



**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 320-35900-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

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WARMINSTER_NAWC
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-35900-1, NAS WILLOW GROVE NAWC
WARMINSTER PA**
02/21/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-35900-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

For:
Tetra Tech, Inc.
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Approved for release.
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2/21/2018 8:59 AM

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Definitions/Glossary

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

TestAmerica Job ID: 320-35900-1

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-35900-1

Receipt

The samples were received on 2/9/2018 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

LCMS

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-020818-RW-324 (320-35900-5), WGNA-020818-FRB-0335 (320-35900-8), (LCS 320-208144/2-A) and (MB 320-208144/1-A). Re-analysis was performed with concurring results. The original analysis has been reported.

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.

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-208144.

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: 320-35900-1

Client Sample ID: NAWC-020818-RW-142

Lab Sample ID: 320-35900-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	10	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	7.5	J M	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.4	J M	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-020818-FRB-142

Lab Sample ID: 320-35900-2

No Detections.

Client Sample ID: WGNA-020818-RW-3556

Lab Sample ID: 320-35900-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	28	J M	40	6.8	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	17	J M	20	2.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.8	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-020818-FRB-3556

Lab Sample ID: 320-35900-4

No Detections.

Client Sample ID: NAWC-020818-RW-324

Lab Sample ID: 320-35900-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	42	M	41	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	29		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	16	J	30	5.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: NAWC-020818-FRB-324

Lab Sample ID: 320-35900-6

No Detections.

Client Sample ID: WGNA-020818-RW-0335

Lab Sample ID: 320-35900-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	19	J M	40	6.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.6	J	30	5.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.5	J	10	1.9	ng/L	1		537	Total/NA

Client Sample ID: WGNA-020818-FRB-0335

Lab Sample ID: 320-35900-8

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-35900-1

Client Sample ID: NAWC-020818-RW-142

Lab Sample ID: 320-35900-1

Date Collected: 02/08/18 08:10

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	10	J M	40	6.8	ng/L		02/13/18 10:20	02/16/18 14:13	1
Perfluorooctanoic acid (PFOA)	7.5	J M	20	2.8	ng/L		02/13/18 10:20	02/16/18 14:13	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		02/13/18 10:20	02/16/18 14:13	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		02/13/18 10:20	02/16/18 14:13	1
Perfluoroheptanoic acid (PFHpA)	2.4	J M	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:13	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		02/13/18 10:20	02/16/18 14:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	87		70 - 130				02/13/18 10:20	02/16/18 14:13	1
13C2 PFDA	102		70 - 130				02/13/18 10:20	02/16/18 14:13	1

Client Sample ID: NAWC-020818-FRB-142

Lab Sample ID: 320-35900-2

Date Collected: 02/08/18 08:05

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		02/13/18 10:20	02/16/18 14:18	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		02/13/18 10:20	02/16/18 14:18	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		02/13/18 10:20	02/16/18 14:18	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		02/13/18 10:20	02/16/18 14:18	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:18	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		02/13/18 10:20	02/16/18 14:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130				02/13/18 10:20	02/16/18 14:18	1
13C2 PFDA	106		70 - 130				02/13/18 10:20	02/16/18 14:18	1

Client Sample ID: WGNA-020818-RW-3556

Lab Sample ID: 320-35900-3

Date Collected: 02/08/18 10:10

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	J M	40	6.8	ng/L		02/13/18 10:20	02/16/18 14:23	1
Perfluorooctanoic acid (PFOA)	17	J M	20	2.8	ng/L		02/13/18 10:20	02/16/18 14:23	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		02/13/18 10:20	02/16/18 14:23	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		02/13/18 10:20	02/16/18 14:23	1
Perfluoroheptanoic acid (PFHpA)	4.8	J	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:23	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		02/13/18 10:20	02/16/18 14:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		70 - 130				02/13/18 10:20	02/16/18 14:23	1
13C2 PFDA	122		70 - 130				02/13/18 10:20	02/16/18 14:23	1

Client Sample Results

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

TestAmerica Job ID: 320-35900-1

Client Sample ID: WGNA-020818-FRB-3556

Lab Sample ID: 320-35900-4

Date Collected: 02/08/18 10:05

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.7	ng/L		02/13/18 10:20	02/16/18 14:27	1
Perfluorooctanoic acid (PFOA)	7.9	U	20	2.8	ng/L		02/13/18 10:20	02/16/18 14:27	1
Perfluorononanoic acid (PFNA)	20	U	24	7.9	ng/L		02/13/18 10:20	02/16/18 14:27	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.4	ng/L		02/13/18 10:20	02/16/18 14:27	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.8	1.9	ng/L		02/13/18 10:20	02/16/18 14:27	1
Perfluorobutanesulfonic acid (PFBS)	35	U	89	16	ng/L		02/13/18 10:20	02/16/18 14:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		70 - 130	02/13/18 10:20	02/16/18 14:27	1
13C2 PFDA	122		70 - 130	02/13/18 10:20	02/16/18 14:27	1

Client Sample ID: NAWC-020818-RW-324

Lab Sample ID: 320-35900-5

Date Collected: 02/08/18 11:10

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	42	M	41	6.9	ng/L		02/13/18 10:20	02/16/18 14:32	1
Perfluorooctanoic acid (PFOA)	29		20	2.8	ng/L		02/13/18 10:20	02/16/18 14:32	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		02/13/18 10:20	02/16/18 14:32	1
Perfluorohexanesulfonic acid (PFHxS)	16	J	30	5.6	ng/L		02/13/18 10:20	02/16/18 14:32	1
Perfluoroheptanoic acid (PFHpA)	3.8	J	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:32	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		02/13/18 10:20	02/16/18 14:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130	02/13/18 10:20	02/16/18 14:32	1
13C2 PFDA	134	Q	70 - 130	02/13/18 10:20	02/16/18 14:32	1

Client Sample ID: NAWC-020818-FRB-324

Lab Sample ID: 320-35900-6

Date Collected: 02/08/18 11:05

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.9	ng/L		02/13/18 10:20	02/16/18 14:46	1
Perfluorooctanoic acid (PFOA)	8.1	U	20	2.8	ng/L		02/13/18 10:20	02/16/18 14:46	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		02/13/18 10:20	02/16/18 14:46	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		02/13/18 10:20	02/16/18 14:46	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:46	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		02/13/18 10:20	02/16/18 14:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130	02/13/18 10:20	02/16/18 14:46	1
13C2 PFDA	121		70 - 130	02/13/18 10:20	02/16/18 14:46	1

Client Sample Results

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

TestAmerica Job ID: 320-35900-1

Client Sample ID: WGNA-020818-RW-0335

Lab Sample ID: 320-35900-7

Date Collected: 02/08/18 12:40

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	19	J M	40	6.9	ng/L		02/13/18 10:20	02/16/18 14:51	1
Perfluorooctanoic acid (PFOA)	23		20	2.8	ng/L		02/13/18 10:20	02/16/18 14:51	1
Perfluorononanoic acid (PFNA)	20	U	24	8.1	ng/L		02/13/18 10:20	02/16/18 14:51	1
Perfluorohexanesulfonic acid (PFHxS)	7.6	J	30	5.6	ng/L		02/13/18 10:20	02/16/18 14:51	1
Perfluoroheptanoic acid (PFHpA)	6.5	J	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:51	1
Perfluorobutanesulfonic acid (PFBS)	36	U	91	16	ng/L		02/13/18 10:20	02/16/18 14:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				02/13/18 10:20	02/16/18 14:51	1
13C2 PFDA	102		70 - 130				02/13/18 10:20	02/16/18 14:51	1

Client Sample ID: WGNA-020818-FRB-0335

Lab Sample ID: 320-35900-8

Date Collected: 02/08/18 12:35

Matrix: Water

Date Received: 02/09/18 09:40

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		02/13/18 10:20	02/16/18 14:55	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		02/13/18 10:20	02/16/18 14:55	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		02/13/18 10:20	02/16/18 14:55	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		02/13/18 10:20	02/16/18 14:55	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		02/13/18 10:20	02/16/18 14:55	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		02/13/18 10:20	02/16/18 14:55	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				02/13/18 10:20	02/16/18 14:55	1
13C2 PFDA	140	Q	70 - 130				02/13/18 10:20	02/16/18 14:55	1

Default Detection Limits

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

TestAmerica Job ID: 320-35900-1

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-35900-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		PFHxA (70-130)	PFDA (70-130)
320-35900-1	NAWC-020818-RW-142	87	102
320-35900-2	NAWC-020818-FRB-142	95	106
320-35900-3	WGNA-020818-RW-3556	81	122
320-35900-4	WGNA-020818-FRB-3556	83	122
320-35900-5	NAWC-020818-RW-324	93	134 Q
320-35900-6	NAWC-020818-FRB-324	92	121
320-35900-7	WGNA-020818-RW-0335	86	102
320-35900-8	WGNA-020818-FRB-0335	86	140 Q
LCS 320-208144/2-A	Lab Control Sample	90	142 Q
LCSD 320-208144/3-A	Lab Control Sample Dup	92	103
MB 320-208144/1-A	Method Blank	96	145 Q

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-35900-1

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

Lab Sample ID: MB 320-208144/1-A
Matrix: Water
Analysis Batch: 208812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 208144

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		02/13/18 10:20	02/16/18 13:59	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		02/13/18 10:20	02/16/18 13:59	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		02/13/18 10:20	02/16/18 13:59	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		02/13/18 10:20	02/16/18 13:59	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		02/13/18 10:20	02/16/18 13:59	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		02/13/18 10:20	02/16/18 13:59	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	96		70 - 130	02/13/18 10:20	02/16/18 13:59	1
13C2 PFDA	145	Q	70 - 130	02/13/18 10:20	02/16/18 13:59	1

Lab Sample ID: LCS 320-208144/2-A
Matrix: Water
Analysis Batch: 208812

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 208144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	112	103		ng/L		92	70 - 130
Perfluorononanoic acid (PFNA)	111	115		ng/L		104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	167	159		ng/L		96	70 - 130
Perfluoroheptanoic acid (PFHpA)	55.6	55.1		ng/L		99	70 - 130
Perfluorobutanesulfonic acid (PFBS)	500	415		ng/L		83	70 - 130

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	90		70 - 130
13C2 PFDA	142	Q	70 - 130

Lab Sample ID: LCSD 320-208144/3-A
Matrix: Water
Analysis Batch: 208812

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 208144

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	
								RPD	Limit
Perfluorooctanesulfonic acid (PFOS)	223	212	M	ng/L		95	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	112	101		ng/L		90	70 - 130	3	30
Perfluorononanoic acid (PFNA)	111	111		ng/L		100	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	167	158		ng/L		95	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	55.6	53.0		ng/L		95	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	500	400		ng/L		80	70 - 130	4	30

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		70 - 130
13C2 PFDA	103		70 - 130

QC Association Summary

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

TestAmerica Job ID: 320-35900-1

LCMS

Prep Batch: 208144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-35900-1	NAWC-020818-RW-142	Total/NA	Water	537	
320-35900-2	NAWC-020818-FRB-142	Total/NA	Water	537	
320-35900-3	WGNA-020818-RW-3556	Total/NA	Water	537	
320-35900-4	WGNA-020818-FRB-3556	Total/NA	Water	537	
320-35900-5	NAWC-020818-RW-324	Total/NA	Water	537	
320-35900-6	NAWC-020818-FRB-324	Total/NA	Water	537	
320-35900-7	WGNA-020818-RW-0335	Total/NA	Water	537	
320-35900-8	WGNA-020818-FRB-0335	Total/NA	Water	537	
MB 320-208144/1-A	Method Blank	Total/NA	Water	537	
LCS 320-208144/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-208144/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 208812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-35900-1	NAWC-020818-RW-142	Total/NA	Water	537	208144
320-35900-2	NAWC-020818-FRB-142	Total/NA	Water	537	208144
320-35900-3	WGNA-020818-RW-3556	Total/NA	Water	537	208144
320-35900-4	WGNA-020818-FRB-3556	Total/NA	Water	537	208144
320-35900-5	NAWC-020818-RW-324	Total/NA	Water	537	208144
MB 320-208144/1-A	Method Blank	Total/NA	Water	537	208144
LCS 320-208144/2-A	Lab Control Sample	Total/NA	Water	537	208144
LCSD 320-208144/3-A	Lab Control Sample Dup	Total/NA	Water	537	208144

Analysis Batch: 208836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-35900-6	NAWC-020818-FRB-324	Total/NA	Water	537	208144
320-35900-7	WGNA-020818-RW-0335	Total/NA	Water	537	208144
320-35900-8	WGNA-020818-FRB-0335	Total/NA	Water	537	208144

Lab Chronicle

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

TestAmerica Job ID: 320-35900-1

Client Sample ID: NAWC-020818-RW-142

Date Collected: 02/08/18 08:10

Date Received: 02/09/18 09:40

Lab Sample ID: 320-35900-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208812	02/16/18 14:13	JRB	TAL SAC

Client Sample ID: NAWC-020818-FRB-142

Date Collected: 02/08/18 08:05

Date Received: 02/09/18 09:40

Lab Sample ID: 320-35900-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208812	02/16/18 14:18	JRB	TAL SAC

Client Sample ID: WGNA-020818-RW-3556

Date Collected: 02/08/18 10:10

Date Received: 02/09/18 09:40

Lab Sample ID: 320-35900-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208812	02/16/18 14:23	JRB	TAL SAC

Client Sample ID: WGNA-020818-FRB-3556

Date Collected: 02/08/18 10:05

Date Received: 02/09/18 09:40

Lab Sample ID: 320-35900-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208812	02/16/18 14:27	JRB	TAL SAC

Client Sample ID: NAWC-020818-RW-324

Date Collected: 02/08/18 11:10

Date Received: 02/09/18 09:40

Lab Sample ID: 320-35900-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208812	02/16/18 14:32	JRB	TAL SAC

Client Sample ID: NAWC-020818-FRB-324

Date Collected: 02/08/18 11:05

Date Received: 02/09/18 09:40

Lab Sample ID: 320-35900-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208836	02/16/18 14:46	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-35900-1

Client Sample ID: WGNA-020818-RW-0335

Lab Sample ID: 320-35900-7

Date Collected: 02/08/18 12:40

Matrix: Water

Date Received: 02/09/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208836	02/16/18 14:51	JRB	TAL SAC

Client Sample ID: WGNA-020818-FRB-0335

Lab Sample ID: 320-35900-8

Date Collected: 02/08/18 12:35

Matrix: Water

Date Received: 02/09/18 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			208144	02/13/18 10:20	KMK	TAL SAC
Total/NA	Analysis	537		1	208836	02/16/18 14:55	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 320-35900-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
Arizona	State Program	9	AZ0708	08-11-18
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-18
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-18
L-A-B	DoD ELAP		L2468	01-20-21
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-14-18
Michigan	State Program	5	9947	01-31-18 *
Nevada	State Program	9	CA00044	07-31-18
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	07-31-18
USDA	Federal		P330-11-00436	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

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

TestAmerica Job ID: 320-35900-1

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: 320-35900-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-35900-1	NAWC-020818-RW-142	Water	02/08/18 08:10	02/09/18 09:40
320-35900-2	NAWC-020818-FRB-142	Water	02/08/18 08:05	02/09/18 09:40
320-35900-3	WGNA-020818-RW-3556	Water	02/08/18 10:10	02/09/18 09:40
320-35900-4	WGNA-020818-FRB-3556	Water	02/08/18 10:05	02/09/18 09:40
320-35900-5	NAWC-020818-RW-324	Water	02/08/18 11:10	02/09/18 09:40
320-35900-6	NAWC-020818-FRB-324	Water	02/08/18 11:05	02/09/18 09:40
320-35900-7	WGNA-020818-RW-0335	Water	02/08/18 12:40	02/09/18 09:40
320-35900-8	WGNA-020818-FRB-0335	Water	02/08/18 12:35	02/09/18 09:40

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208773

Lab Sample ID: IC 320-208773/4 Client Sample ID: _____

Date Analyzed: 02/16/18 08:55 Lab File ID: 2018.02.016_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.66	Assign Peak	roycea	02/16/18 10:26
Perfluorooctanesulfonic acid (PFOS)	2.12	Assign Peak	roycea	02/16/18 10:26

Lab Sample ID: IC 320-208773/5 Client Sample ID: _____

Date Analyzed: 02/16/18 09:00 Lab File ID: 2018.02.016_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	02/16/18 10:29

Lab Sample ID: IC 320-208773/6 Client Sample ID: _____

Date Analyzed: 02/16/18 09:05 Lab File ID: 2018.02.016_537ICAL_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	02/16/18 10:29

Lab Sample ID: IC 320-208773/7 ICISAV Client Sample ID: _____

Date Analyzed: 02/16/18 09:09 Lab File ID: 2018.02.016_537ICAL_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208773

Lab Sample ID: IC 320-208773/8 Client Sample ID: _____

Date Analyzed: 02/16/18 09:14 Lab File ID: 2018.02.016_537ICAL_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:30

Lab Sample ID: IC 320-208773/9 Client Sample ID: _____

Date Analyzed: 02/16/18 09:19 Lab File ID: 2018.02.016_537ICAL_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:31

Lab Sample ID: CCVL 320-208773/11 Client Sample ID: _____

Date Analyzed: 02/16/18 09:28 Lab File ID: 2018.02.016_537ICAL_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.12	Peak assignment corrected	roycea	02/16/18 10:36

Lab Sample ID: ICV 320-208773/13 Client Sample ID: _____

Date Analyzed: 02/16/18 09:37 Lab File ID: 2018.02.016_537ICAL_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Peak assignment corrected	roycea	02/16/18 10:37

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208812

Lab Sample ID: CCV 320-208812/1 CCVIS Client Sample ID: _____

Date Analyzed: 02/16/18 13:50 Lab File ID: 2018.02.16_537C_028.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.06	Peak assignment corrected	roycea	02/17/18 09:43

Lab Sample ID: LCS 320-208144/2-A Client Sample ID: _____

Date Analyzed: 02/16/18 14:04 Lab File ID: 2018.02.16_537C_031.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.06	Peak assignment corrected	roycea	02/17/18 09:44

Lab Sample ID: LCSD 320-208144/3-A Client Sample ID: _____

Date Analyzed: 02/16/18 14:09 Lab File ID: 2018.02.16_537C_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:45

Lab Sample ID: 320-35900-1 Client Sample ID: NAWC-020818-RW-142

Date Analyzed: 02/16/18 14:13 Lab File ID: 2018.02.16_537C_033.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.62	Missed Peak	barnettj	02/17/18 12:49
Perfluorooctanoic acid (PFOA)	1.80	Baseline	barnettj	02/17/18 12:50
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208812

Lab Sample ID: 320-35900-3 Client Sample ID: WGNA-020818-RW-3556

Date Analyzed: 02/16/18 14:23 Lab File ID: 2018.02.16_537C_035.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.80	Baseline	barnettj	02/17/18 12:50
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:46

Lab Sample ID: 320-35900-5 Client Sample ID: NAWC-020818-RW-324

Date Analyzed: 02/16/18 14:32 Lab File ID: 2018.02.16_537C_037.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:46

Lab Sample ID: CCV 320-208812/11 CCVIS Client Sample ID: _____

Date Analyzed: 02/16/18 14:37 Lab File ID: 2018.02.16_537C_038.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:47

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 208836

Lab Sample ID: CCV 320-208836/11 CCVIS Client Sample ID: _____

Date Analyzed: 02/16/18 14:37 Lab File ID: 2018.02.16_537C_038.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:47

Lab Sample ID: 320-35900-7 Client Sample ID: WGNA-020818-RW-0335

Date Analyzed: 02/16/18 14:51 Lab File ID: 2018.02.16_537C_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:47

Lab Sample ID: CCV 320-208836/16 CCVIS Client Sample ID: _____

Date Analyzed: 02/16/18 15:00 Lab File ID: 2018.02.16_537C_043.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.05	Peak assignment corrected	roycea	02/17/18 09:48

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
LC537-HSP_00026	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutane Sulfonate	1250.1 ng/mL		
							Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL		
							Perfluorononanoic acid (PFNA)	277.867 ng/mL		
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL		
.LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutane Sulfonate	90 ug/mL		
							Perfluorobutanesulfonic acid (PFBS)	90 ug/mL		
							LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
							LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
							LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
							LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
..LC537-PFOS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFOS_00002	0.0974 g	Perfluorobutane Sulfonate	2 mg/mL		
							Perfluorobutanesulfonic acid (PFBS)	2 mg/mL		
...LC537_PFOS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g		
							Perfluorobutanesulfonic acid (PFBS)	1 g/g		
..LC537-PFHpA_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL		
							...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V	
..LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL		
							...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V	
..LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL		
							...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F	
..LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL		
							...LC537 PFOA_00003	10/31/23	SIGMA ALDRICH, Lot BCBS1198V	
..LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL		
							...LC537_PFOS_00003	04/17/19	sigma alrich, Lot SZBE107XV	
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00059	1000 uL	13C2-PFOA	10 ng/mL		
							13C4 PFOS	28.68 ng/mL		
.LC537-IS_00059	07/30/18	01/30/18	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		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00021	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00030	07/30/18	02/15/18	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00059	1000 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM2_00001	400 uL	Perfluorobutanesulfonic acid (PFBS)	100.092 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.1619 ng/mL
							Perfluorononanoic acid (PFNA)	20.1641 ng/mL
							Perfluorooctanoic acid (PFOA)	20.167 ng/mL
			Perfluorooctanesulfonic acid (PFOS)	20.1702 ng/mL				
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	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_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM2_00001	08/15/18	02/15/18	Methanol, Lot 090285	10 mL	LC537ICIM_00020	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	2.5023 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.504047 ug/mL
							Perfluorononanoic acid (PFNA)	0.504103 ug/mL
							Perfluorooctanoic acid (PFOA)	0.504176 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.504255 ug/mL
..LC537ICIM_00020	08/15/18	02/15/18	Methanol, Lot 090285	25 mL	LC537-PFBS2_00009	0.625 mL	Perfluorobutanesulfonic acid (PFBS)	50.0459 ug/mL
					LC537-PFHxA2_00012	0.0625 mL	Perfluoroheptanoic acid (PFHpA)	5 ug/mL
					LC537-PFHxS2_00009	0.126 mL	Perfluorohexanesulfonic acid (PFHxS)	10.0809 ug/mL
					LC537-PFNA2_00010	0.126 mL	Perfluorononanoic acid (PFNA)	10.0821 ug/mL
					LC537-PFOA2_00011	0.126 mL	Perfluorooctanoic acid (PFOA)	10.0835 ug/mL
LC537-PFOS2_00011	0.126 mL	Perfluorooctanesulfonic acid (PFOS)	10.0851 ug/mL					
...LC537-PFBS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	17.1 mL	LC537_PFBS2_00002	0.0343 g	Perfluorobutanesulfonic acid (PFBS)	2001.84 ug/mL
....LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
...LC537-PFHxA2_00012	08/15/18	02/15/18	Methanol, Lot 09092	23.95 mL	LC537_PFHxA2_00002	0.0479 g	Perfluoroheptanoic acid (PFHpA)	2000 ug/mL
....LC537_PFHxA2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
...LC537-PFHxS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	25.87 mL	LC537_PFHxS2_00002	0.0569 g	Perfluorohexanesulfonic acid (PFHxS)	2000.19 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHxS2_00002	06/08/22		Santa Cruz Biotechnology, Lot G2516		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA2_00010	08/15/18	02/15/18	Methanol, Lot 090285	16.58 mL	LC537 PFNA2_00002	0.0333 g	Perfluorononanoic acid (PFNA)	2000.41 ug/mL
...LC537 PFNA2_00002	06/14/22		Aldrich, Lot MKCC0699		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
...LC537-PFOA2_00011	08/15/18	02/15/18	Methanol, Lot 090285	22.96 mL	LC537 PFOA2_00002	0.0464 g	Perfluorooctanoic acid (PFOA)	2000.7 ug/mL
...LC537 PFOA2_00002	06/09/22		Afla Aesar, Lot 10199078		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
...LC537-PFOS2_00011	08/15/18	02/15/18	Methanol, Lot 090285	14.71 mL	LC537_PFOS2_00002	0.0378 g	Perfluorooctanesulfonic acid (PFOS)	2001.01 ug/mL
....LC537_PFOS2_00002	06/14/22		Sigma, Lot BCBQ0108V		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00055	05/27/18	11/27/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00007	60 uL	13C2-PFOA	0.1 ug/mL
.LCM2PFOA_00007	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00021	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00021	04/01/18	02/15/18	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00059	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00032	60 uL	Perfluorobutanesulfonic acid (PFBS)	9.0018 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1.00031 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.00134 ng/mL
							Perfluorononanoic acid (PFNA)	2.00088 ng/mL
							Perfluorooctanoic acid (PFOA)	2.01129 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.01756 ng/mL
					LC537-SU_00059	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00059	07/30/18	01/30/18	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_00032	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	333.4 uL	Perfluorobutanesulfonic acid (PFBS)	750.15 ng/mL
							Perfluoroheptanoic acid (PFHpA)	83.3591 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	250.111 ng/mL
							Perfluorononanoic acid (PFNA)	166.74 ng/mL
							Perfluorooctanoic acid (PFOA)	167.608 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	334.797 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBFS_00002	0.0974 g	Perfluorobutanesulfonic acid (PFBS)	2 mg/mL
....LC537_PFBFS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpa_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpa_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpa_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00021	04/01/18	02/05/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00027	320 uL	Perfluorobutanesulfonic acid (PFBS)	20.0016 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.22264 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.66884 ng/mL
							Perfluorononanoic acid (PFNA)	4.44587 ng/mL
							Perfluorooctanoic acid (PFOA)	4.469 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.92684 ng/mL
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00059	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma aldrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	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_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00024	04/01/18	02/05/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00027	720 uL	Perfluorobutanesulfonic acid (PFBS)	45.0036 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5.00094 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.0049 ng/mL
							Perfluorononanoic acid (PFNA)	10.0032 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0553 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	20.0854 ng/mL
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00059	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
..LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V			(Purchased Reagent)	Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V			(Purchased Reagent)	Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537_PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F			(Purchased Reagent)	Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537_PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V			(Purchased Reagent)	Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV			(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
..LC537-IS_00059	07/30/18	01/30/18	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
.LC537-SU_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL		
					LCMPFHxA_00015	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_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL		
LC537-L4_00021	04/01/18	02/15/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00027	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0072 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	10.0019 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	30.0098 ng/mL		
							Perfluorononanoic acid (PFNA)	20.0064 ng/mL		
							Perfluorooctanoic acid (PFOA)	20.1105 ng/mL		
					Perfluorooctanesulfonic acid (PFOS)	40.1708 ng/mL				
					LC537-IS_00059	500 uL	13C2-PFOA	10 ng/mL		
LC537-SU_00059	500 uL	13C2 PFDA	10 ng/mL							
						13C2 PFHxA	10 ng/mL			
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL		
							Perfluorononanoic acid (PFNA)	277.867 ng/mL		
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL		
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL		
							LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
							LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
							LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
							LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
							LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL		
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g		
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL		
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFNA 00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA 00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA 00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA 00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA 00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA 00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA 00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA 00015	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 00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00025	04/01/18	02/05/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00027	2160 uL	Perfluorobutanesulfonic acid (PFBS)	135.011 ng/mL
							Perfluoroheptanoic acid (PFHpA)	15.0028 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0147 ng/mL
							Perfluorononanoic acid (PFNA)	30.0096 ng/mL
							Perfluorooctanoic acid (PFOA)	30.1658 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.2562 ng/mL
					LC537-IS_00059	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00059	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA 00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537_PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537_PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	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_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L6_00021	04/01/18	02/15/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00027	720 uL	Perfluorobutanesulfonic acid (PFBS)	180.014 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20.0038 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	60.0196 ng/mL
							Perfluorononanoic acid (PFNA)	40.0128 ng/mL
							Perfluorooctanoic acid (PFOA)	40.221 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	80.3416 ng/mL
					LC537-IS_00059	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00059	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00027	04/01/18	01/30/18	Methanol, Lot 141039	40000 uL	LC537SPIM_00026	555.6 uL	Perfluorobutanesulfonic acid (PFBS)	1250.1 ng/mL
							Perfluoroheptanoic acid (PFHpA)	138.915 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	416.802 ng/mL
							Perfluorononanoic acid (PFNA)	277.867 ng/mL
							Perfluorooctanoic acid (PFOA)	279.313 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	557.928 ng/mL
..LC537SPIM_00026	04/01/18	01/30/18	Methanol, Lot 104453	20000 uL	LC537-PFBS_00009	900 uL	Perfluorobutanesulfonic acid (PFBS)	90 ug/mL
					LC537-PFHpA_00016	100 uL	Perfluoroheptanoic acid (PFHpA)	10.0011 ug/mL
					LC537-PFHxS_00011	300 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0074 ug/mL
					LC537-PFNA_00014	400 uL	Perfluorononanoic acid (PFNA)	20.0048 ug/mL
					LC537-PFOA_00015	400 uL	Perfluorooctanoic acid (PFOA)	20.1089 ug/mL
					LC537-PFOS_00009	800 uL	Perfluorooctanesulfonic acid (PFOS)	40.1676 ug/mL
...LC537-PFBS_00009	04/01/18	01/30/18	Methanol, Lot 090285	48.7 mL	LC537_PFBS_00002	0.0974 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_00016	04/01/18	01/30/18	Methanol, Lot 090285	59.74 mL	LC537_PFHpA_00002	0.1207 g	Perfluoroheptanoic acid (PFHpA)	2.00022 mg/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00011	04/01/18	01/30/18	Methanol, Lot 090285	38.64 mL	LC537_PFHxS_00002	0.085 g	Perfluorohexanesulfonic acid (PFHxS)	2.00049 mg/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00014	04/01/18	01/30/18	Methanol, Lot 090285	62.58 mL	LC537 PFNA_00002	0.065 g	Perfluorononanoic acid (PFNA)	1000.24 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00015	07/30/18	01/30/18	Methanol, Lot 090285	31 mL	LC537 PFOA_00003	0.0312 g	Perfluorooctanoic acid (PFOA)	1.00545 mg/mL
....LC537 PFOA_00003	10/31/23		SIGMA ALDRICH, Lot BCBS1198V		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00009	07/30/18	01/30/18	Methanol, Lot 090285	36 mL	LC537_PFOS_00003	0.0397 g	Perfluorooctanesulfonic acid (PFOS)	1.00419 mg/mL
....LC537_PFOS_00003	04/17/19		sigma alrich, Lot SZBE107XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00059	07/30/18	01/30/18	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_00059	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	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_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-SU_00057	07/30/18	01/30/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	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_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFB_00002

7: 4/1/15 SPV

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

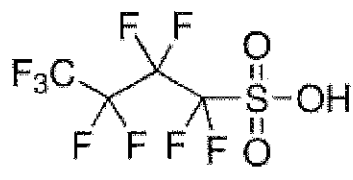
Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

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

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



PFBS

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

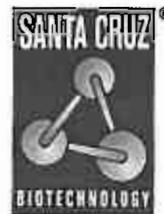
Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

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

Reagent

LC537_PFB2_00002

F: 6.8.17 SW



CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Reagent

LC537_PFHpA_00002

R: 4/1/15 4V

Certificate of Analysis

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

PFHpA

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

Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

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

Reagent

LC537_PFHpA2_00002

Certificate of analysis

r:6.13.17 SW

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

PFHe A

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

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ThermoFisher
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Reagent

LC537_PFHxS_00002

r: 4/1/15 stw

Certificate of Analysis

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

Product Number: 50929

Batch Number: BCBL3545V

Brand: Aldrich

CAS Number: 3871-99-6

Formula: C₆F₁₃KO₃S

Formula Weight: 438.20

Quality Release Date: 20 JUN 2013

PFH₁₃S-K

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

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

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

stw 4/1/15

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

Reagent

LC537_PFHxS2_00002

n: 6-8-17 SKJ

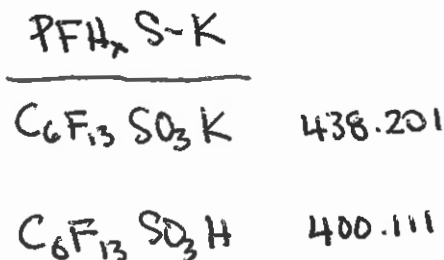


The Future of Science

CERTIFICATE OF ANALYSIS

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

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



MW correction = $\frac{400.11}{438.201} = 0.91307$ PFH₁₃S
 CAS# 355-46-4

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

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

Reagent

LC537_PENA_00002

R: 4/1/15 SKV



Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

Customer service:

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

PFNA

Reagent

LC537_PFN2_00002

P: 6.14.17 SKW

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

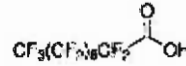
Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

Product Number: 394459
Batch Number: MKCC0699
Brand: ALDRICH
CAS Number: 375-95-1
MDL Number: MFCD00039605
Formula: C9HF17O2
Formula Weight: 464.08 g/mol
Quality Release Date: 07 DEC 2016



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Reagent

LC537_PFOA_00003

P: 11/30/16 SKV
PFA

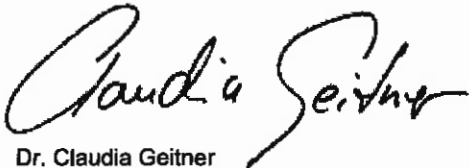
SIGMA-ALDRICH

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

Certificate of Analysis

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

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



Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Reagent

LC537_PFOA2_00002

Certificate of analysis

P: 6/21/17 SW ✓

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

PFOA

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

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

Order our products online www.alfa.com

ThermoFisher
SCIENTIFIC

Reagent

LC537_PFOs_00003

n: 11/30/16 SV
PFOS

SIGMA-ALDRICH

CERTIFICATE OF ANALYSIS

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

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

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

Reference Material (RM)

1. General Information

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

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

2. Batch Analysis

Identity	complying
Assay (LC-MS)	98 %
Date of Analysis	22.Apr.2014

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFOs2_00002

R: 6.14.17 SKV

Certificate of Analysis

Product Name: HEPTADEC AFLUORO OCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT
98 %

Product Number: 365289

Batch Number: BCBQ0108V

Brand: Aldrich

CAS Number: 56773-42-3

Formula: $CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$

Formula Weight: 629.37

Quality Release Date: 11 JUN 2015

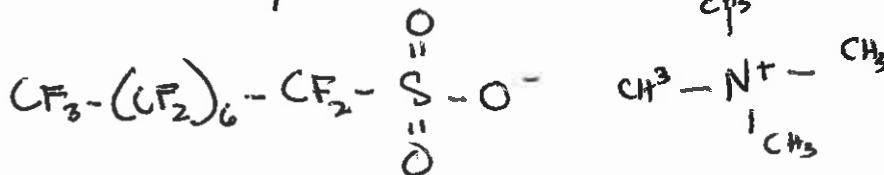
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity & MW correction = 77.37%



	$C_{17}F_{17}SO_3^+H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.966	-
S = 32.066	32.066	-
O = 16.000	47.997	20.60
H = 1.008	1.008	14.007
N = 14.007	-	14.007
	<hr/>	<hr/>
	500.125	130.255

Reagent

LCM2PFOA_00007

P: 5/11/17 SKV



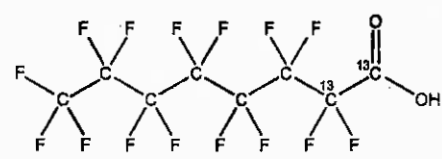
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M2PFOA0216

STRUCTURE:  **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

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

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

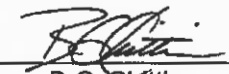
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 02/24/2016
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

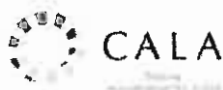
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

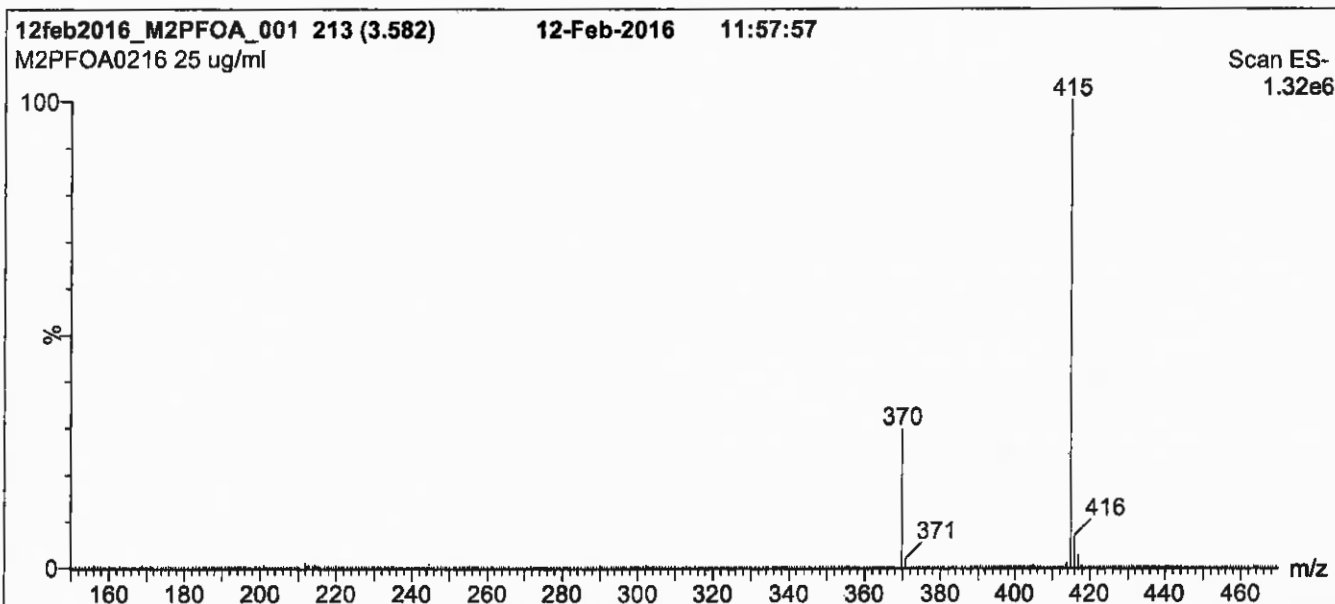
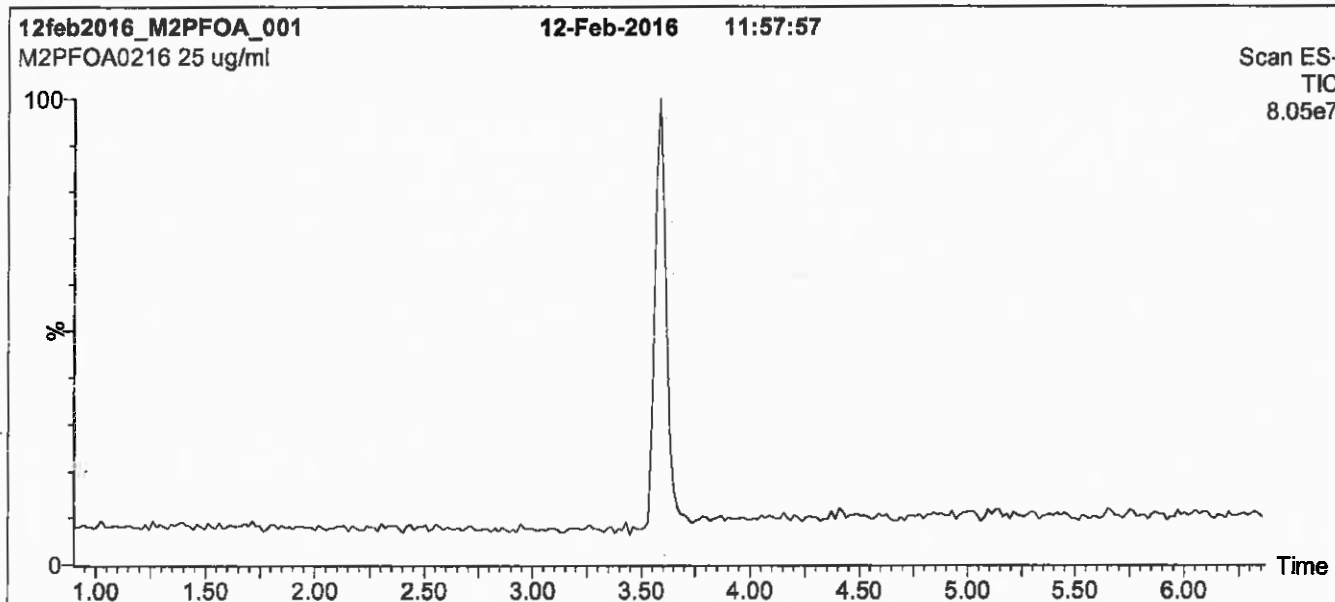
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

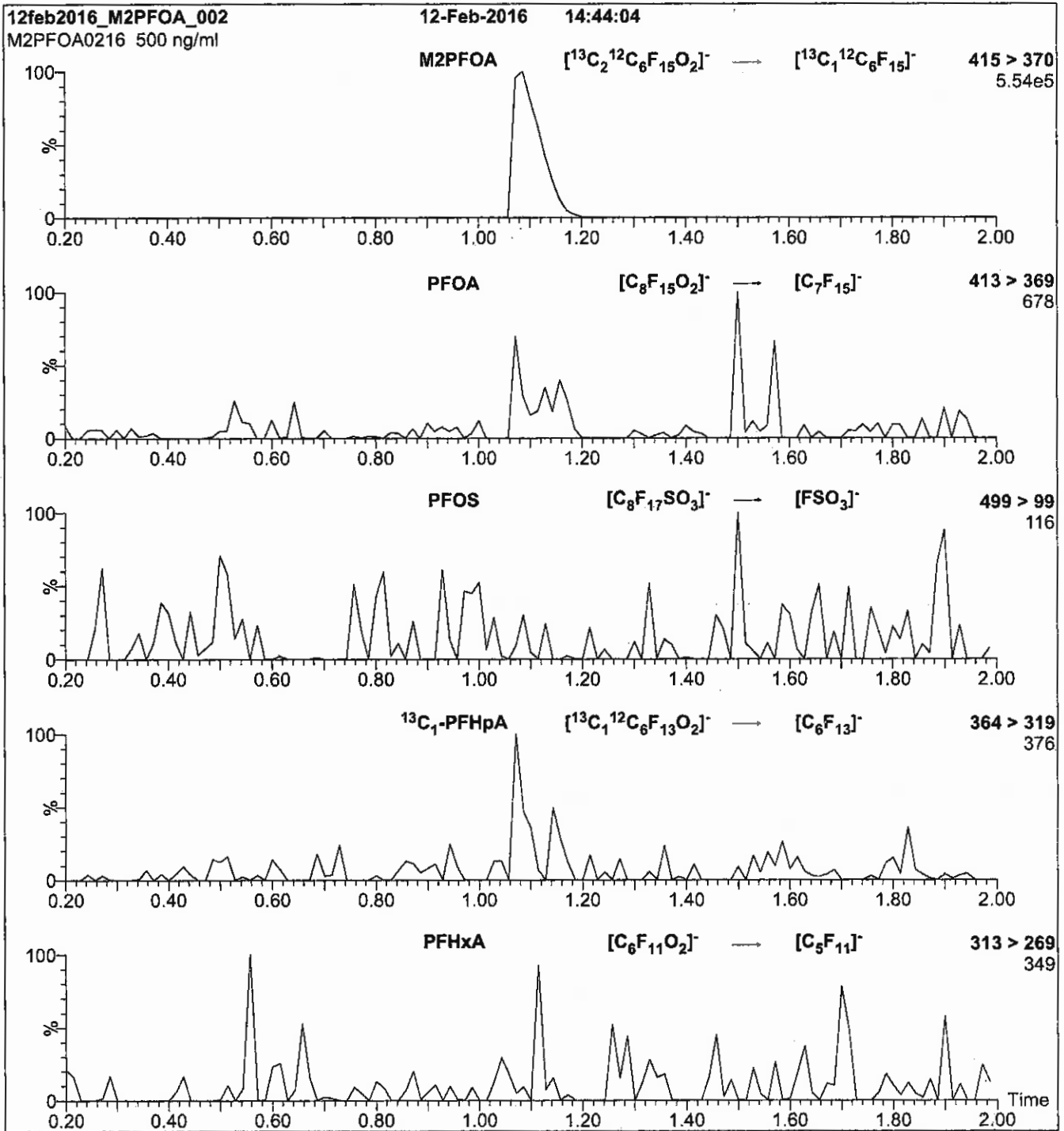
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H₂O

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

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255

ID: LCMPPFDA_00012

Exp: 09/30/21 Prpd: SBC

13C2-Perfluorodecanoic acid

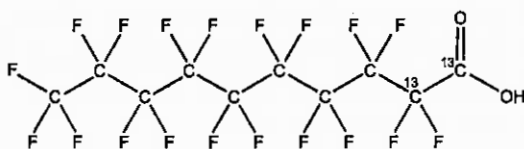


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** Not available



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

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

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy) 09/30/2016

EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chríttim

Date: 10/07/2016
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

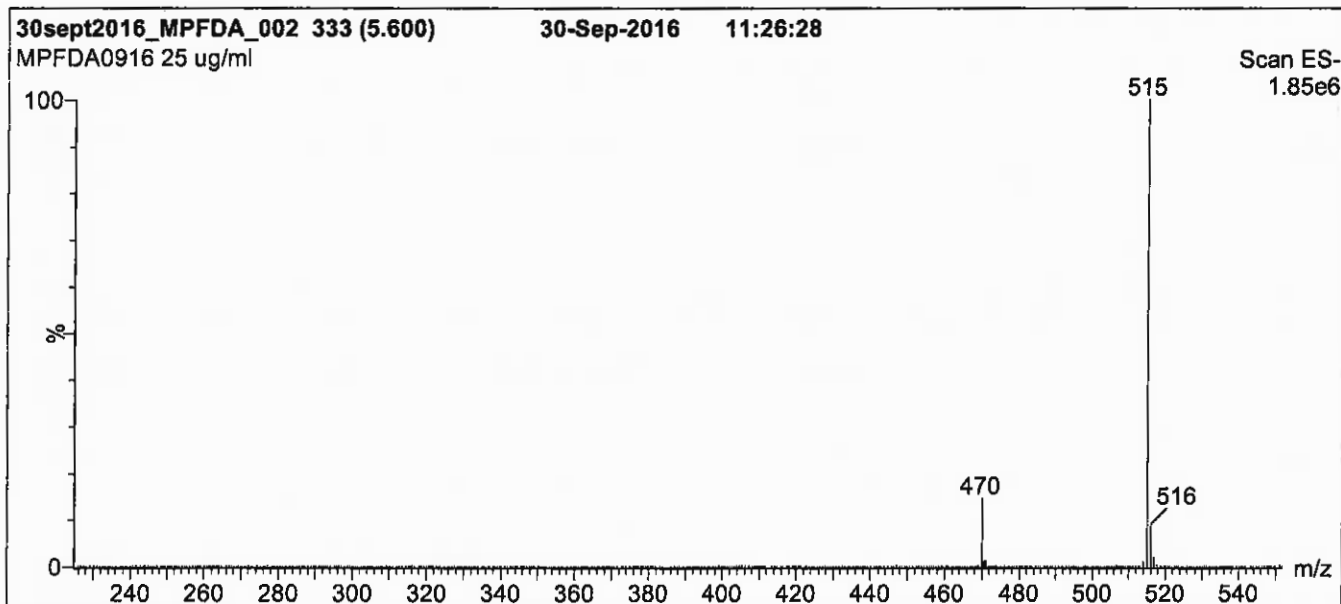
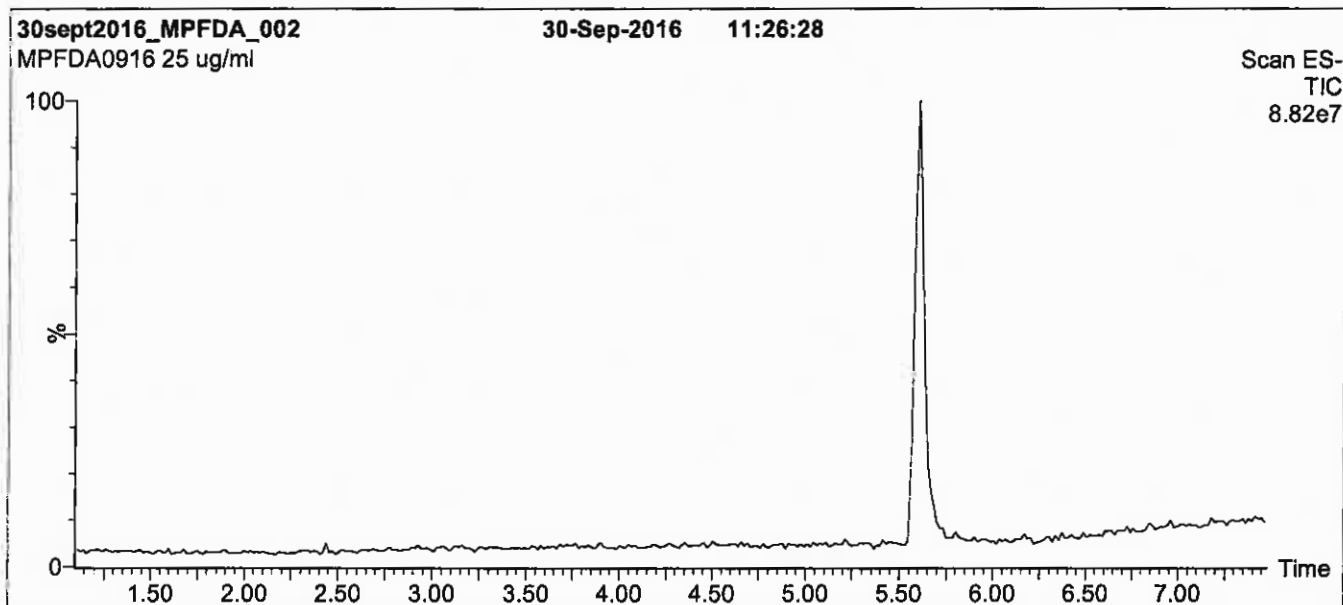
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For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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



Conditions for Figure 1:

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

Chromatographic Conditions

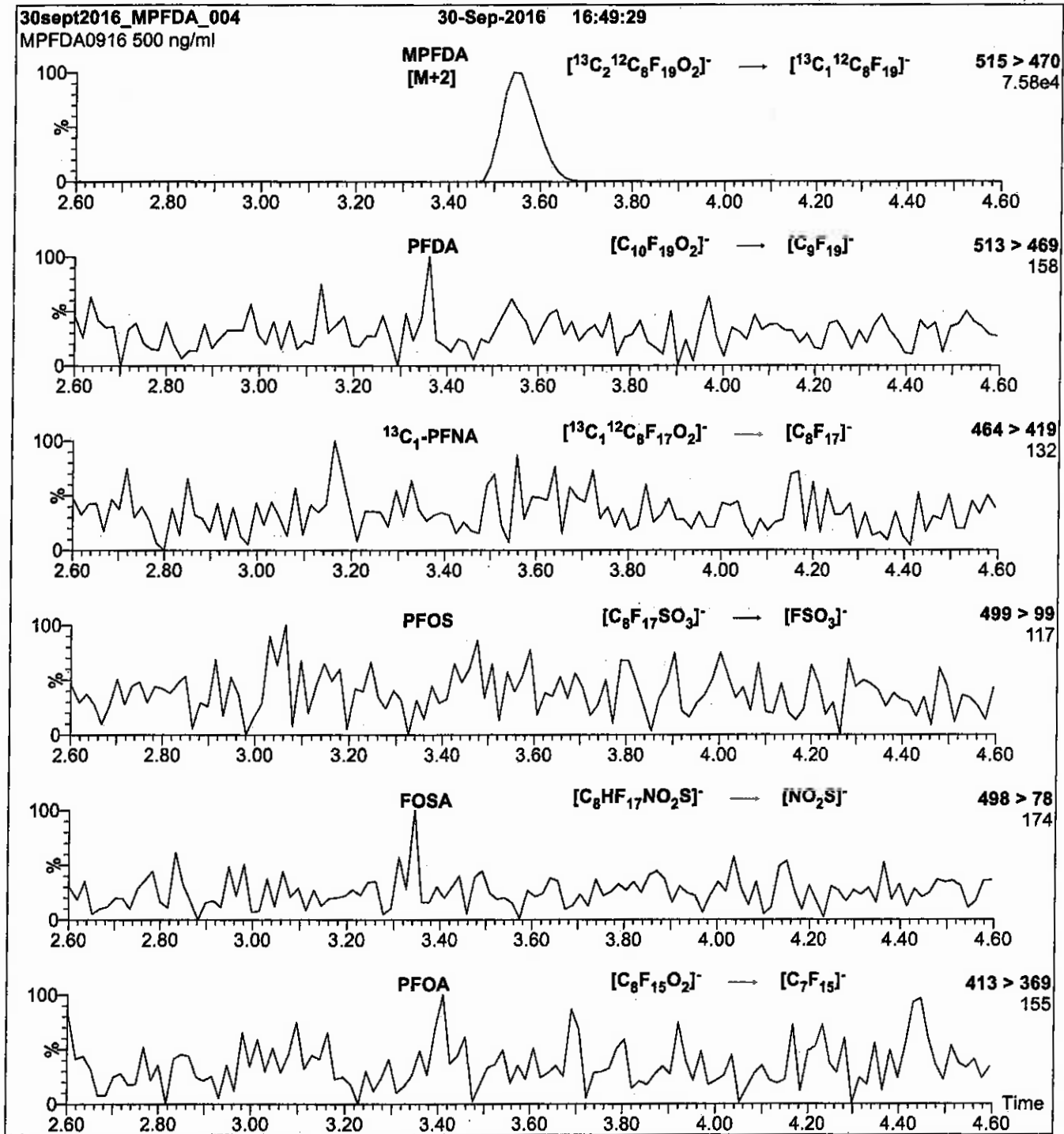
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00015

r: 5/10/17 skd



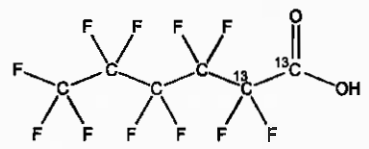
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA1116

STRUCTURE: **CAS #:** Not available



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

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

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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: 12/13/2016
(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:

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HAZARDS:

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UNCERTAINTY:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

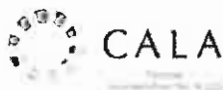
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

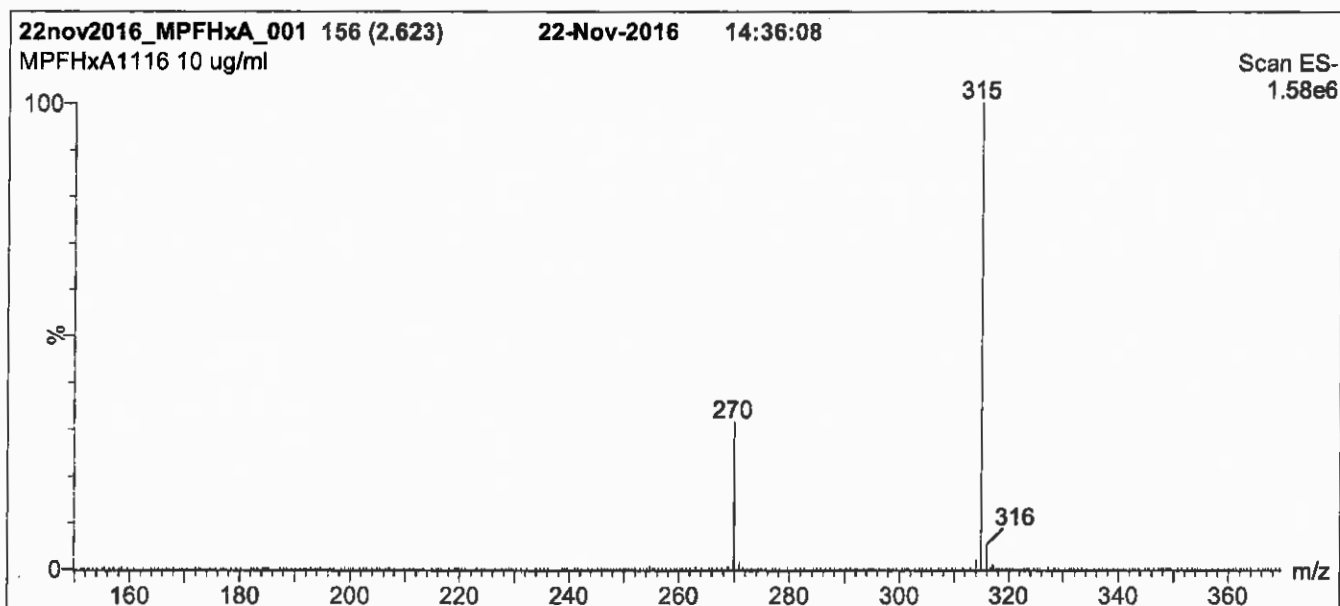
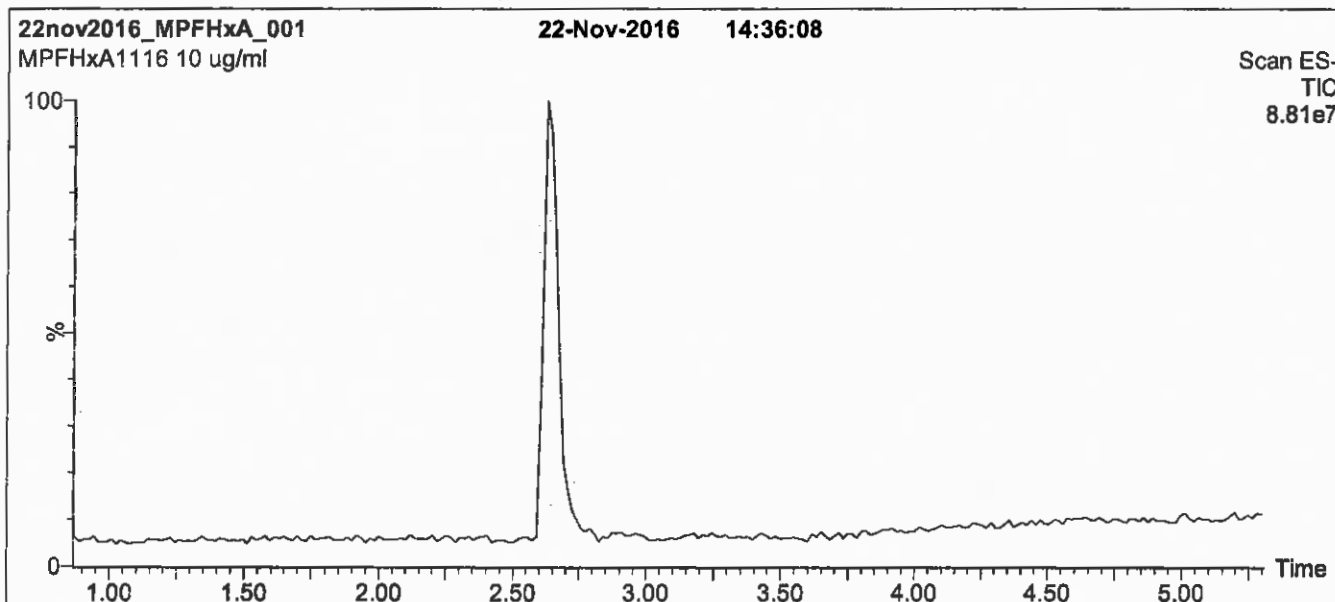
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

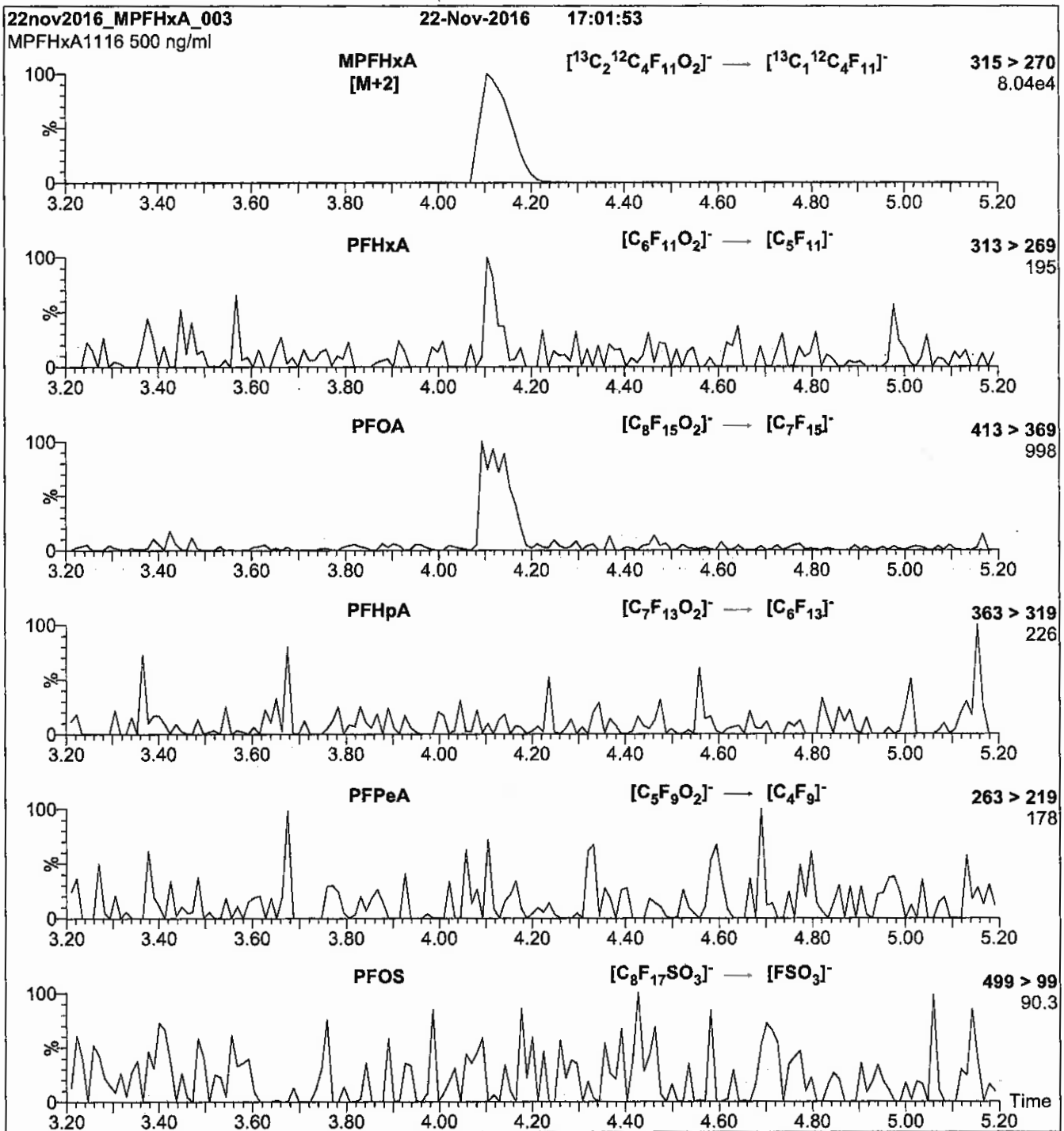
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 10

Reagent

LCMPFOS_00021

r: 5/6/17 SKV

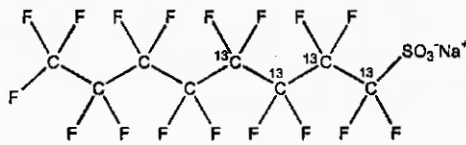


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na	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)	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-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/14/2016
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

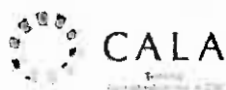
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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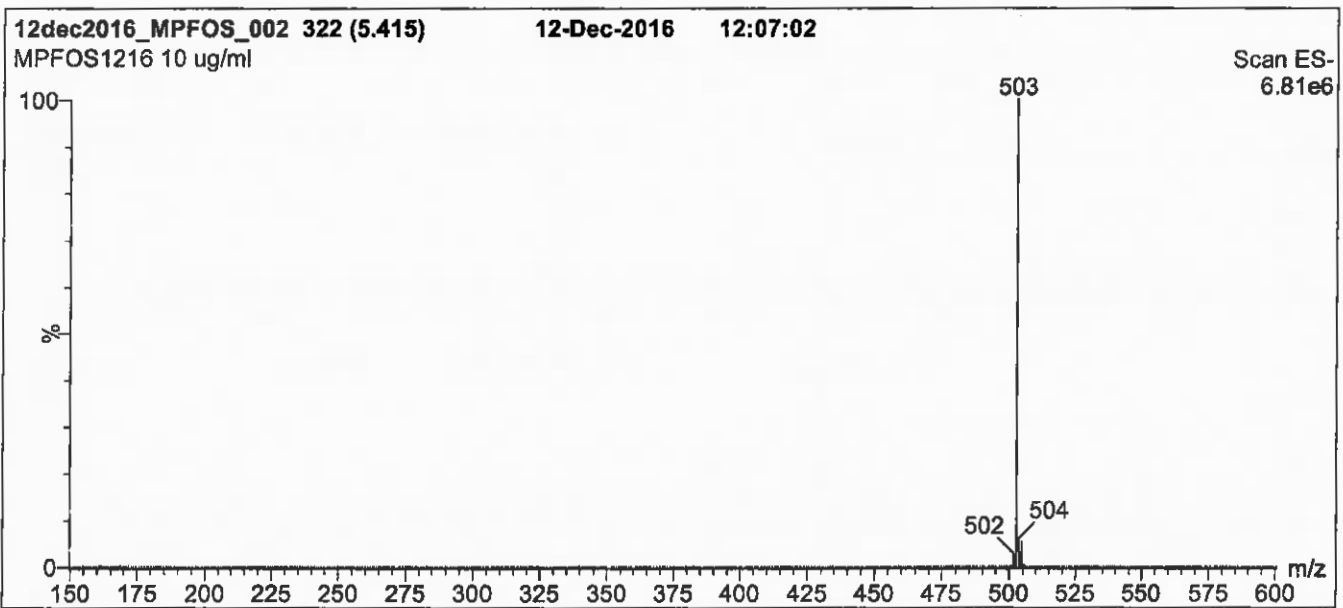
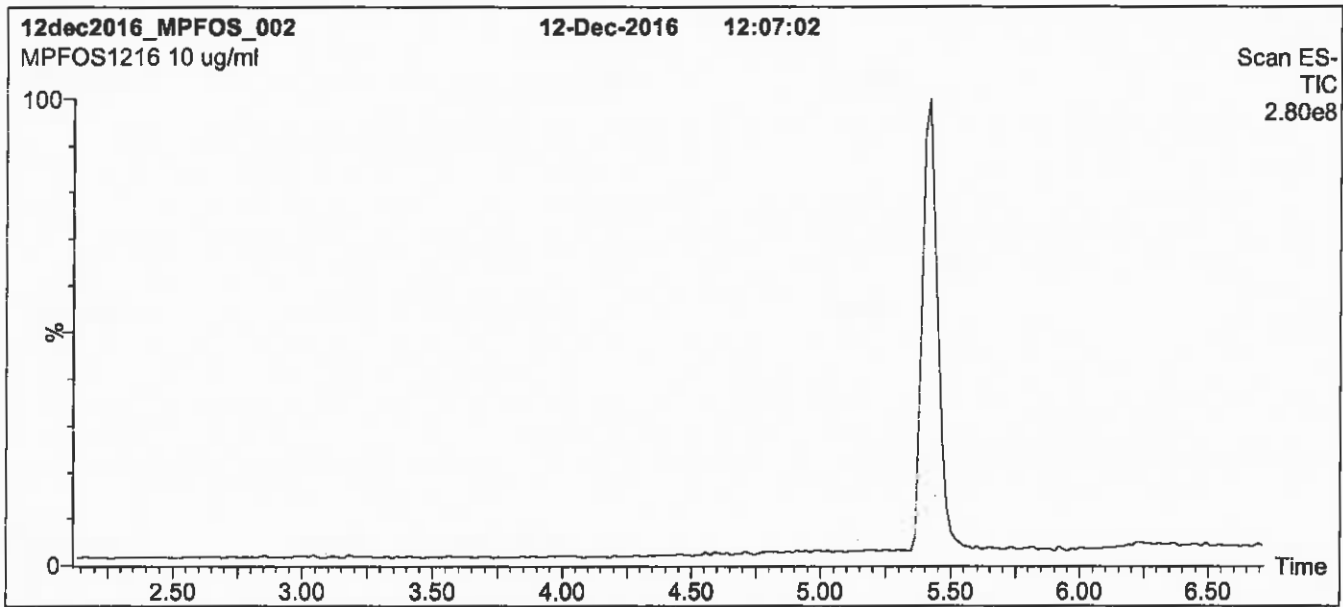
QUALITY MANAGEMENT:

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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 85% organic over 7.5 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

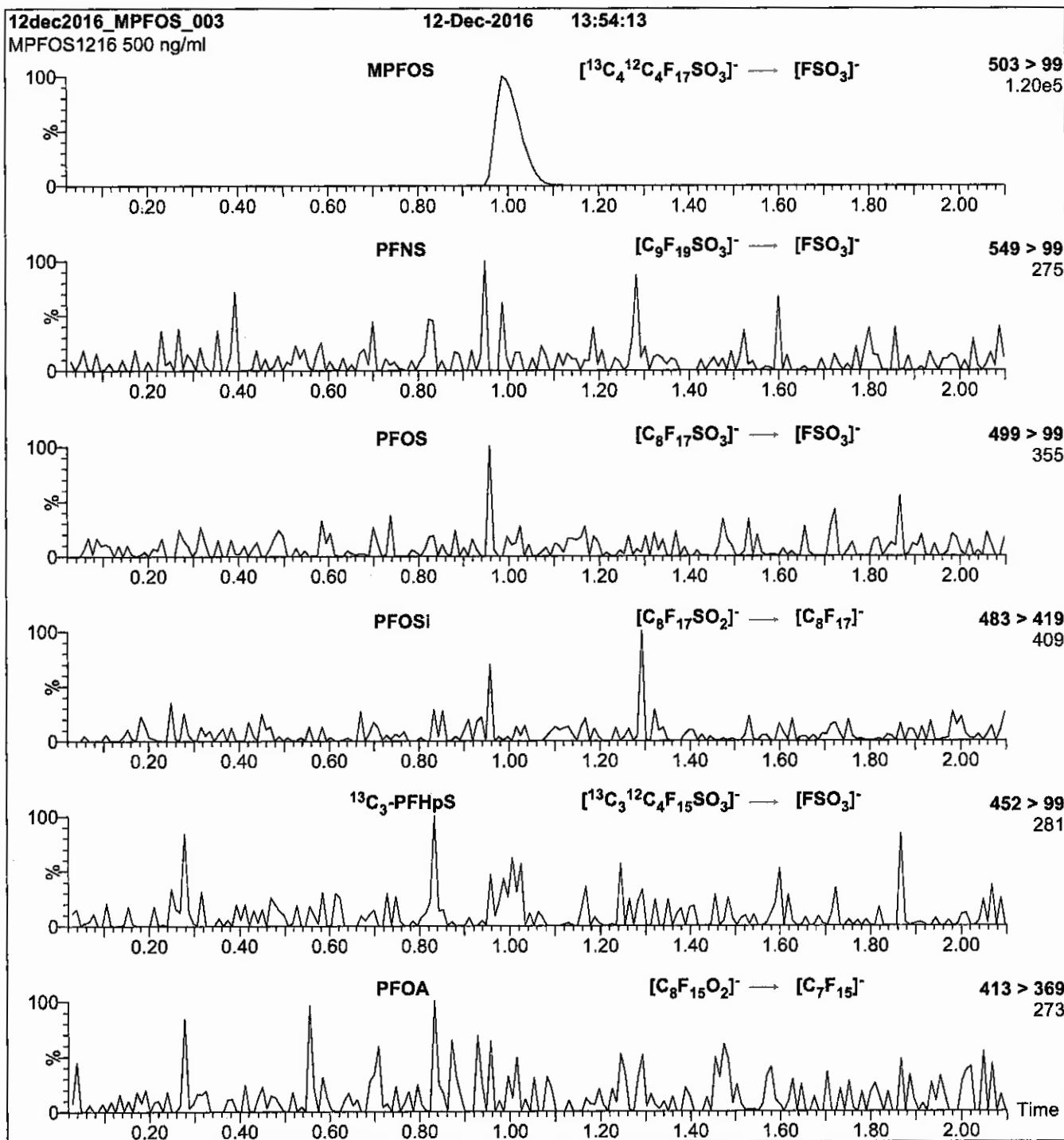
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 40

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-020818-RW-142	320-35900-1	87	102
NAWC-020818-FRB-142	320-35900-2	95	106
WGNA-020818-RW-3556	320-35900-3	81	122
WGNA-020818-FRB-3556	320-35900-4	83	122
NAWC-020818-RW-324	320-35900-5	93	134 Q
NAWC-020818-FRB-324	320-35900-6	92	121
WGNA-020818-RW-0335	320-35900-7	86	102
WGNA-020818-FRB-0335	320-35900-8	86	140 Q
	MB 320-208144/1-A	96	145 Q
	LCS 320-208144/2-A	90	142 Q
	LCSD 320-208144/3-A	92	103

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.02.16_537C_031.d
 Lab ID: LCS 320-208144/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	223	219	98	70-130	M
Perfluorooctanoic acid (PFOA)	112	103	92	70-130	
Perfluorononanoic acid (PFNA)	111	115	104	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	159	96	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	55.1	99	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	415	83	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.02.16_537C_032.d

Lab ID: LCSD 320-208144/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	223	212	95	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	112	101	90	3	30	70-130	
Perfluorononanoic acid (PFNA)	111	111	100	3	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	158	95	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	53.0	95	4	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	400	80	4	30	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab File ID: 2018.02.16_537C_030.d Lab Sample ID: MB 320-208144/1-A
 Matrix: Water Date Extracted: 02/13/2018 10:20
 Instrument ID: A8_N Date Analyzed: 02/16/2018 13:59
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-208144/2-A	2018.02.16_537C 031.d	02/16/2018 14:04
	LCSD 320-208144/3-A	2018.02.16_537C 032.d	02/16/2018 14:09
NAWC-020818-RW-142	320-35900-1	2018.02.16_537C 033.d	02/16/2018 14:13
NAWC-020818-FRB-142	320-35900-2	2018.02.16_537C 034.d	02/16/2018 14:18
WGNA-020818-RW-3556	320-35900-3	2018.02.16_537C 035.d	02/16/2018 14:23
WGNA-020818-FRB-3556	320-35900-4	2018.02.16_537C 036.d	02/16/2018 14:27
NAWC-020818-RW-324	320-35900-5	2018.02.16_537C 037.d	02/16/2018 14:32
NAWC-020818-FRB-324	320-35900-6	2018.02.16_537C 040.d	02/16/2018 14:46
WGNA-020818-RW-0335	320-35900-7	2018.02.16_537C 041.d	02/16/2018 14:51
WGNA-020818-FRB-0335	320-35900-8	2018.02.16_537C 042.d	02/16/2018 14:55

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 02/16/2018 09:19
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	937117	1.86	2726868	2.11		
UPPER LIMIT	1405676	2.36	4090302	2.61		
LOWER LIMIT	468559	1.36	1363434	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-208773/11	955394	1.87	2663428	2.12		
ICV 320-208773/13	890238	1.85	2703377	2.11		
CCV 320-208812/1 CCVIS	1002709	1.80	3182424	2.05		
MB 320-208144/1-A	1100471	1.80	3359503	2.05		
LCS 320-208144/2-A	974838	1.80	2870865	2.05		
LCSD 320-208144/3-A	1111442	1.80	3236345	2.05		
320-35900-1	NAWC-020818-RW-142	1098352	1.80	3206942	2.05	
320-35900-2	NAWC-020818-FRB-142	1079037	1.79	3224727	2.04	
320-35900-3	WGNA-020818-RW-3556	974206	1.80	2847084	2.05	
320-35900-4	WGNA-020818-FRB-3556	1062738	1.80	3099249	2.05	
320-35900-5	NAWC-020818-RW-324	1137115	1.80	3188817	2.05	
CCV 320-208812/11 CCVIS	950489	1.80	2838162	2.05		
CCV 320-208836/11 CCVIS	950489	1.80	2838162	2.05		
320-35900-6	NAWC-020818-FRB-324	1058453	1.80	3025986	2.05	
320-35900-7	WGNA-020818-RW-0335	1025764	1.79	3120515	2.04	
320-35900-8	WGNA-020818-FRB-0335	1078902	1.80	3190396	2.05	
CCV 320-208836/16 CCVIS	928919	1.80	2875305	2.05		

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208812/1 Date Analyzed: 02/16/2018 13:50
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_028 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1002709	1.80	3182424	2.05		
UPPER LIMIT	1403793	2.30	4455394	2.55		
LOWER LIMIT	701896	1.30	2227697	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-208144/1-A		1100471	1.80	3359503	2.05	
LCS 320-208144/2-A		974838	1.80	2870865	2.05	
LCSD 320-208144/3-A		1111442	1.80	3236345	2.05	
320-35900-1	NAWC-020818-RW-142	1098352	1.80	3206942	2.05	
320-35900-2	NAWC-020818-FRB-142	1079037	1.79	3224727	2.04	
320-35900-3	WGNA-020818-RW-3556	974206	1.80	2847084	2.05	
320-35900-4	WGNA-020818-FRB-3556	1062738	1.80	3099249	2.05	
320-35900-5	NAWC-020818-RW-324	1137115	1.80	3188817	2.05	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208812/11 Date Analyzed: 02/16/2018 14:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_038 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	950489	1.80	2838162	2.05		
UPPER LIMIT	1330685	2.30	3973427	2.55		
LOWER LIMIT	665342	1.30	1986713	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-208144/1-A		1100471	1.80	3359503	2.05	
LCS 320-208144/2-A		974838	1.80	2870865	2.05	
LCSD 320-208144/3-A		1111442	1.80	3236345	2.05	
320-35900-1	NAWC-020818-RW-142	1098352	1.80	3206942	2.05	
320-35900-2	NAWC-020818-FRB-142	1079037	1.79	3224727	2.04	
320-35900-3	WGNA-020818-RW-3556	974206	1.80	2847084	2.05	
320-35900-4	WGNA-020818-FRB-3556	1062738	1.80	3099249	2.05	
320-35900-5	NAWC-020818-RW-324	1137115	1.80	3188817	2.05	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208836/11 Date Analyzed: 02/16/2018 14:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_038 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	950489	1.80	2838162	2.05		
UPPER LIMIT	1330685	2.30	3973427	2.55		
LOWER LIMIT	665342	1.30	1986713	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35900-6	NAWC-020818-FRB-324	1058453	1.80	3025986	2.05	
320-35900-7	WGNA-020818-RW-0335	1025764	1.79	3120515	2.04	
320-35900-8	WGNA-020818-FRB-0335	1078902	1.80	3190396	2.05	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208836/16 Date Analyzed: 02/16/2018 15:00
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_043 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	928919	1.80	2875305	2.05		
UPPER LIMIT	1300487	2.30	4025427	2.55		
LOWER LIMIT	650243	1.30	2012714	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35900-6	NAWC-020818-FRB-324	1058453	1.80	3025986	2.05	
320-35900-7	WGNA-020818-RW-0335	1025764	1.79	3120515	2.04	
320-35900-8	WGNA-020818-FRB-0335	1078902	1.80	3190396	2.05	

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

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

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-RW-142 Lab Sample ID: 320-35900-1
 Matrix: Water Lab File ID: 2018.02.16_537C_033.d
 Analysis Method: 537 Date Collected: 02/08/2018 08:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.8(mL) Date Analyzed: 02/16/2018 14:13
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	J M	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)	2.4	J M	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	87		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_033.d
 Lims ID: 320-35900-A-1-A
 Client ID: NAWC-020818-RW-142
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:13:47 ALS Bottle#: 21 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:45:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	104770	0.7117		338	
298.90 > 99.00	1.358	1.358	0.0	1.000	69981		1.50(0.00-0.00)	170	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.472	1.479	-0.007	1.000	1049327	8.69		15107	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.608	1.616	-0.008	1.000	192397	1.07		148	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	65211	0.6114		12.7	M
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		1098352	10.0		10193	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	197544	1.87		6.6	
413.00 > 169.00	1.791	1.798	-0.007	0.996	128037		1.54(0.00-0.00)	16.5	M
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		3206942	28.7		4151	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	272369	2.58		176	a
499.00 > 99.00	2.048	2.048	0.0	1.000	47874		5.69(0.00-0.00)	28.2	a
\$ 10 13C2 PFDA									
515.00 > 470.00	2.231	2.238	-0.007	1.000	586043	10.2		6917	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_033.d

Injection Date: 16-Feb-2018 14:13:47

Instrument ID: A8_N

Lims ID: 320-35900-A-1-A

Lab Sample ID: 320-35900-1

Client ID: NAWC-020818-RW-142

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

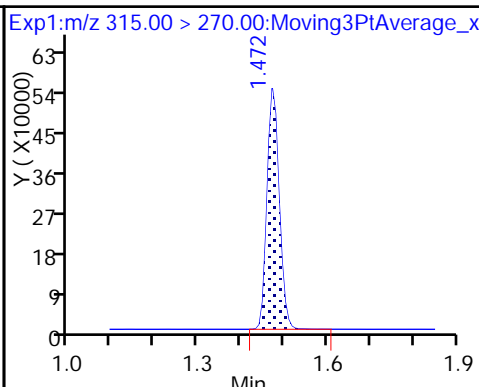
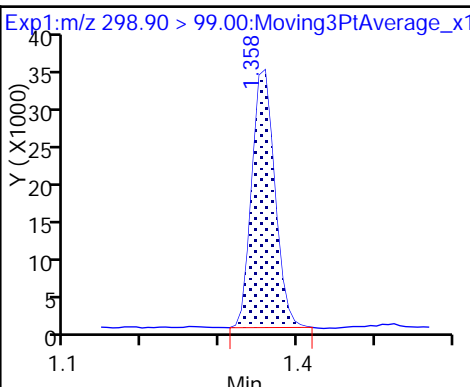
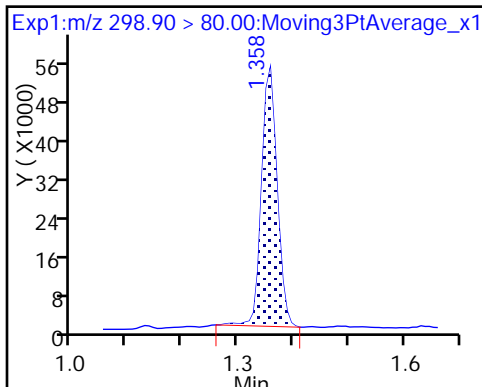
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

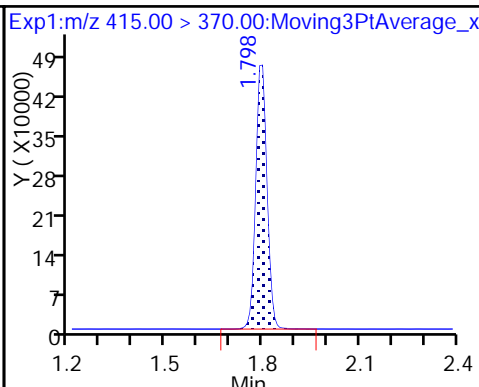
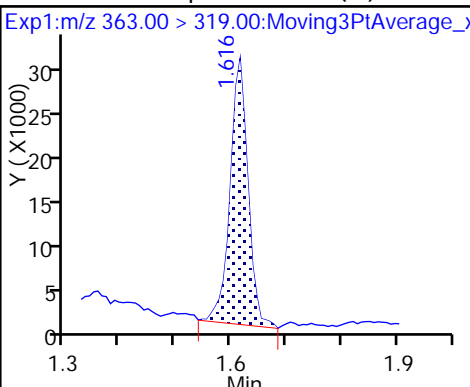
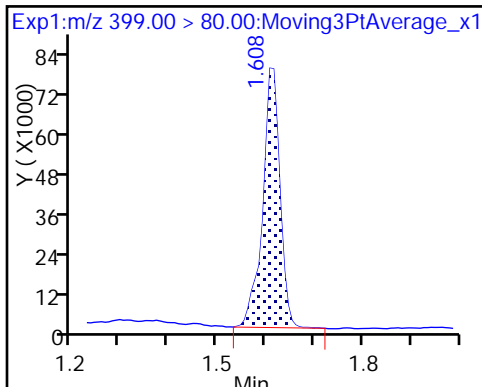
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

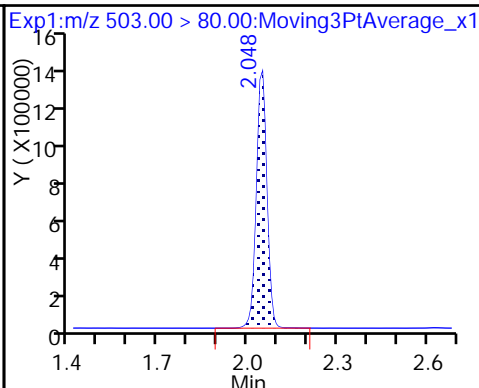
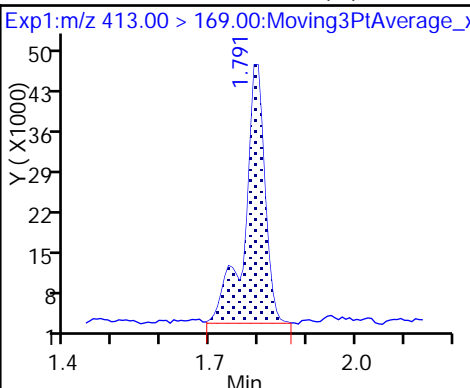
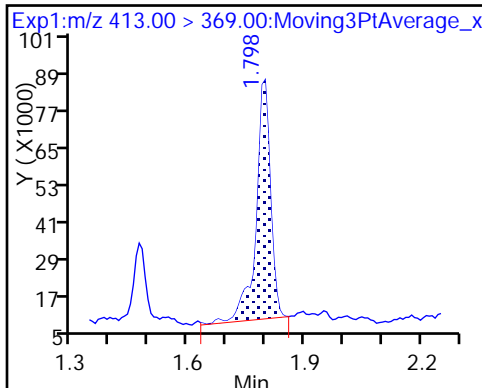
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid (M)

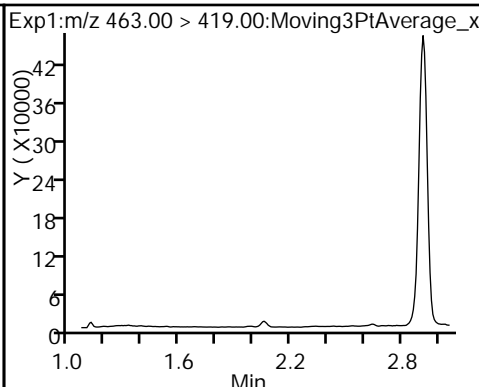
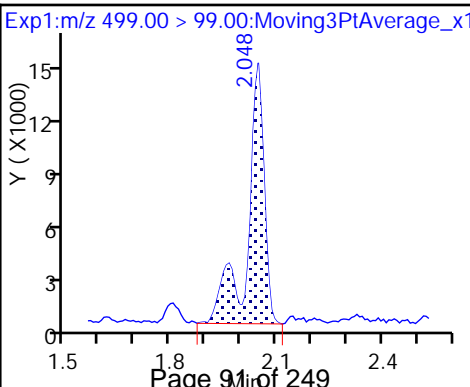
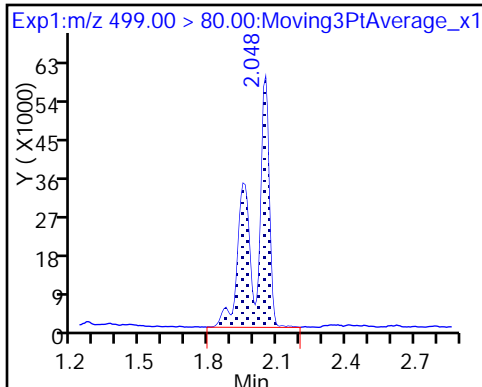
* 7 13C4 PFOS



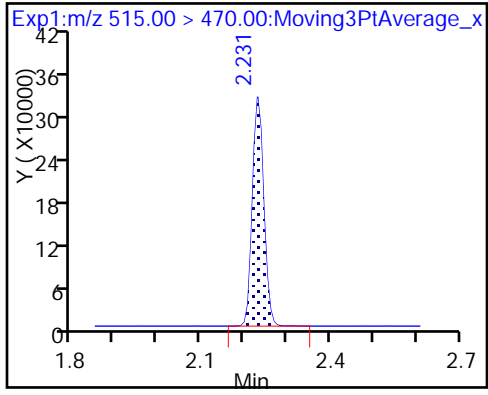
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_033.d
 Lims ID: 320-35900-A-1-A
 Client ID: NAWC-020818-RW-142
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:13:47 ALS Bottle#: 21 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:45:47

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.69	86.86
\$ 10 13C2 PFDA	10.0	10.2	101.77

TestAmerica Sacramento

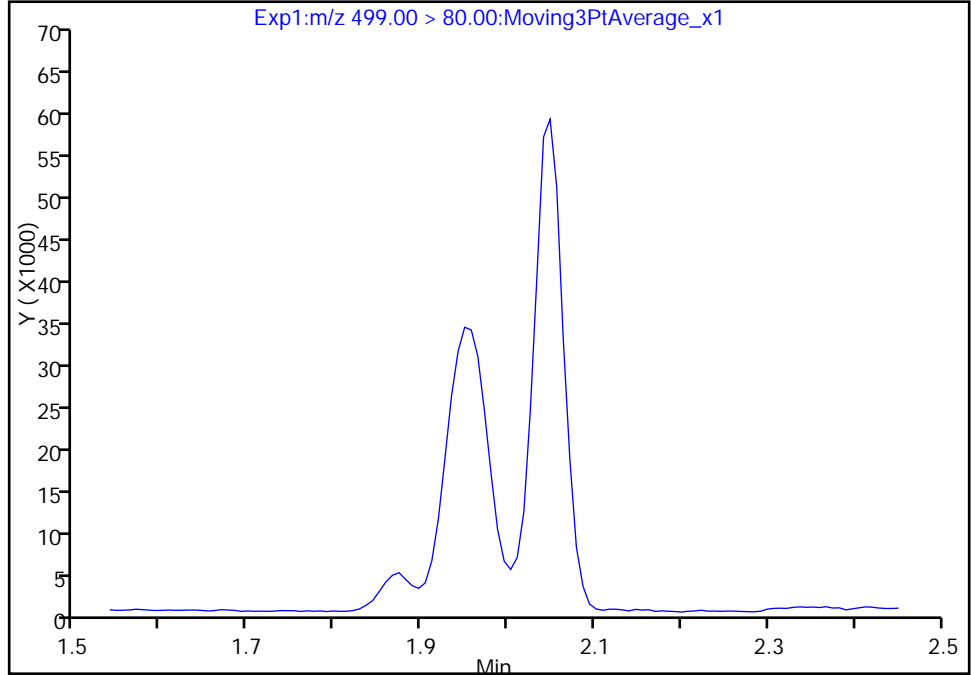
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_033.d
Injection Date: 16-Feb-2018 14:13:47 Instrument ID: A8_N
Lims ID: 320-35900-A-1-A Lab Sample ID: 320-35900-1
Client ID: NAWC-020818-RW-142
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

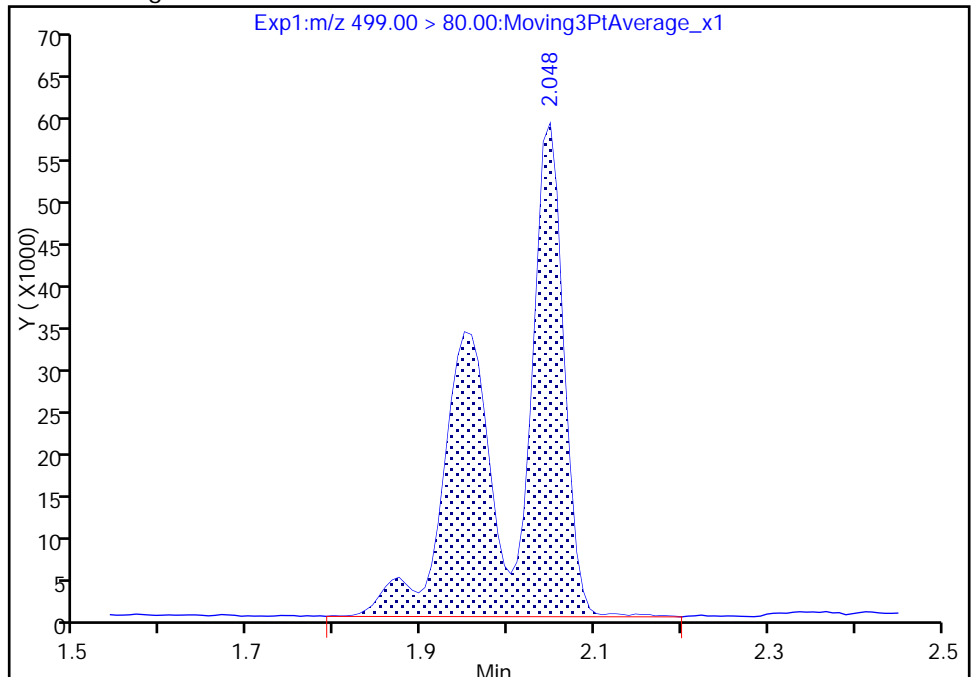
Not Detected
Expected RT: 2.05

Processing Integration Results



RT: 2.05
Area: 272369
Amount: 2.576126
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 17-Feb-2018 09:45:37
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

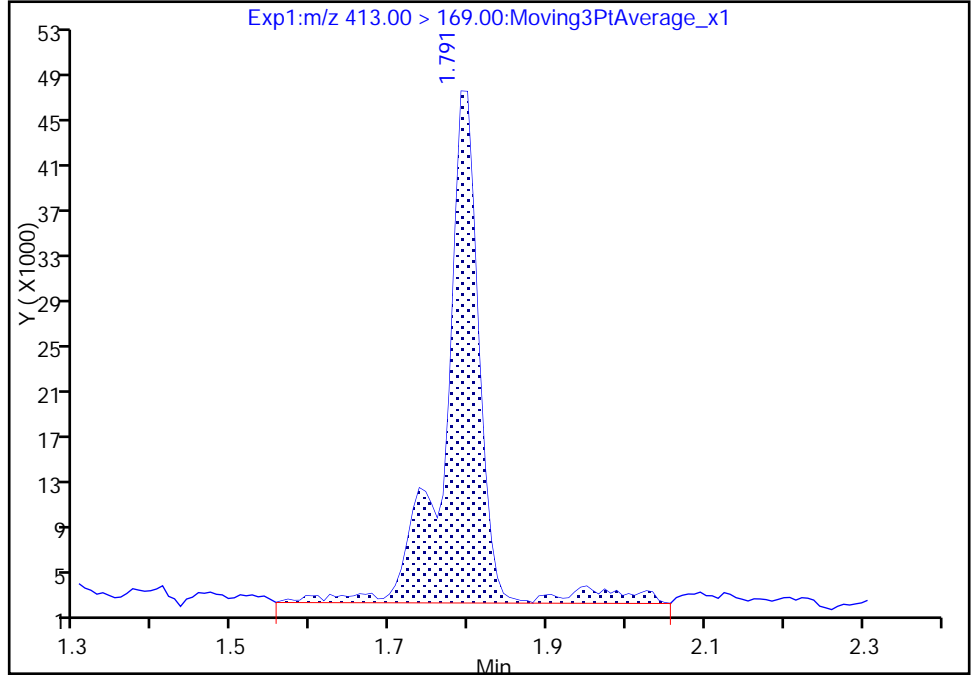
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_033.d
Injection Date: 16-Feb-2018 14:13:47 Instrument ID: A8_N
Lims ID: 320-35900-A-1-A Lab Sample ID: 320-35900-1
Client ID: NAWC-020818-RW-142
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 6
Injection Vol: 2.0 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: 2

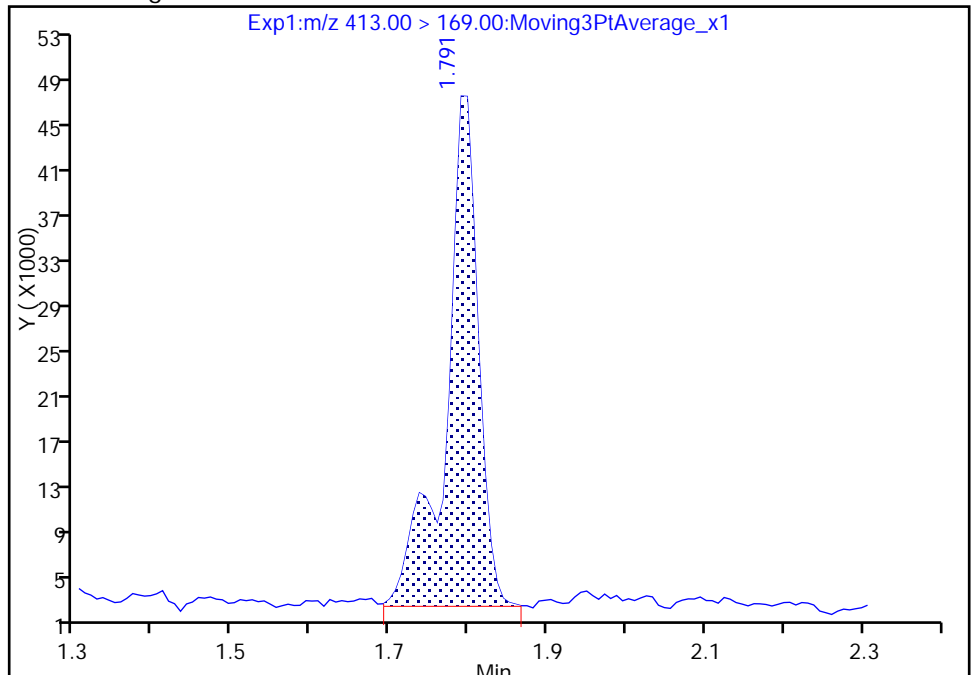
RT: 1.79
Area: 141496
Amount: 1.869531
Amount Units: ng/ml

Processing Integration Results



RT: 1.79
Area: 128037
Amount: 1.869531
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 17-Feb-2018 12:50:02
Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

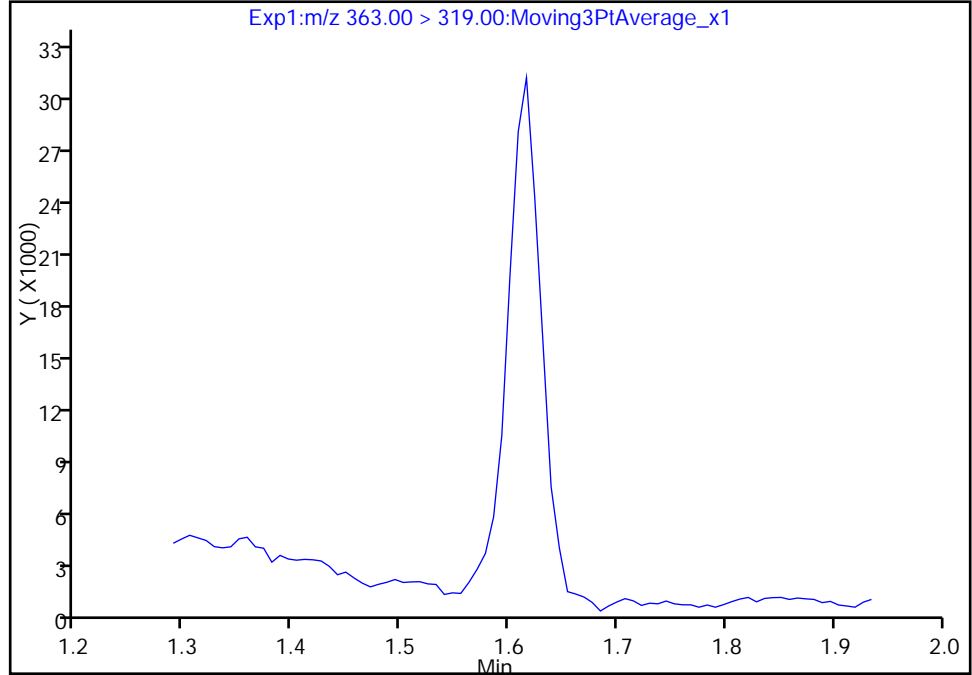
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_033.d
Injection Date: 16-Feb-2018 14:13:47 Instrument ID: A8_N
Lims ID: 320-35900-A-1-A Lab Sample ID: 320-35900-1
Client ID: NAWC-020818-RW-142
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

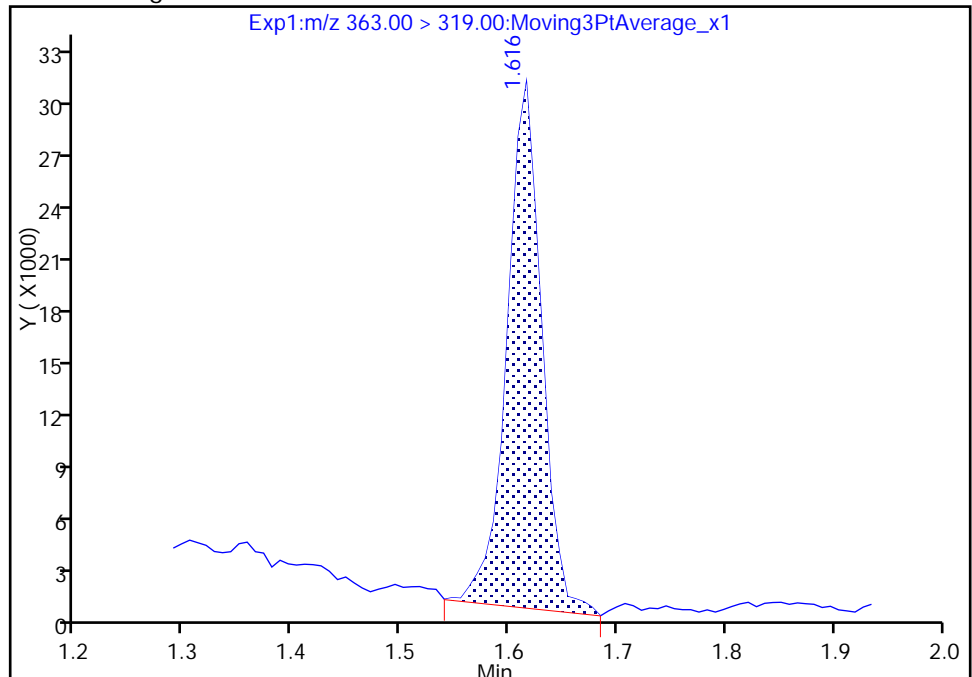
Signal: 1

Not Detected
Expected RT: 1.62

Processing Integration Results



Manual Integration Results



RT: 1.62
Area: 65211
Amount: 0.611365
Amount Units: ng/ml

Reviewer: barnettj, 17-Feb-2018 12:49:47
Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-FRB-142 Lab Sample ID: 320-35900-2
 Matrix: Water Lab File ID: 2018.02.16_537C_034.d
 Analysis Method: 537 Date Collected: 02/08/2018 08:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.1(mL) Date Analyzed: 02/16/2018 14:18
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 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	95		70-130
STL00996	13C2 PFDA	106		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_034.d
 Lims ID: 320-35900-A-2-A
 Client ID: NAWC-020818-FRB-142
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:18:27 ALS Bottle#: 22 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.472	1.479	-0.007	1.000	1124147	9.47	15874	
* 6 13C2-PFOA	415.00 > 370.00	1.791	1.798	-0.007		1079037	10.0	8651	
* 7 13C4 PFOS	503.00 > 80.00	2.041	2.048	-0.007		3224727	28.7	5690	
\$ 10 13C2 PFDA	515.00 > 470.00	2.231	2.238	-0.007	1.000	600747	10.6	7078	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_034.d

Injection Date: 16-Feb-2018 14:18:27

Instrument ID: A8_N

Lims ID: 320-35900-A-2-A

Lab Sample ID: 320-35900-2

Client ID: NAWC-020818-FRB-142

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

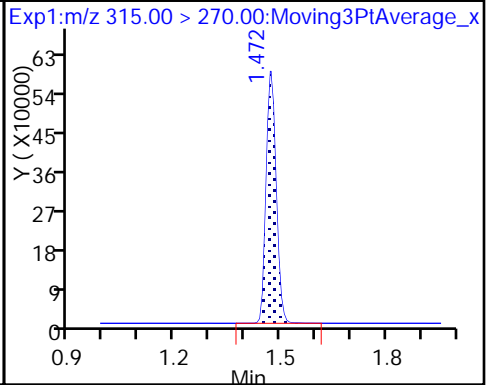
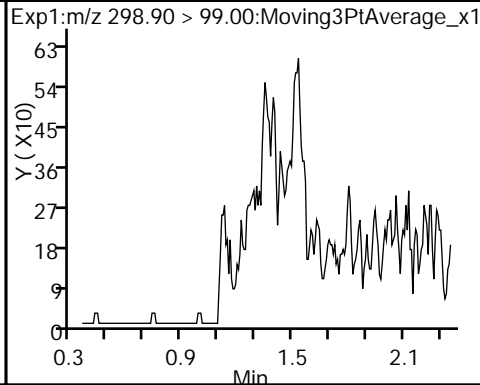
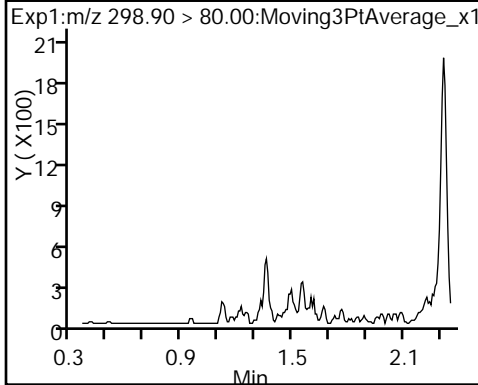
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

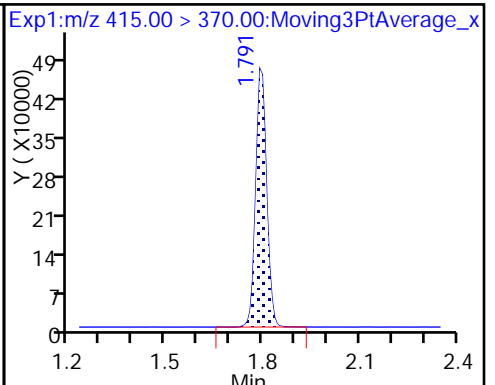
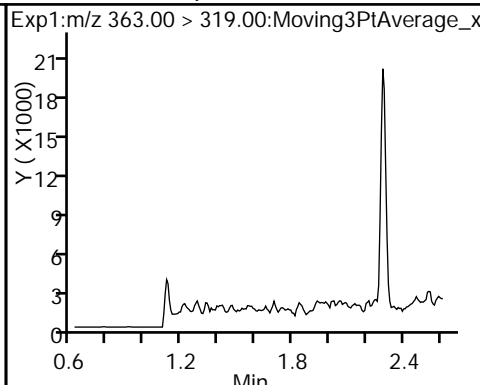
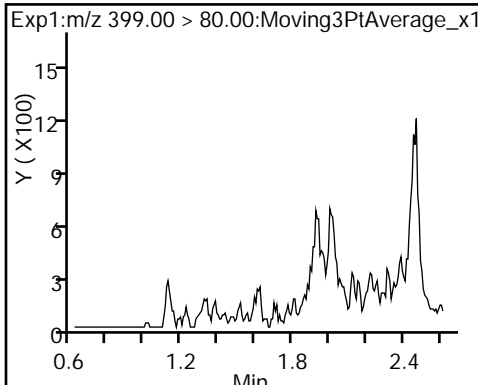
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

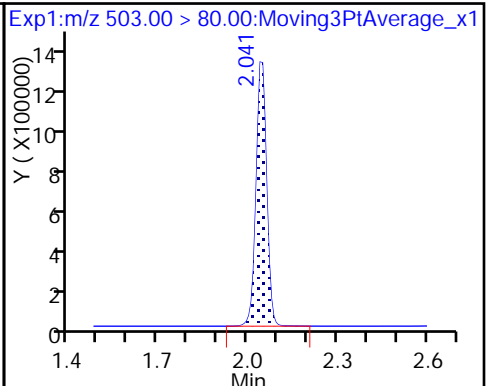
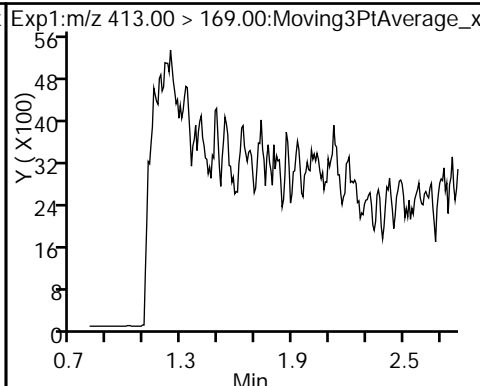
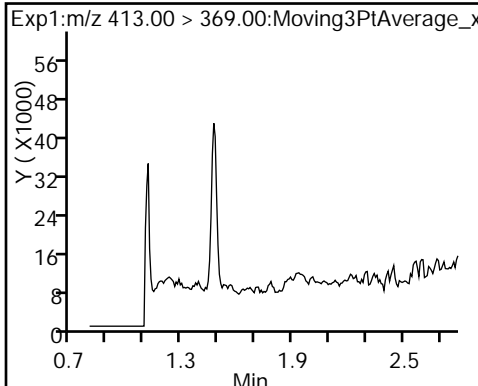
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

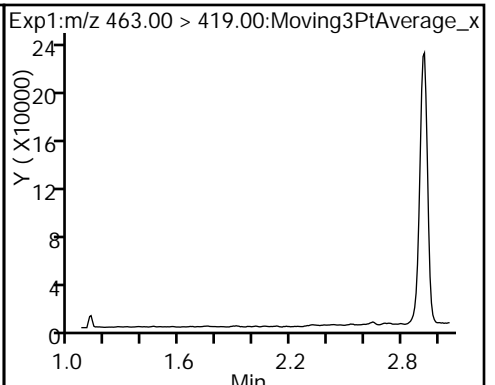
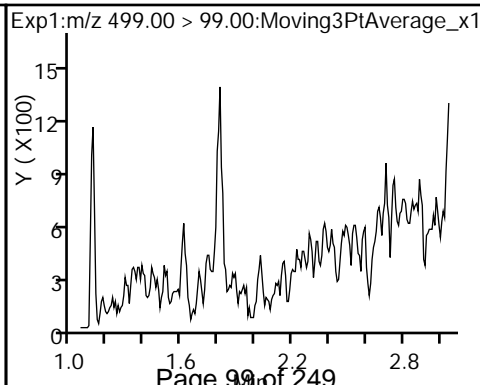
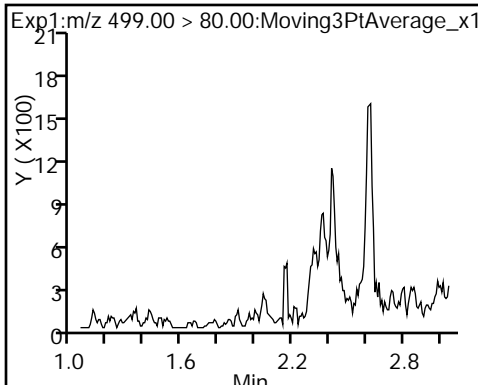
* 7 13C4 PFOS



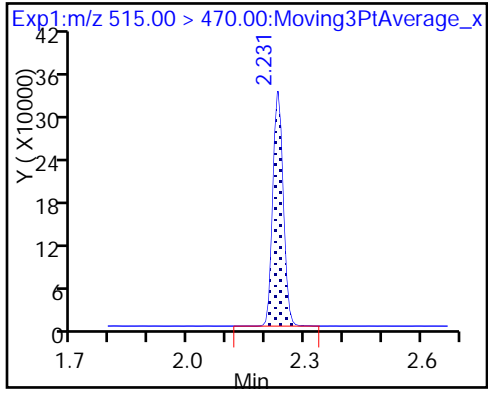
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_034.d
 Lims ID: 320-35900-A-2-A
 Client ID: NAWC-020818-FRB-142
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:18:27 ALS Bottle#: 22 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.47	94.72
\$ 10 13C2 PFDA	10.0	10.6	106.19

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-RW-3556 Lab Sample ID: 320-35900-3
 Matrix: Water Lab File ID: 2018.02.16_537C_035.d
 Analysis Method: 537 Date Collected: 02/08/2018 10:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.1(mL) Date Analyzed: 02/16/2018 14:23
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	17	J M	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)	4.8	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_035.d
 Lims ID: 320-35900-A-3-A
 Client ID: WGNA-020818-RW-3556
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:23:07 ALS Bottle#: 23 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:46:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	165923	1.27		143	
298.90 > 99.00	1.358	1.358	0.0	1.000	112613		1.47(0.00-0.00)	270	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	866289	8.08		12362	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	143601	0.8986		57.9	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	112756	1.19		15.9	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		974206	10.0		7450	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	389113	4.15		12.1	M
413.00 > 169.00	1.798	1.798	0.0	1.000	216985		1.79(0.00-0.00)	27.5	M
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		2847084	28.7		1770	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	655170	6.98		212	a
499.00 > 99.00	2.056	2.048	0.008	1.004	107274		6.11(0.00-0.00)	50.9	a
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	622829	12.2		6850	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_035.d

Injection Date: 16-Feb-2018 14:23:07

Instrument ID: A8_N

Lims ID: 320-35900-A-3-A

Lab Sample ID: 320-35900-3

Client ID: WGNA-020818-RW-3556

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

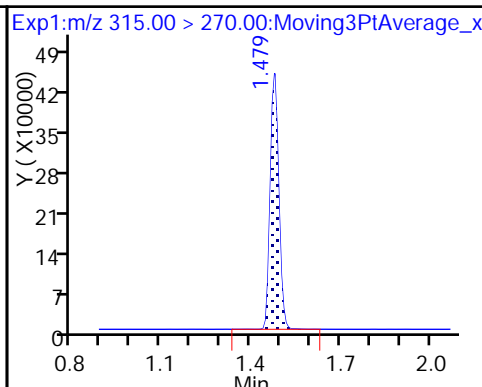
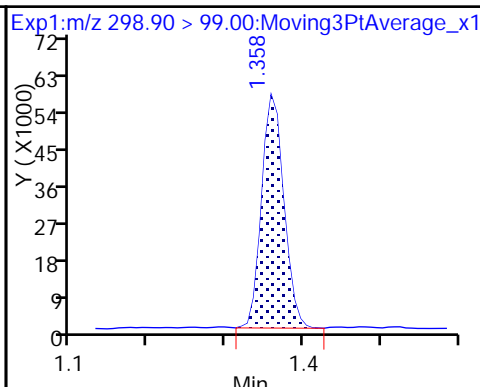
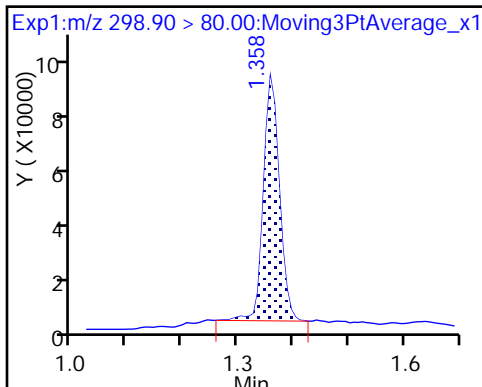
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

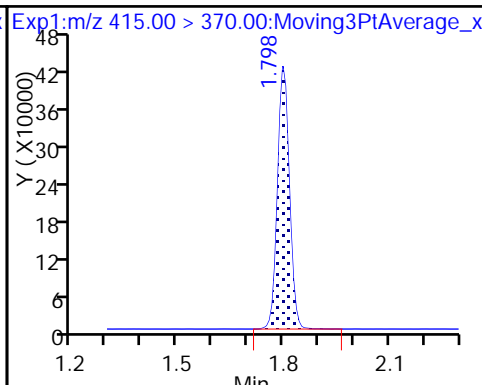
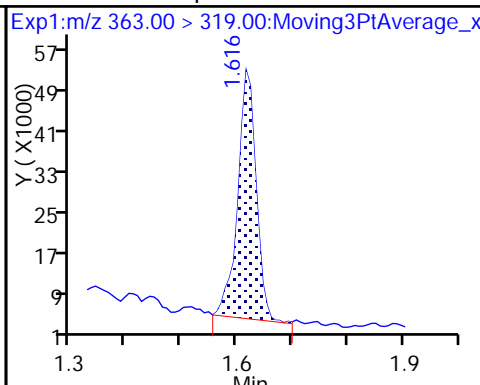
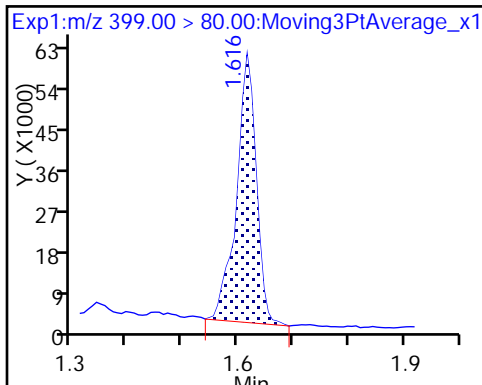
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

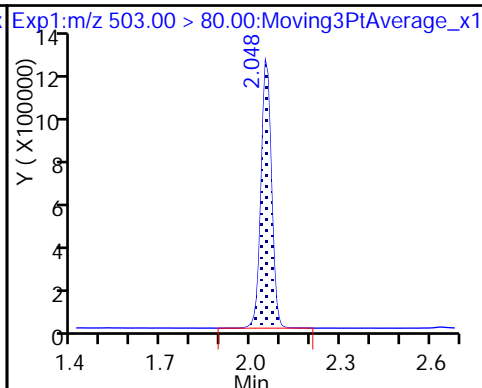
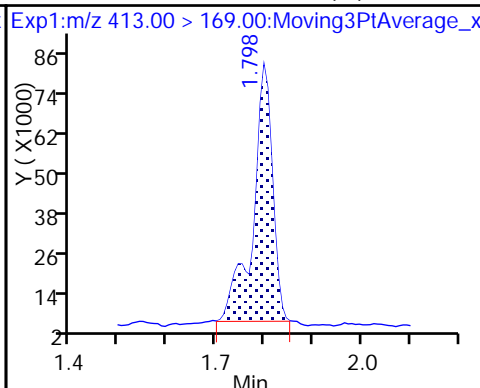
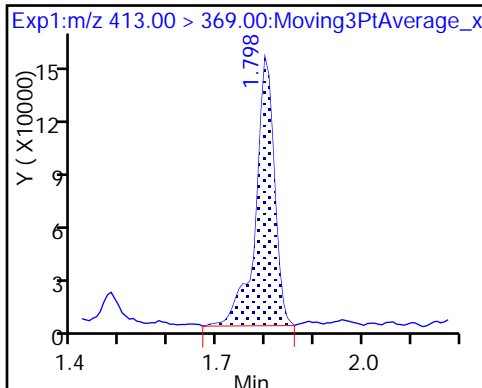
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid (M)

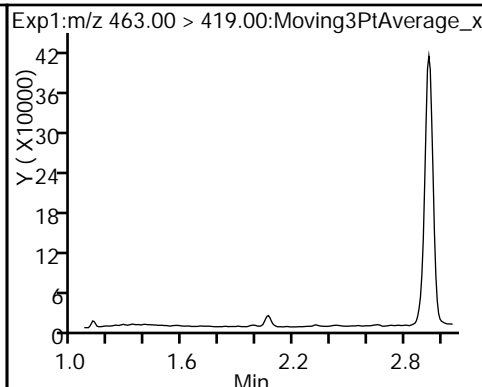
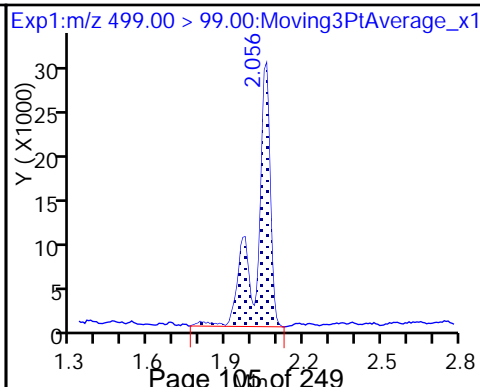
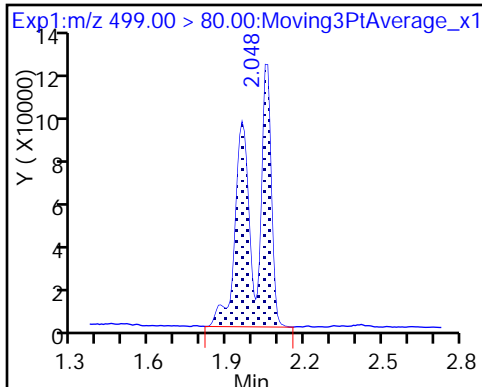
* 7 13C4 PFOS



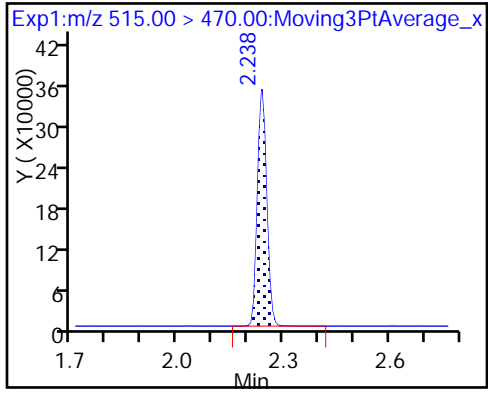
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_035.d
 Lims ID: 320-35900-A-3-A
 Client ID: WGNA-020818-RW-3556
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:23:07 ALS Bottle#: 23 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:46:29

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.08	80.85
\$ 10 13C2 PFDA	10.0	12.2	121.94

TestAmerica Sacramento

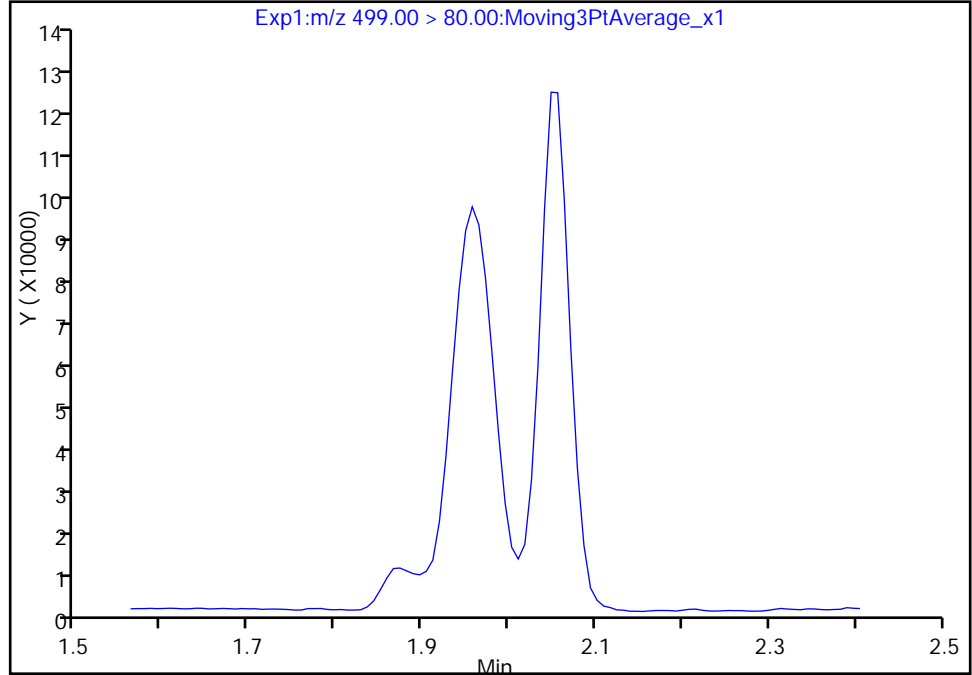
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Injection Date: 16-Feb-2018 14:23:07 Instrument ID: A8_N
Lims ID: 320-35900-A-3-A Lab Sample ID: 320-35900-3
Client ID: WGNA-020818-RW-3556
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

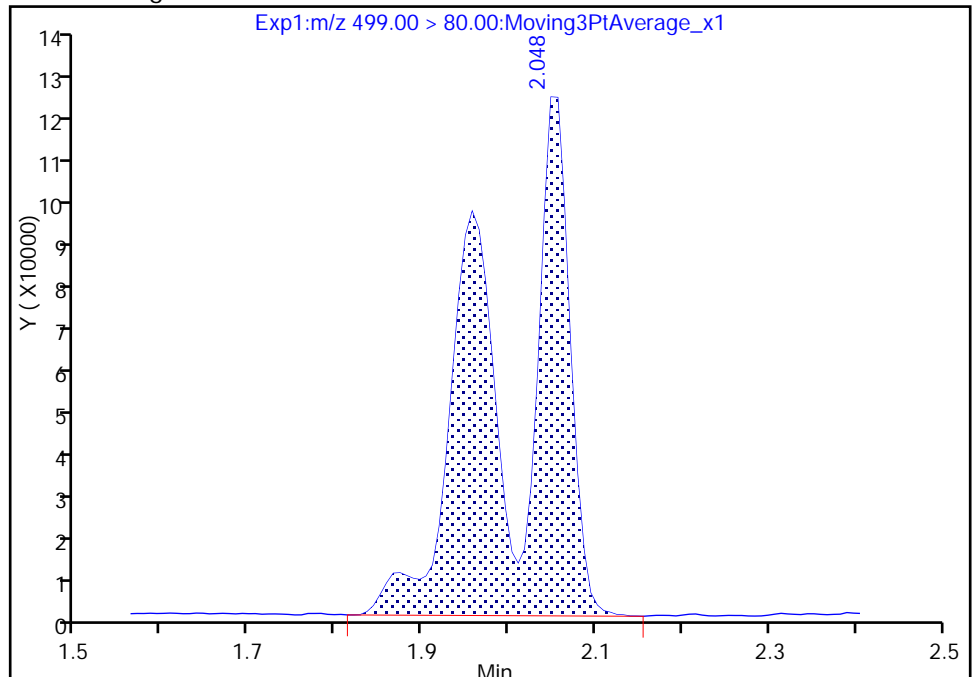
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 655170
Amount: 6.979981
Amount Units: ng/ml



TestAmerica Sacramento

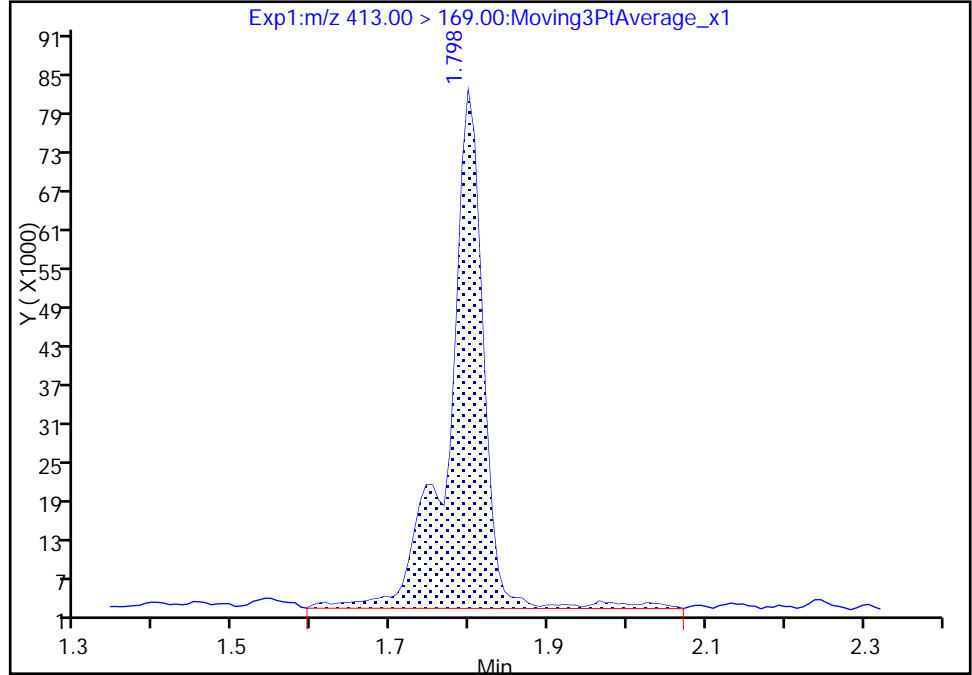
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Injection Date: 16-Feb-2018 14:23:07 Instrument ID: A8_N
Lims ID: 320-35900-A-3-A Lab Sample ID: 320-35900-3
Client ID: WGNA-020818-RW-3556
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

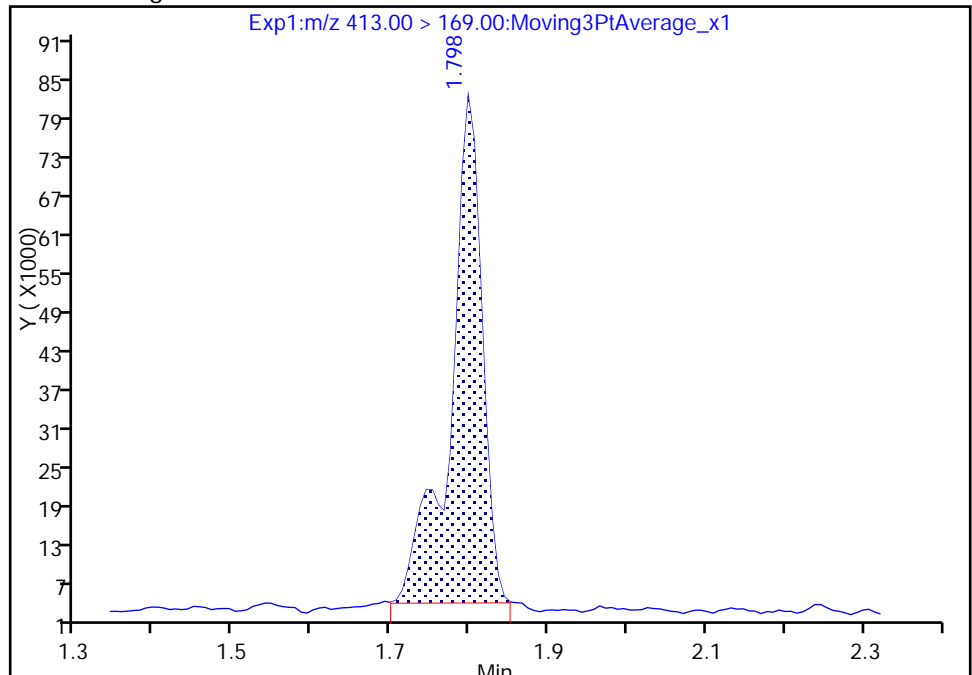
RT: 1.80
Area: 246222
Amount: 4.151788
Amount Units: ng/ml

Processing Integration Results



RT: 1.80
Area: 216985
Amount: 4.151788
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-FRB-3556 Lab Sample ID: 320-35900-4
 Matrix: Water Lab File ID: 2018.02.16_537C_036.d
 Analysis Method: 537 Date Collected: 02/08/2018 10:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 254.1(mL) Date Analyzed: 02/16/2018 14:27
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	122		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_036.d
 Lims ID: 320-35900-A-4-A
 Client ID: WGNA-020818-FRB-3556
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:27:48 ALS Bottle#: 24 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.472	1.479	-0.007	1.000	965673	8.26	14617	
* 6 13C2-PFOA	415.00 > 370.00	1.798	1.798	0.0		1062738	10.0	11276	
* 7 13C4 PFOS	503.00 > 80.00	2.048	2.048	0.0		3099249	28.7	4283	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	681663	12.2	8866	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_036.d

Injection Date: 16-Feb-2018 14:27:48

Instrument ID: A8_N

Lims ID: 320-35900-A-4-A

Lab Sample ID: 320-35900-4

Client ID: WGNA-020818-FRB-3556

Operator ID: SACINSTLCMS01

ALS Bottle#: 24

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

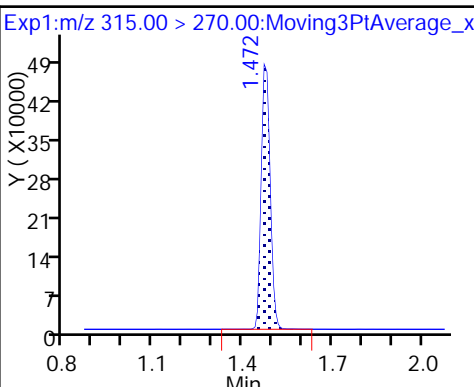
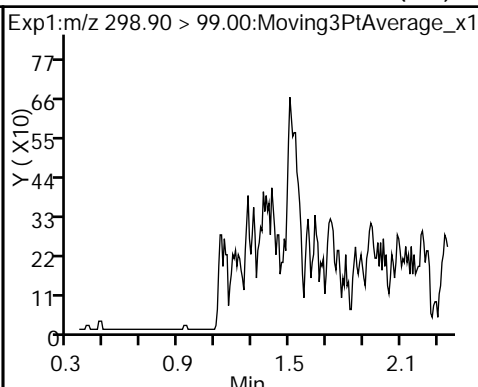
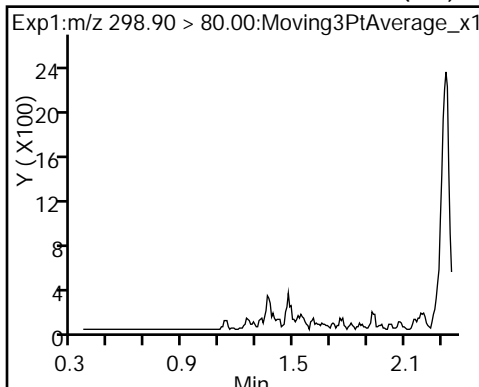
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

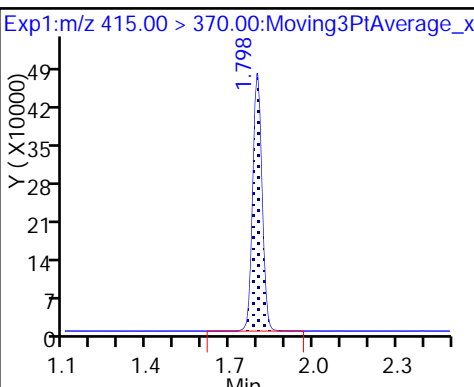
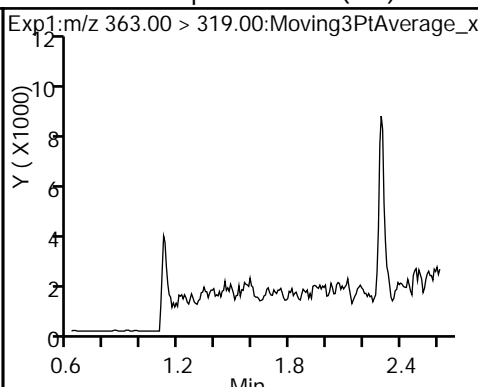
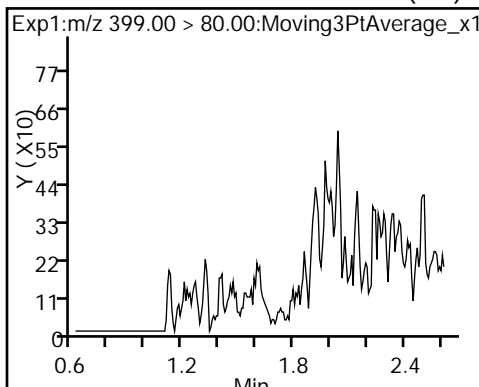
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

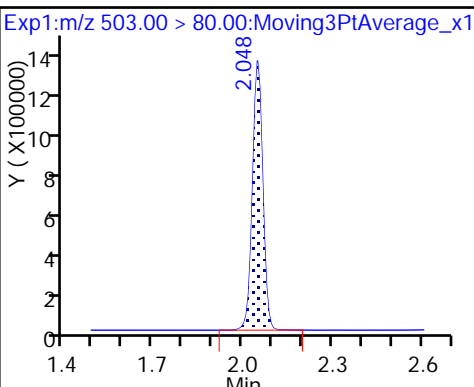
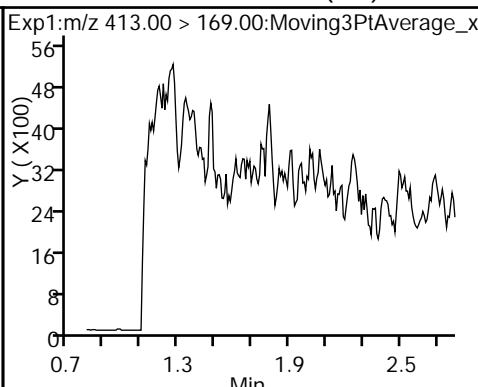
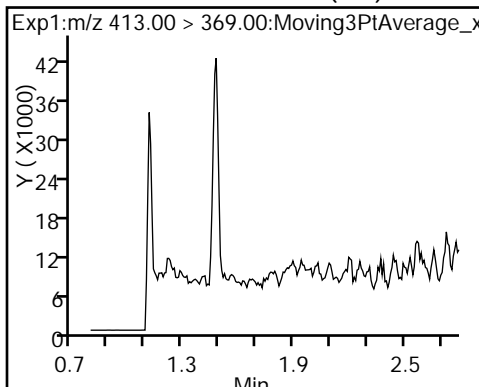
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

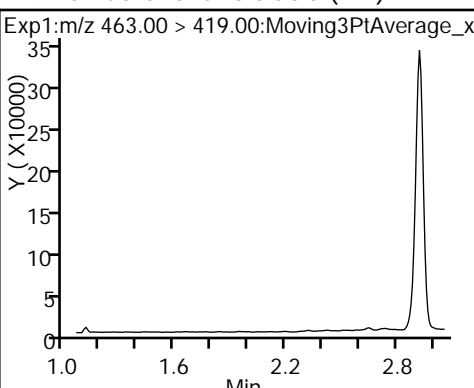
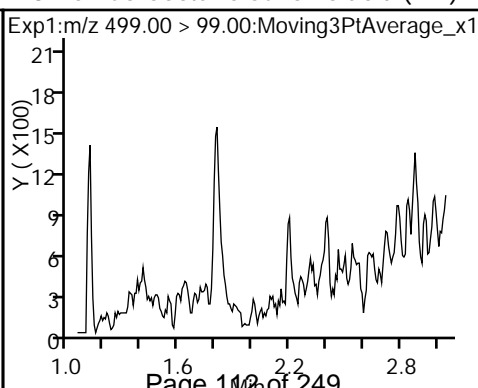
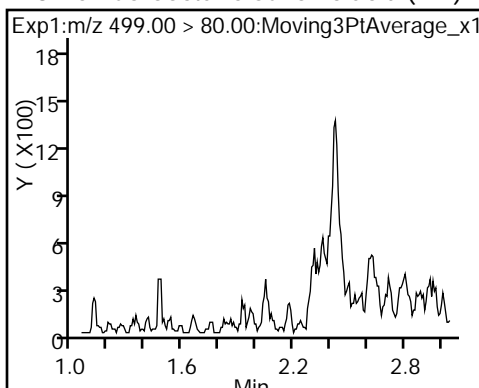
* 7 13C4 PFOS



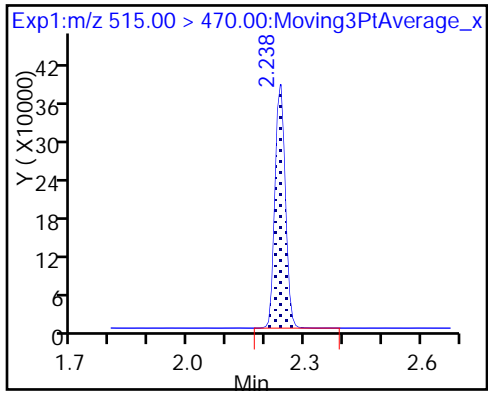
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_036.d
 Lims ID: 320-35900-A-4-A
 Client ID: WGNA-020818-FRB-3556
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:27:48 ALS Bottle#: 24 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.26	82.61
\$ 10 13C2 PFDA	10.0	12.2	122.35

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-RW-324 Lab Sample ID: 320-35900-5
 Matrix: Water Lab File ID: 2018.02.16_537C_037.d
 Analysis Method: 537 Date Collected: 02/08/2018 11:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 246.7(mL) Date Analyzed: 02/16/2018 14:32
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42	M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	29		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	134	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_037.d
 Lims ID: 320-35900-A-5-A
 Client ID: NAWC-020818-RW-324
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:32:28 ALS Bottle#: 25 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:47:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
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\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.479	0.0	1.000	1158381	9.26	14129	
3 Perfluorohexanesulfonic acid	399.00 > 80.00	1.616	1.616	0.0	1.000	718247	4.01	620	
4 Perfluoroheptanoic acid	363.00 > 319.00	1.616	1.616	0.0	1.000	104477	0.9461	20.4	
* 6 13C2-PFOA	415.00 > 370.00	1.798	1.798	0.0		1137115	10.0	10566	
5 Perfluorooctanoic acid	413.00 > 369.00	1.798	1.798	0.0	1.000	773199	7.07	27.0	
	413.00 > 169.00	1.798	1.798	0.0	1.000	450302	1.72(0.00-0.00)	63.0	
* 7 13C4 PFOS	503.00 > 80.00	2.048	2.048	0.0		3188817	28.7	902	
8 Perfluorooctane sulfonic acid	499.00 > 80.00	2.048	2.048	0.0	1.000	1080356	10.3	451	a
	499.00 > 99.00	2.048	2.048	0.0	1.000	246099	4.39(0.00-0.00)	148	a
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	801091	13.4	8718	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_037.d

Injection Date: 16-Feb-2018 14:32:28

Instrument ID: A8_N

Lims ID: 320-35900-A-5-A

Lab Sample ID: 320-35900-5

Client ID: NAWC-020818-RW-324

Operator ID: SACINSTLCMS01

ALS Bottle#: 25

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

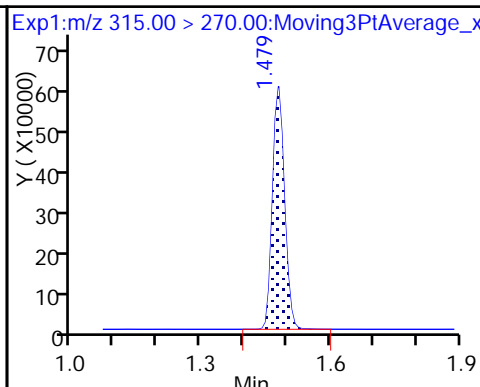
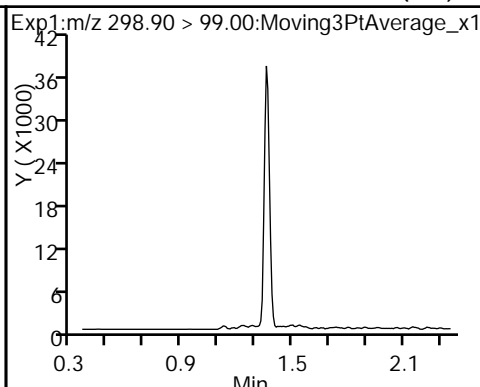
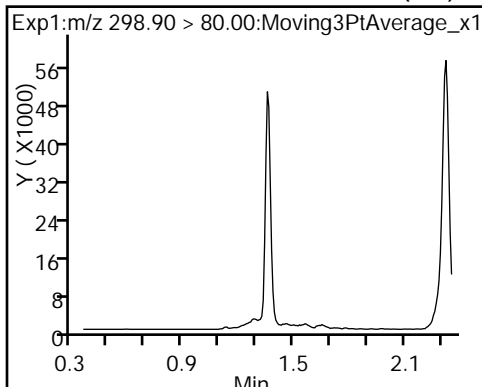
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

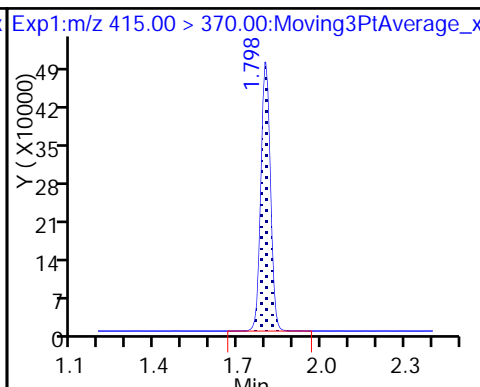
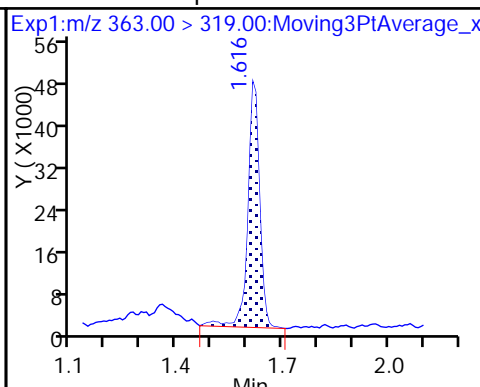
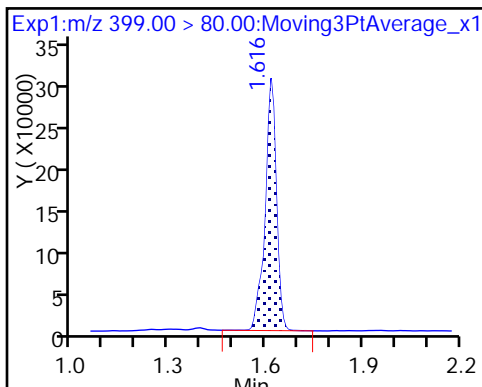
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

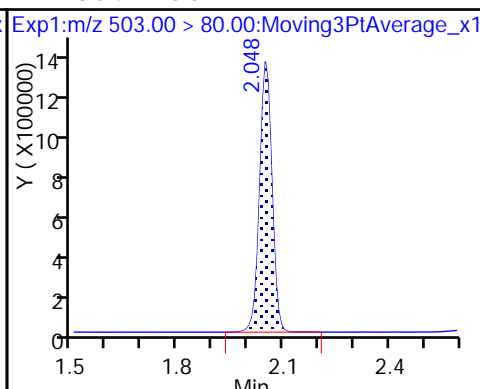
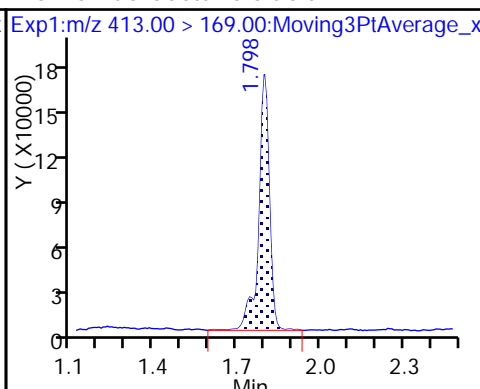
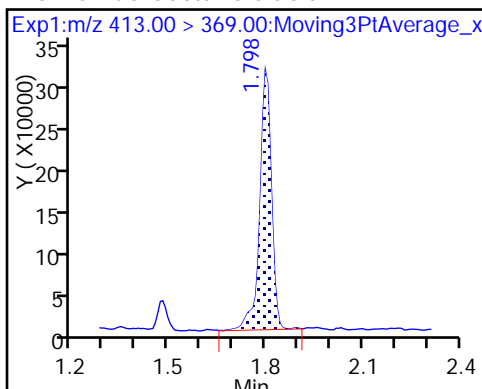
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

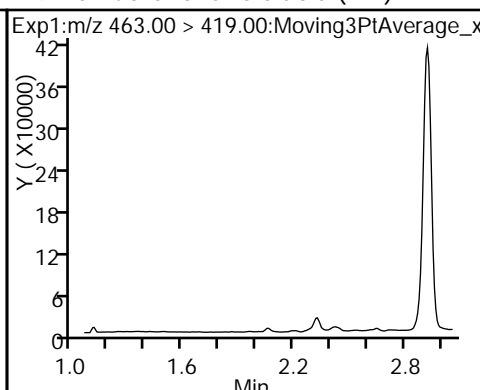
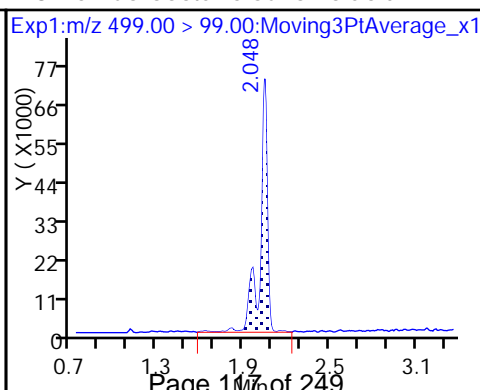
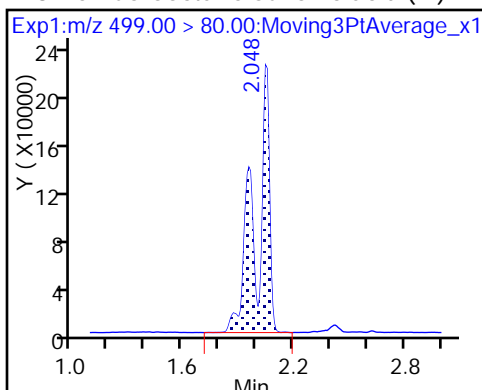
* 7 13C4 PFOS



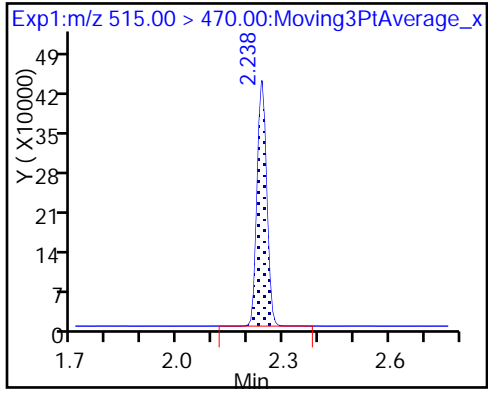
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_037.d
 Lims ID: 320-35900-A-5-A
 Client ID: NAWC-020818-RW-324
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:32:28 ALS Bottle#: 25 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:47:15

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.26	92.62
\$ 10 13C2 PFDA	10.0	13.4	134.38

TestAmerica Sacramento

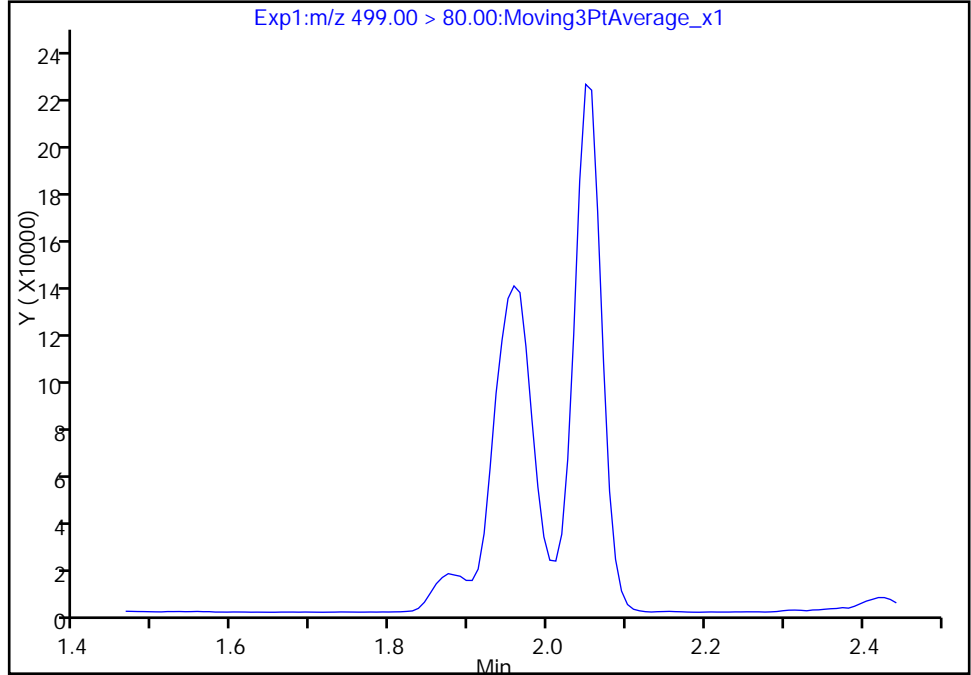
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_037.d
Injection Date: 16-Feb-2018 14:32:28 Instrument ID: A8_N
Lims ID: 320-35900-A-5-A Lab Sample ID: 320-35900-5
Client ID: NAWC-020818-RW-324
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

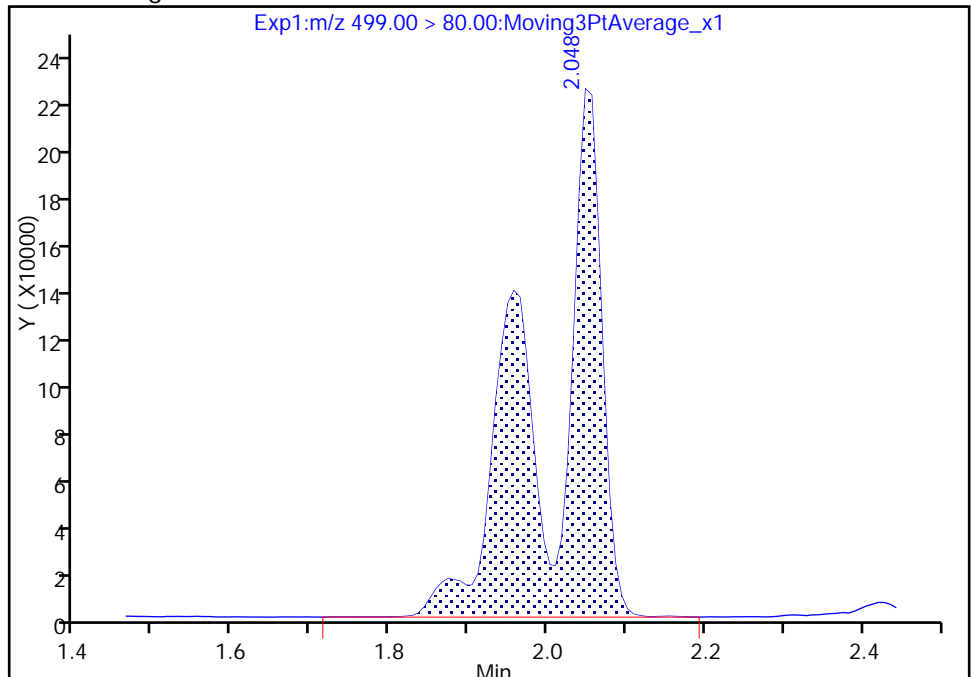
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 1080356
Amount: 10.276325
Amount Units: ng/ml



Reviewer: roycea, 17-Feb-2018 09:46:47

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-FRB-324 Lab Sample ID: 320-35900-6
 Matrix: Water Lab File ID: 2018.02.16_537C_040.d
 Analysis Method: 537 Date Collected: 02/08/2018 11:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 248.1(mL) Date Analyzed: 02/16/2018 14:46
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	121		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_040.d
 Lims ID: 320-35900-A-6-A
 Client ID: NAWC-020818-FRB-324
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:46:28 ALS Bottle#: 26 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.479	0.0	1.000	1066893	9.16	15792	
* 6 13C2-PFOA	415.00 > 370.00	1.798	1.798	0.0		1058453	10.0	10348	
* 7 13C4 PFOS	503.00 > 80.00	2.048	2.048	0.0		3025986	28.7	5448	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	672204	12.1	7490	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_040.d

Injection Date: 16-Feb-2018 14:46:28

Instrument ID: A8_N

Lims ID: 320-35900-A-6-A

Lab Sample ID: 320-35900-6

Client ID: NAWC-020818-FRB-324

Operator ID: SACINSTLCMS01

ALS Bottle#: 26

Worklist Smp#: 13

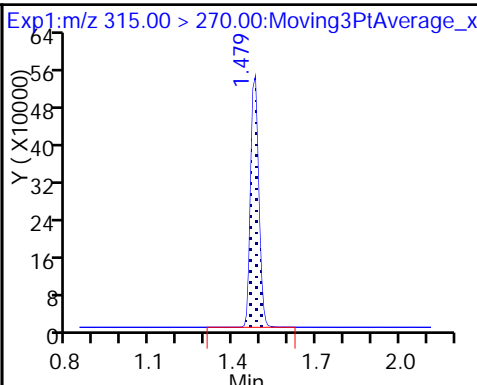
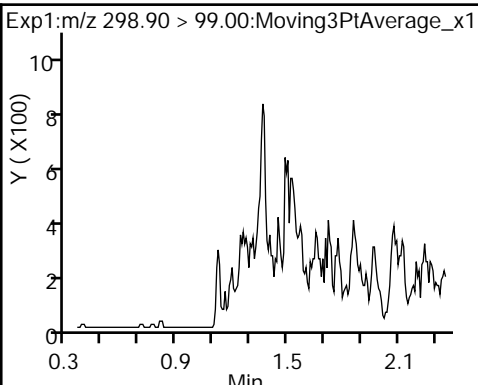
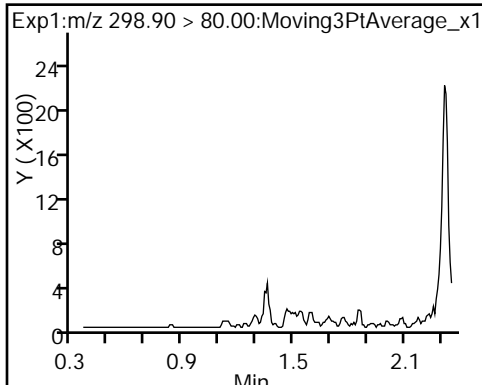
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

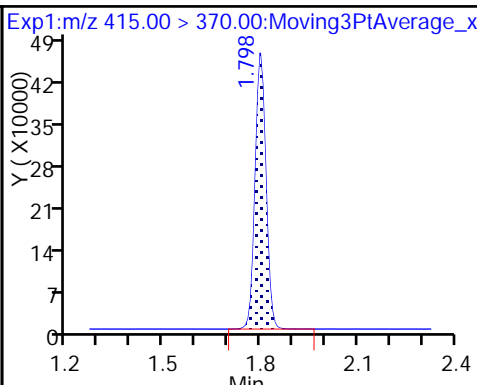
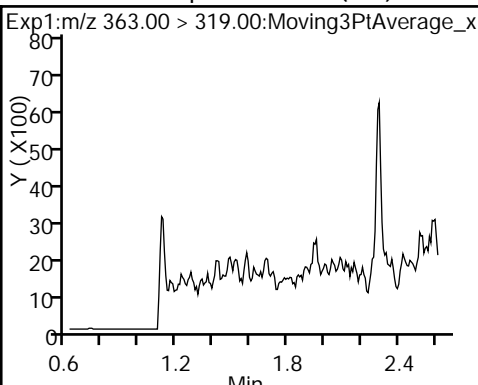
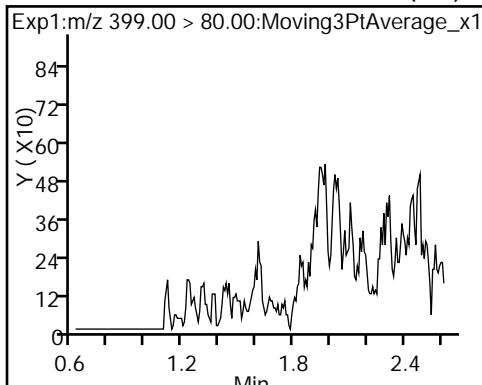
Method: 537_A8_N

Limit Group: LC 537 ICAL

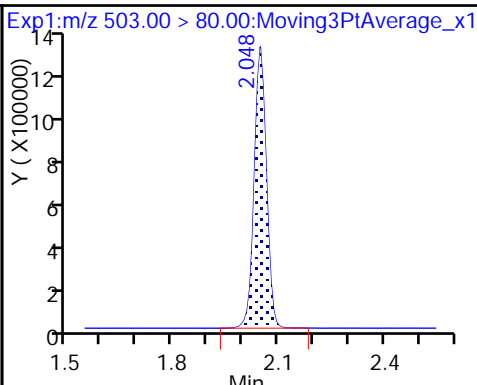
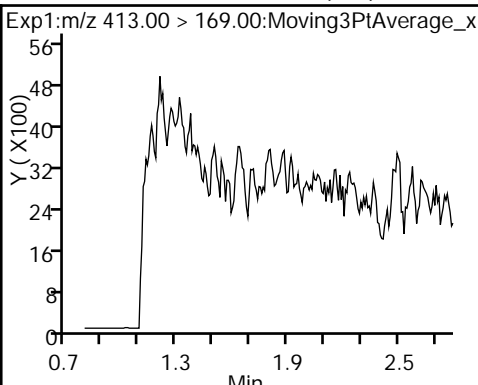
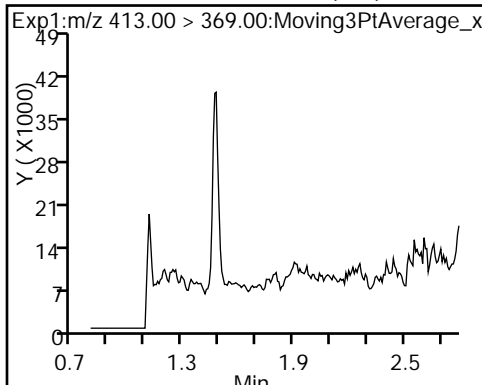
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



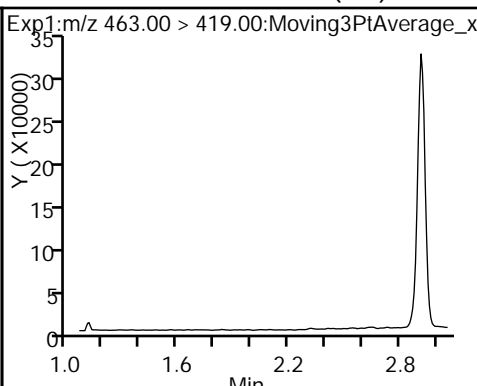
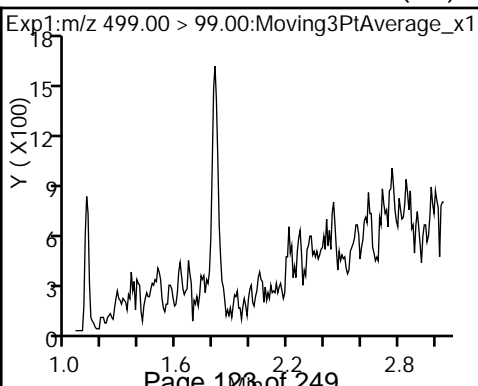
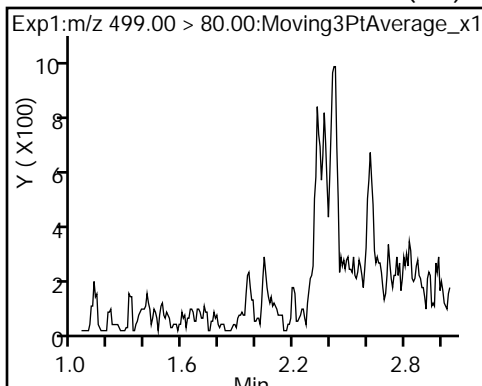
3 Perfluorohexanesulfonic acid (ND) 4 Perfluoroheptanoic acid (ND) * 6 13C2-PFOA



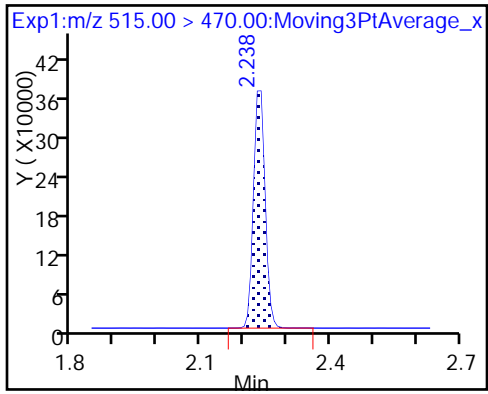
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) * 7 13C4 PFOS



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_040.d
 Lims ID: 320-35900-A-6-A
 Client ID: NAWC-020818-FRB-324
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:46:28 ALS Bottle#: 26 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.16	91.64
\$ 10 13C2 PFDA	10.0	12.1	121.14

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-RW-0335 Lab Sample ID: 320-35900-7
 Matrix: Water Lab File ID: 2018.02.16_537C_041.d
 Analysis Method: 537 Date Collected: 02/08/2018 12:40
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 247.6(mL) Date Analyzed: 02/16/2018 14:51
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.6	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.5	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_041.d
 Lims ID: 320-35900-A-7-A
 Client ID: WGNA-020818-RW-0335
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:51:07 ALS Bottle#: 27 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:48:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	248761	1.74		213	
298.90 > 99.00	1.358	1.358	0.0	1.000	175500		1.42(0.00-0.00)	437	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.472	1.479	-0.007	1.000	969473	8.59		13859	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	331394	1.89		126	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	159308	1.60		25.3	
* 6 13C2-PFOA									
415.00 > 370.00	1.791	1.798	-0.007		1025764	10.0		9524	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	557704	5.65		18.7	
413.00 > 169.00	1.798	1.798	0.0	1.000	347138		1.61(0.00-0.00)	48.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.041	2.048	-0.007		3120515	28.7		2415	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	486576	4.73		156	a
499.00 > 99.00	2.048	2.048	0.0	1.000	90433		5.38(0.00-0.00)	50.3	a
\$ 10 13C2 PFDA									
515.00 > 470.00	2.231	2.238	-0.007	1.000	547838	10.2		6609	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_041.d

Injection Date: 16-Feb-2018 14:51:07

Instrument ID: A8_N

Lims ID: 320-35900-A-7-A

Lab Sample ID: 320-35900-7

Client ID: WGNA-020818-RW-0335

Operator ID: SACINSTLCMS01

ALS Bottle#: 27

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

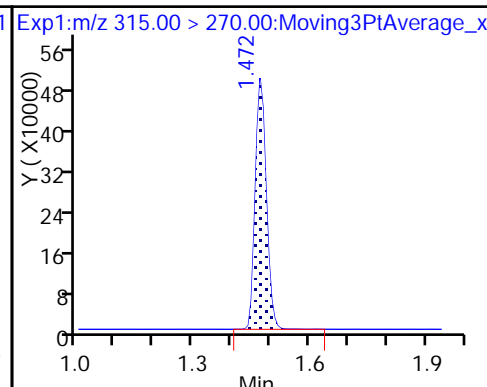
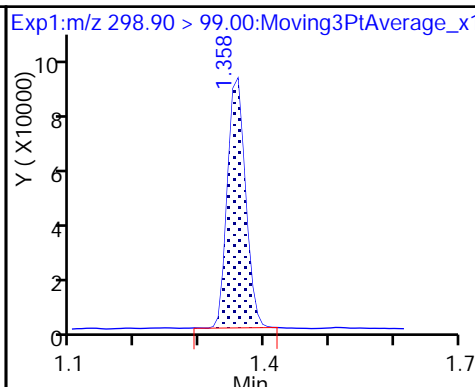
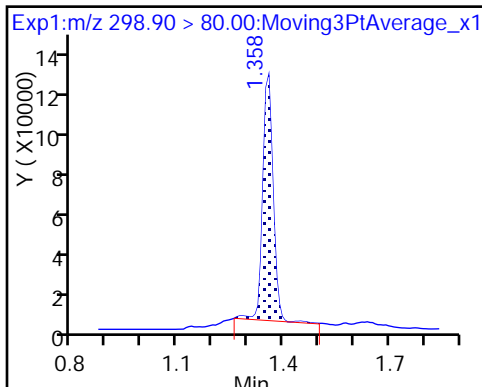
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

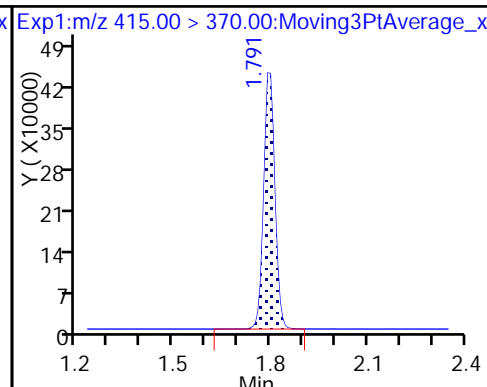
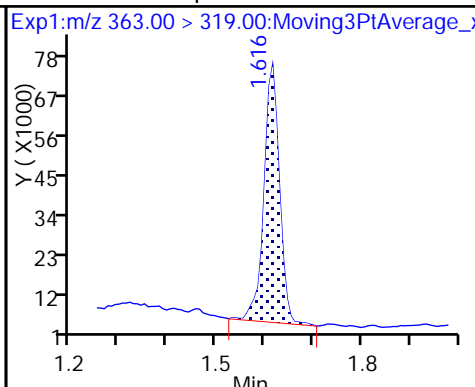
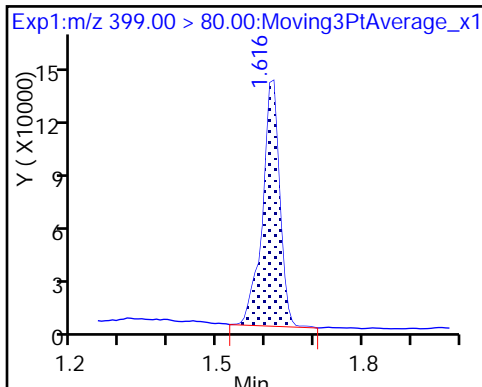
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

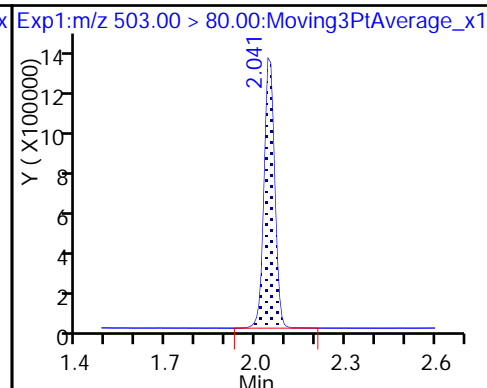
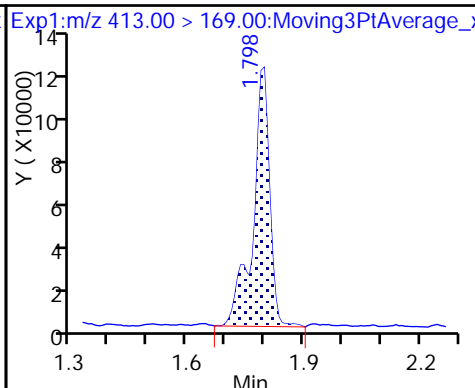
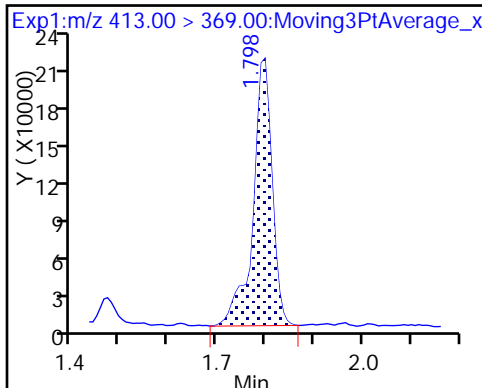
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

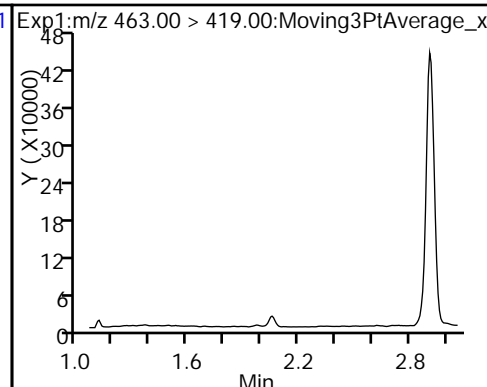
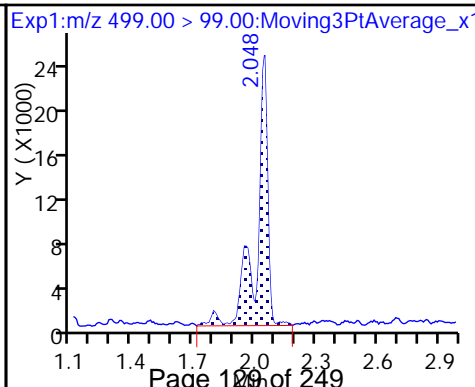
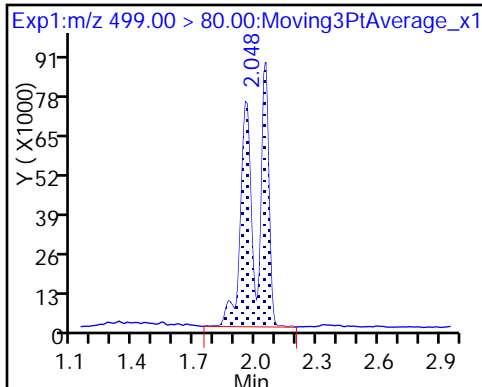
* 7 13C4 PFOS



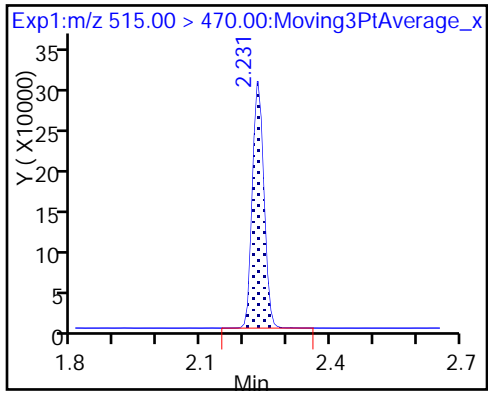
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_041.d
 Lims ID: 320-35900-A-7-A
 Client ID: WGNA-020818-RW-0335
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:51:07 ALS Bottle#: 27 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:48:03

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.59	85.93
\$ 10 13C2 PFDA	10.0	10.2	101.87

TestAmerica Sacramento

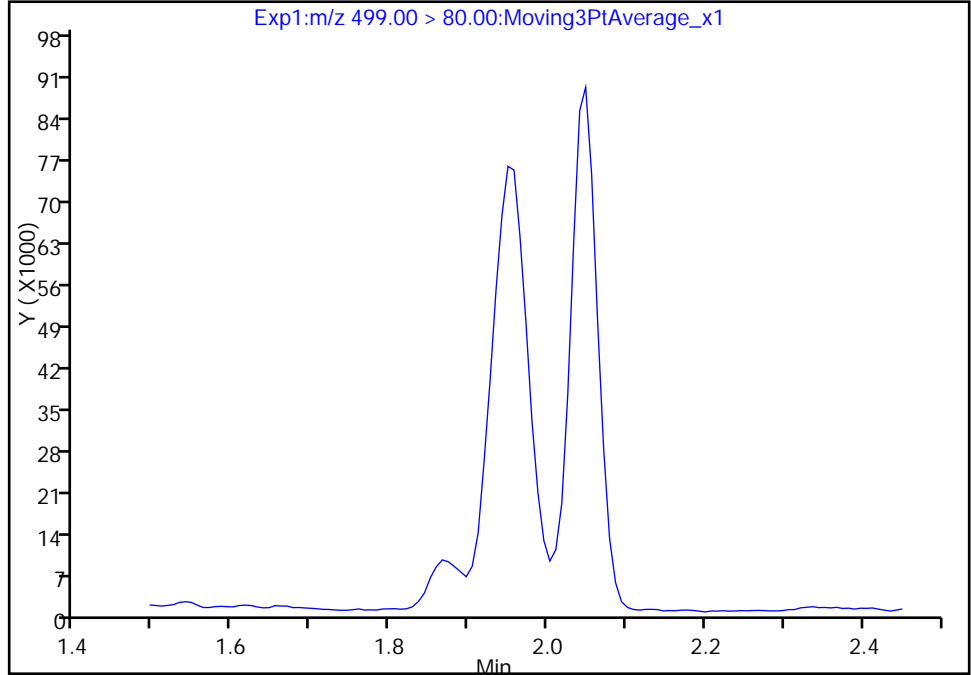
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_041.d
Injection Date: 16-Feb-2018 14:51:07 Instrument ID: A8_N
Lims ID: 320-35900-A-7-A Lab Sample ID: 320-35900-7
Client ID: WGNA-020818-RW-0335
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 14
Injection Vol: 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

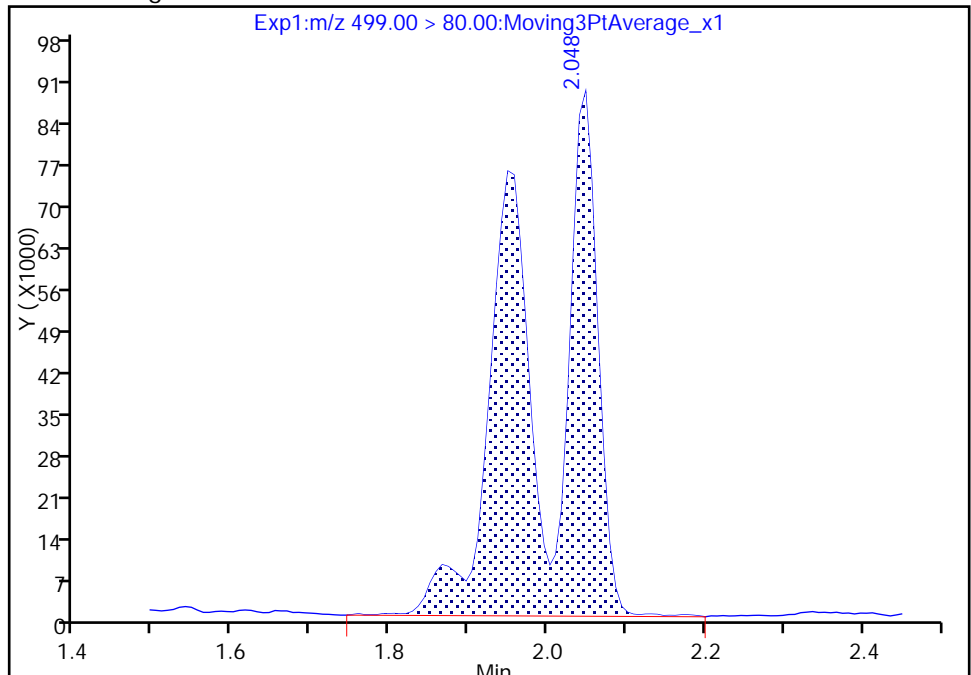
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 486576
Amount: 4.729606
Amount Units: ng/ml



Reviewer: roycea, 17-Feb-2018 09:47:52

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-FRB-0335 Lab Sample ID: 320-35900-8
 Matrix: Water Lab File ID: 2018.02.16_537C_042.d
 Analysis Method: 537 Date Collected: 02/08/2018 12:35
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 248.7(mL) Date Analyzed: 02/16/2018 14:55
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	140	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_042.d
 Lims ID: 320-35900-A-8-A
 Client ID: WGNA-020818-FRB-0335
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:55:46 ALS Bottle#: 28 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.479	1.479	0.0	1.000	1025553	8.64	15273	
* 6 13C2-PFOA	415.00 > 370.00	1.798	1.798	0.0		1078902	10.0	9941	
5 Perfluorooctanoic acid	413.00 > 369.00	1.806	1.798	0.008	1.000	49005	0.4721	0.9	
	413.00 > 169.00	1.798	1.798	0.0	0.996	18894	2.59(0.00-0.00)	2.4	
* 7 13C4 PFOS	503.00 > 80.00	2.048	2.048	0.0		3190396	28.7	1609	
\$ 10 13C2 PFDA	515.00 > 470.00	2.238	2.238	0.0	1.000	791639	14.0	8076	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_042.d

Injection Date: 16-Feb-2018 14:55:46

Instrument ID: A8_N

Lims ID: 320-35900-A-8-A

Lab Sample ID: 320-35900-8

Client ID: WGNA-020818-FRB-0335

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 15

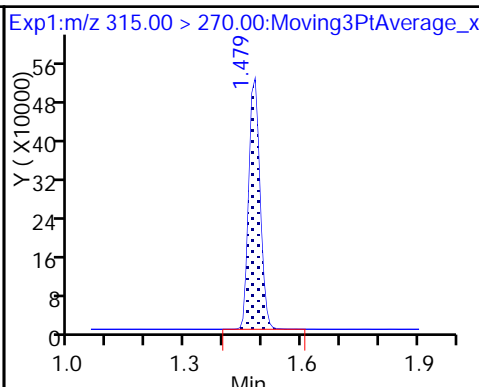
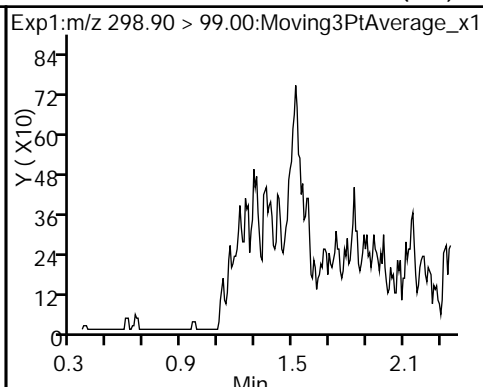
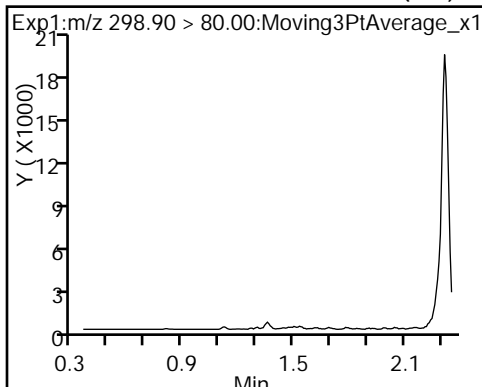
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537_A8_N

Limit Group: LC 537 ICAL

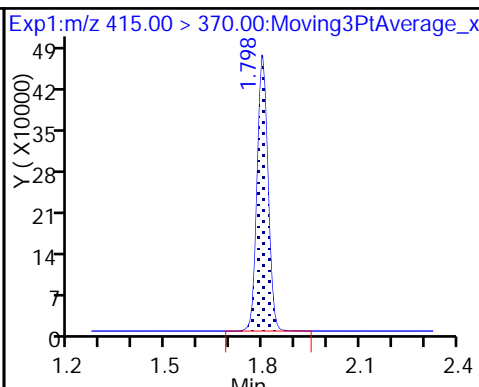
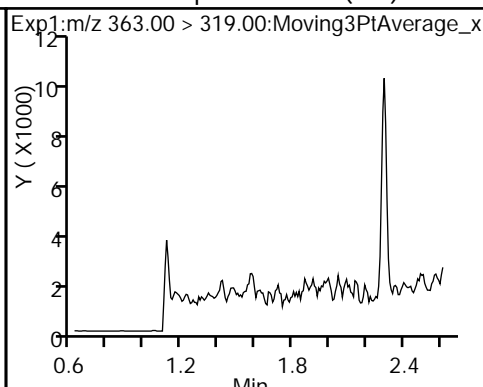
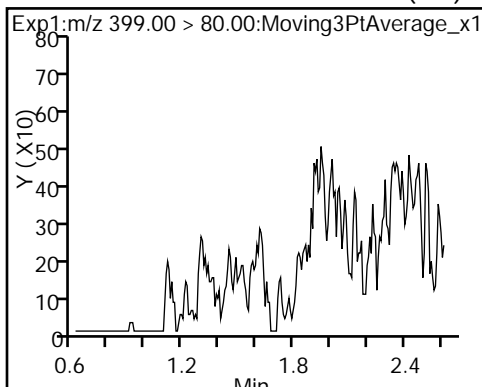
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

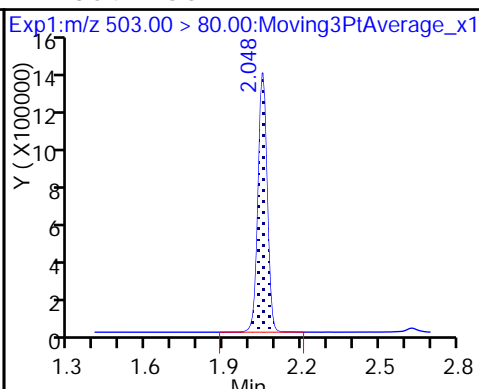
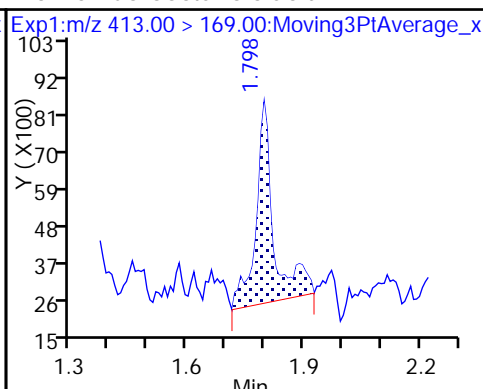
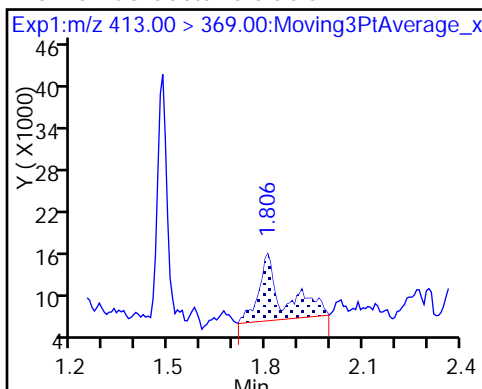
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

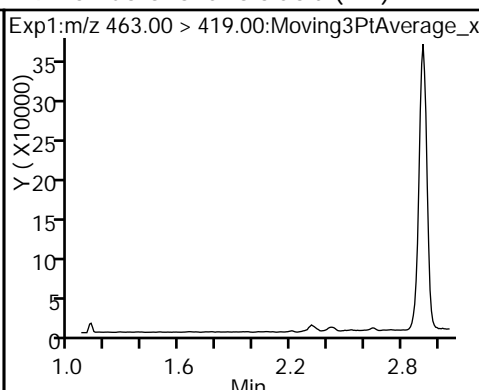
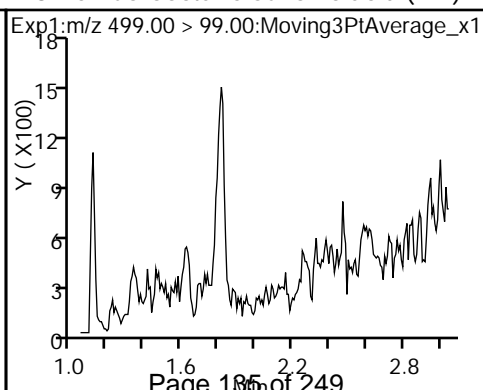
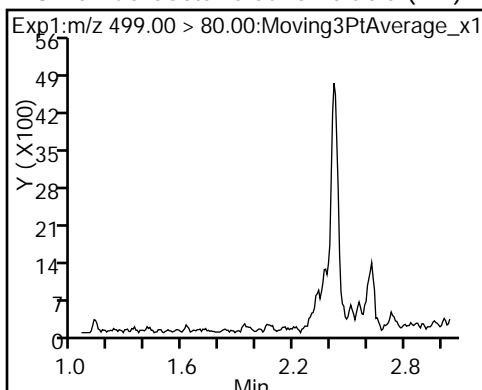
* 7 13C4 PFOS



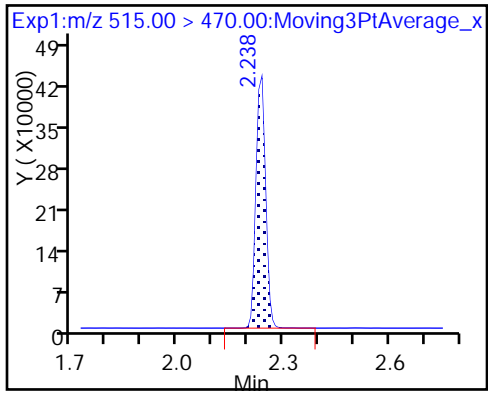
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_042.d
 Lims ID: 320-35900-A-8-A
 Client ID: WGNA-020818-FRB-0335
 Sample Type: Client
 Inject. Date: 16-Feb-2018 14:55:46 ALS Bottle#: 28 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-35900-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.64	86.42
\$ 10 13C2 PFDA	10.0	14.0	139.96

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

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1922 0.9350	1.2685	1.2630	1.1053	1.0403	QuaF		1.3180	-0.002120					1.0000			0.9600
Perfluorohexanesulfonic acid (PFHxS)	1.5376 1.6019	1.6461	1.6181	1.5963	1.6585	Ave		1.6098			2.7		30.0				
Perfluoroheptanoic acid (PFHpA)	0.9596 0.9834	0.9488	0.9462	1.0388	0.9501	Ave		0.9711			3.7		30.0				
Perfluorooctanoic acid (PFOA)	0.9118 0.9514	1.0053	0.9624	0.9616	0.9798	Ave		0.9620			3.2		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.9021 0.9430	0.9481	0.9569	0.9539	0.9692	Ave		0.9455			2.4		30.0				
Perfluorononanoic acid (PFNA)	0.6417 0.6193	0.5823	0.5991	0.6537	0.5962	Ave		0.6154			4.5		30.0				
13C2 PFHxA	1.1327 1.1621	1.0418	1.0430	1.1541	1.0657	Ave		1.0999			5.1		30.0				
13C2 PFDA	0.5790 0.5388	0.4974	0.4674	0.5464	0.5166	Ave		0.5243			7.5		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.: 320-35900-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1004877 16112512	2401851	5386060	9625497	13334361	9.00 180	20.0	45.0	90.0	135
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	432087 9203547	1039145	2300670	4635169	7088297	3.00 60.0	6.67	15.0	30.0	45.0
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	89434 1755879	208408	467875	919334	1334846	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	170858 3415564	443975	956930	1711070	2767901	2.01 40.2	4.47	10.1	20.1	30.2
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	339345 7252490	801200	1821248	3707450	5544581	4.02 80.3	8.93	20.1	40.2	60.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	119635 2211715	255853	592583	1157180	1675602	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1055358 1037300	1029524	1031304	1021204	998008	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	539488 480980	491558	462142	483499	483740	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.: 320-35900-1 Analy Batch No.: 208773

SDG No.: _____

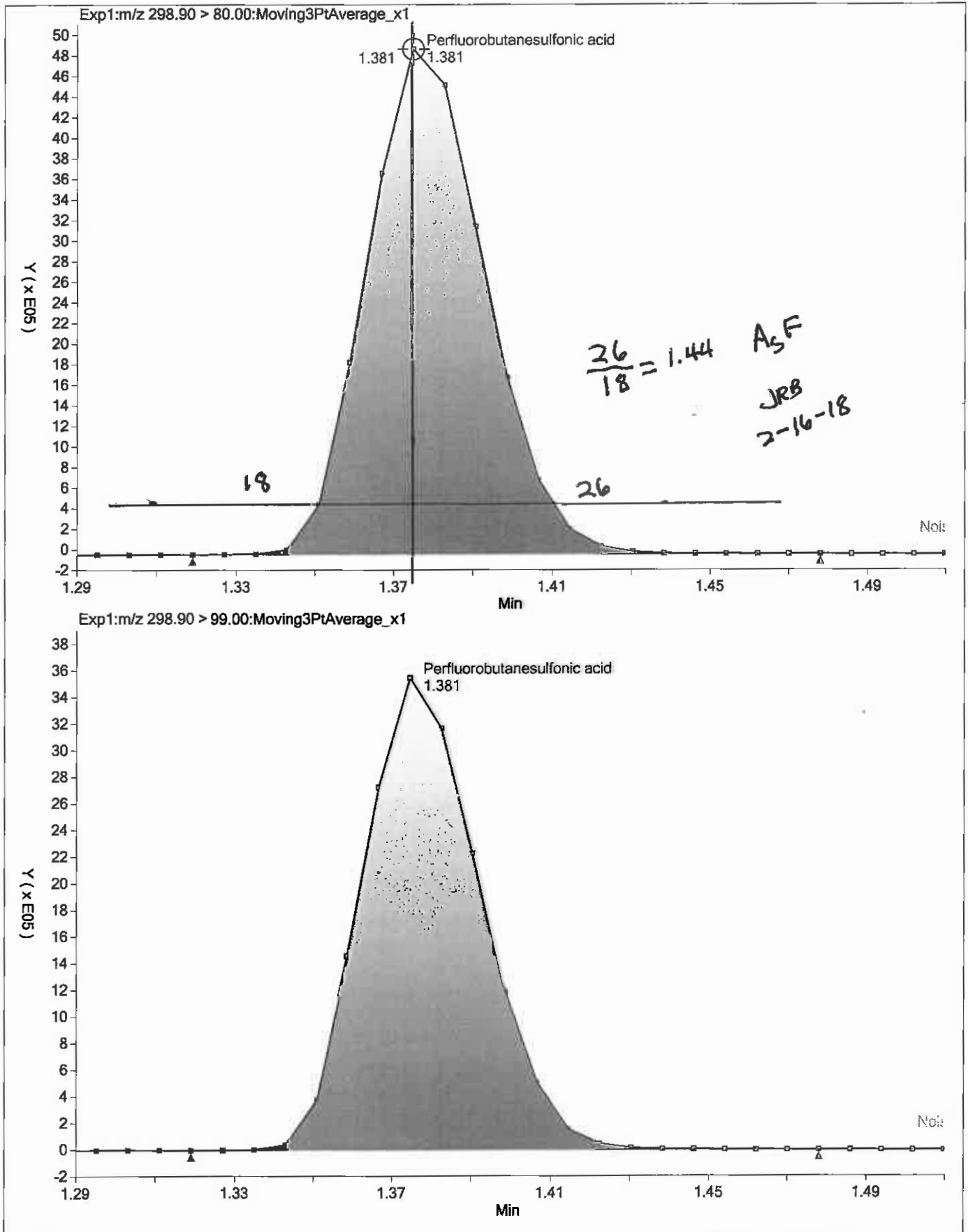
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

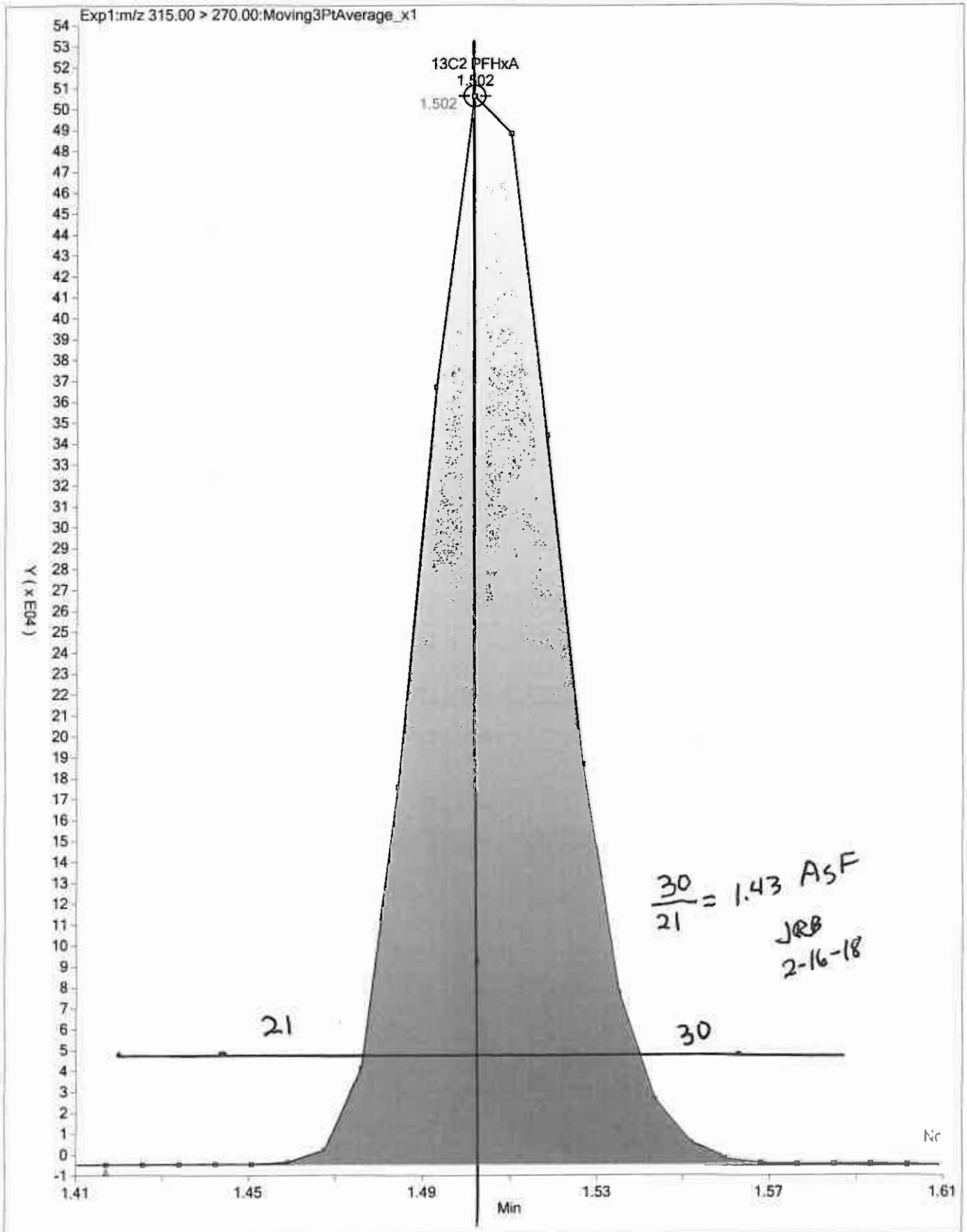
Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-8.3	-0.6	3.6	-2.3	1.1	-0.3	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-4.5	2.3	0.5	-0.8	3.0	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-1.2	-2.3	-2.6	7.0	-2.2	1.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-5.2	4.5	0.0	0.0	1.8	-1.1	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	0.3	1.2	0.9	2.5	-0.3	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.3	-5.4	-2.6	6.2	-3.1	0.6	50	30	30	30	30	30
13C2 PFHxA	3.0	-5.3	-5.2	4.9	-3.1	5.7	30	30	30	30	30	30
13C2 PFDA	10.4	-5.1	-10.9	4.2	-1.5	2.8	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 16FEB2018_537_ICAL Worklist Num: 54164
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b
 Limit Group: LC 537 ICAL
 Analysis Type: SemiVOA
 Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 208773
 CCV IS Mode: Select Ical Level, Cal Level: 3
 Non-Cal IS Mode: Last Ccal Sample

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

Lab ID	Ini Date	\$ 2	\$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
	IS Std			3628037 1 81	9733097 2 06
# 1 RB	16-Feb-2018 08:41:23			1076886< 29.7*	2716766< 27.9*
# 2 RB	16-Feb-2018 08:46:06			1019457< 28.1*	2755286< 28.3*
# 3 RB	16-Feb-2018 08:50:50			1105032< 30.5*	2805992< 28.8*
	IS Std				
# 4 IC L1	16-Feb-2018 08:55:33	1.51 103.00	2.28 110.40	931713> 100.0*	2685321> 100.0*
# 5 IC L2	16-Feb-2018 09:00:16	1.51 94.72	2.28 94.88	988244> 106.1*	2714895> 101.1*
# 6 IC L3	16-Feb-2018 09:05:01	1.50 94.82	2.27 89.15	988820> 106.1*	2717621> 101.2*
# 7 IC L4	16-Feb-2018 09:09:42	1.50 104.90	2.27 104.20	884854> 95.0*	2774986> 103.3*
# 8 IC L5	16-Feb-2018 09:14:23	1.50 96.89	2.26 98.53	936458> 100.5*	2722967> 101.4*
# 9 IC L6	16-Feb-2018 09:19:04	1.50 105.70	2.27 102.80	892615> 95.8*	2745419> 102.2*
	IS Std			988820 1 86	2717621 2 12
#10 RB	16-Feb-2018 09:23:44			878108 88.8	2705714 99.6
	IS Std			884854 1 85	2774986 2 11
#11 CCVL	16-Feb-2018 09:28:24	1.51 94.27	2.27 95.61	955394 108.0	2663428 96.0
	IS Std			955394 1 87	2663428 2 12
#12 RB	16-Feb-2018 09:33:05			966669 101.2	2704283 101.5
	IS Std			884854 1 85	2774986 2 11
#13 ICV	16-Feb-2018 09:37:44	1.50 102.30	2.26 102.00	890238 100.6	2703377 97.4
	IS Std				
#14 RB	16-Feb-2018 09:42:24				

13C2-PFOA

$$RPD = \frac{988820 - 884854}{\frac{(988820 + 884854)}{2}} \times 100 = 11.1$$

13C4-PFOS

$$RPD = \frac{2774986 - 2685321}{\frac{(2774986 + 2685321)}{2}} \times 100 = 3.28$$

JRB
2-16-18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 16-Feb-2018 08:55:33 ALS Bottle#: 1 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:29 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:27:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	1004877	8.25		5011	
298.90 > 99.00	1.381	1.381	0.0	1.000	703519		1.43(0.00-0.00)	3183	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	1055358	10.3		16680	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.656	0.006	1.000	432087	2.87		1230	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	89434	0.9884		25.8	M
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.859	0.007		931713	10.0		9317	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.860	0.006	1.000	170858	1.91		8.2	
413.00 > 169.00	1.866	1.860	0.006	1.000	97793		1.75(0.00-0.00)	20.1	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.109	0.015	1.000	339345	3.83		616	a
499.00 > 99.00	2.124	2.109	0.015	1.000	75172		4.51(0.00-0.00)	93.5	a
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.114	0.010		2685321	28.7		10079	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.122	0.010	1.000	119635	2.09		13.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.270	0.006	1.000	539488	11.0		5616	

QC Flag Legend

Review Flags

M - Manually Integrated

a - User Assigned ID

Reagents:

LC537-L1_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d

Injection Date: 16-Feb-2018 08:55:33

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

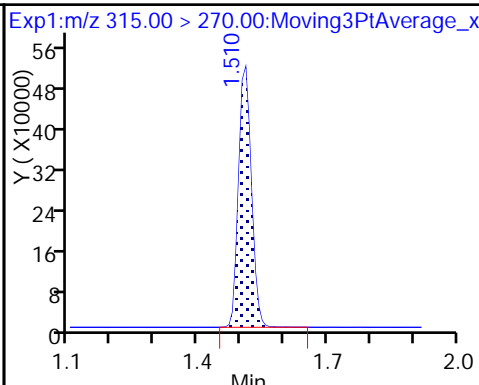
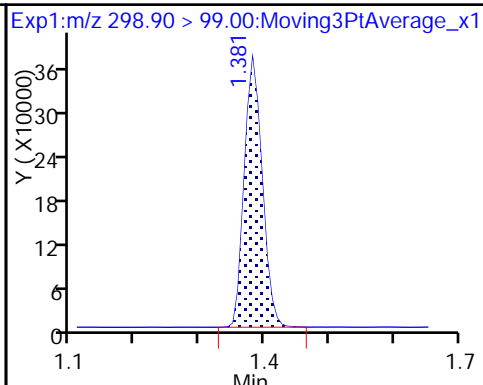
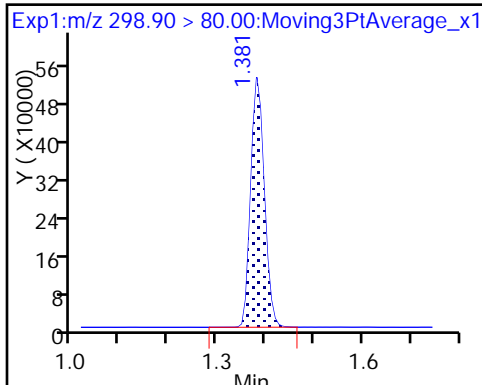
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

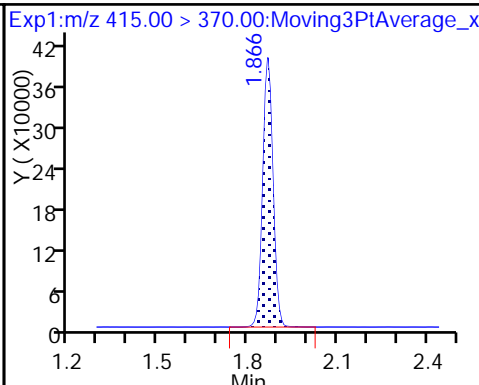
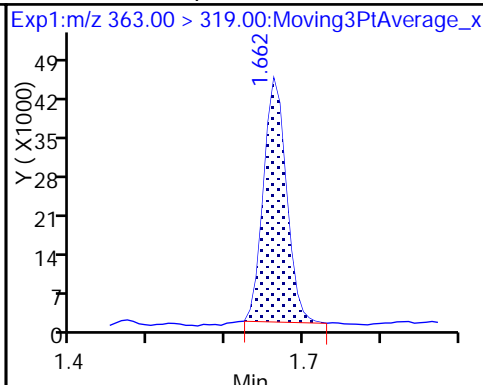
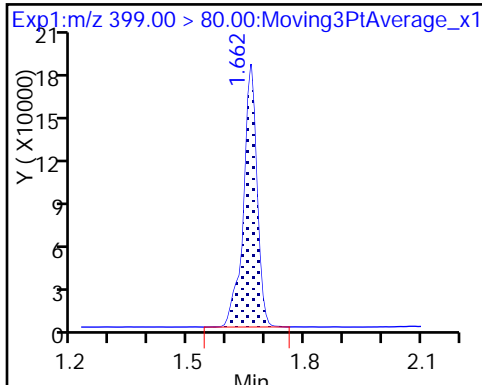
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

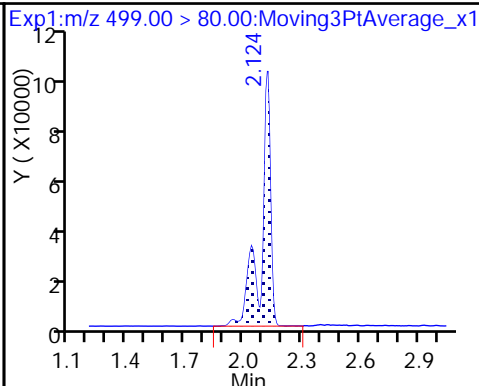
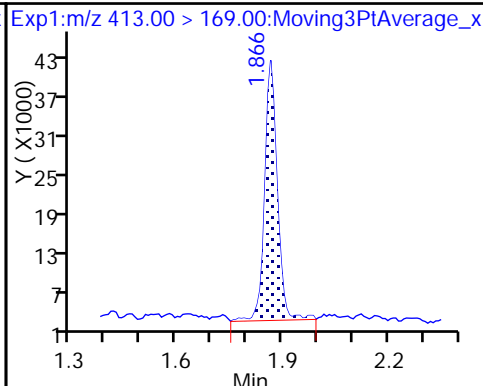
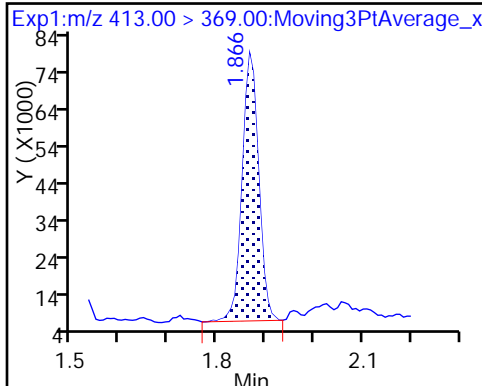
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

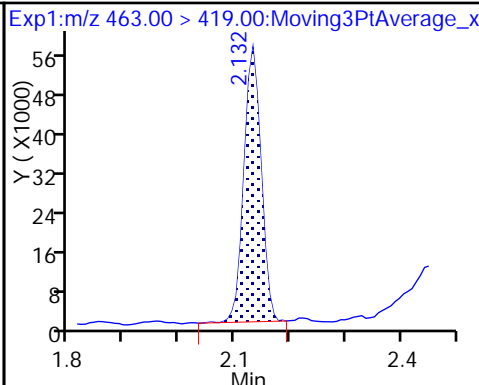
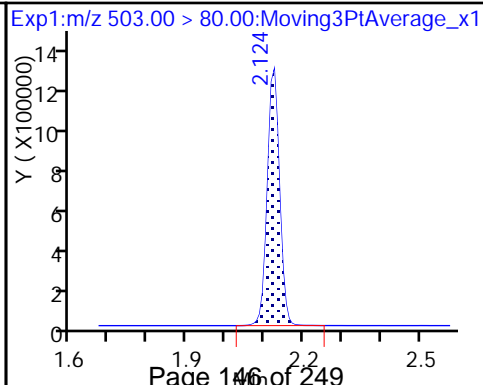
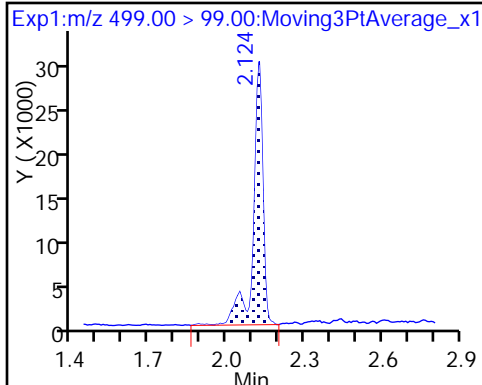
8 Perfluorooctane sulfonic acid (M)



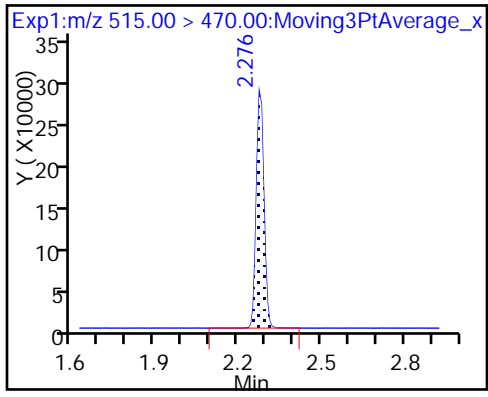
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

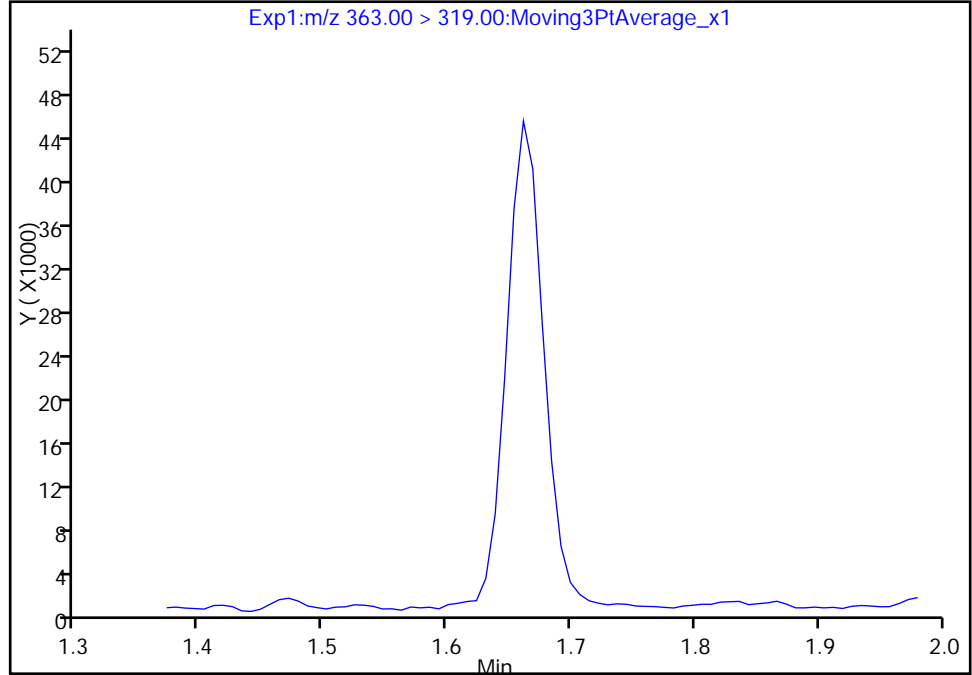
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d
Injection Date: 16-Feb-2018 08:55:33 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

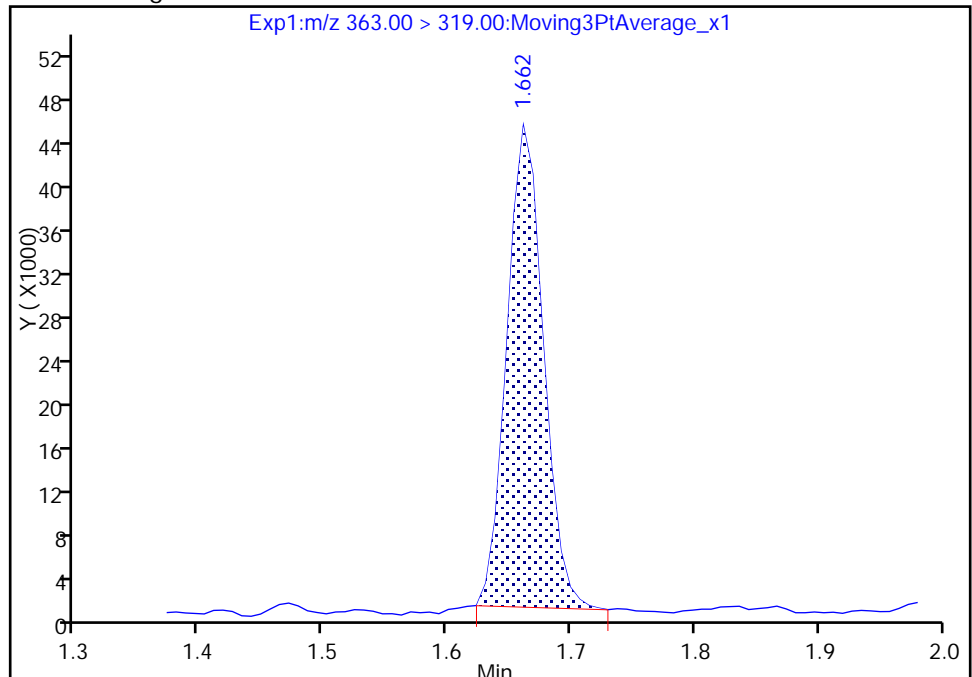
Not Detected
Expected RT: 1.66

Processing Integration Results



Manual Integration Results

RT: 1.66
Area: 89434
Amount: 0.988420
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:26:41
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

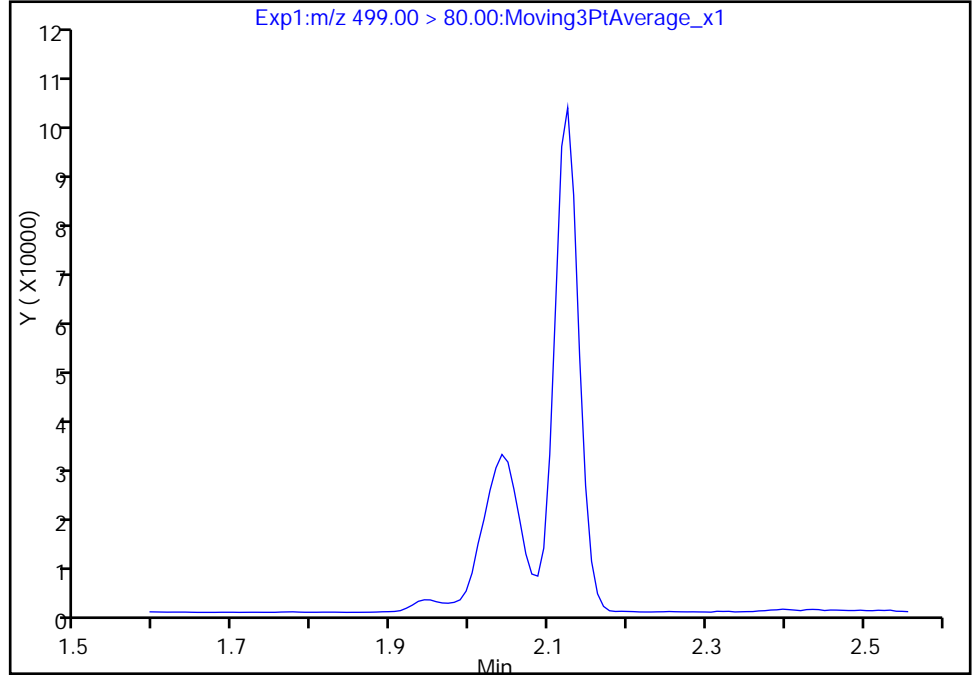
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_004.d
Injection Date: 16-Feb-2018 08:55:33 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

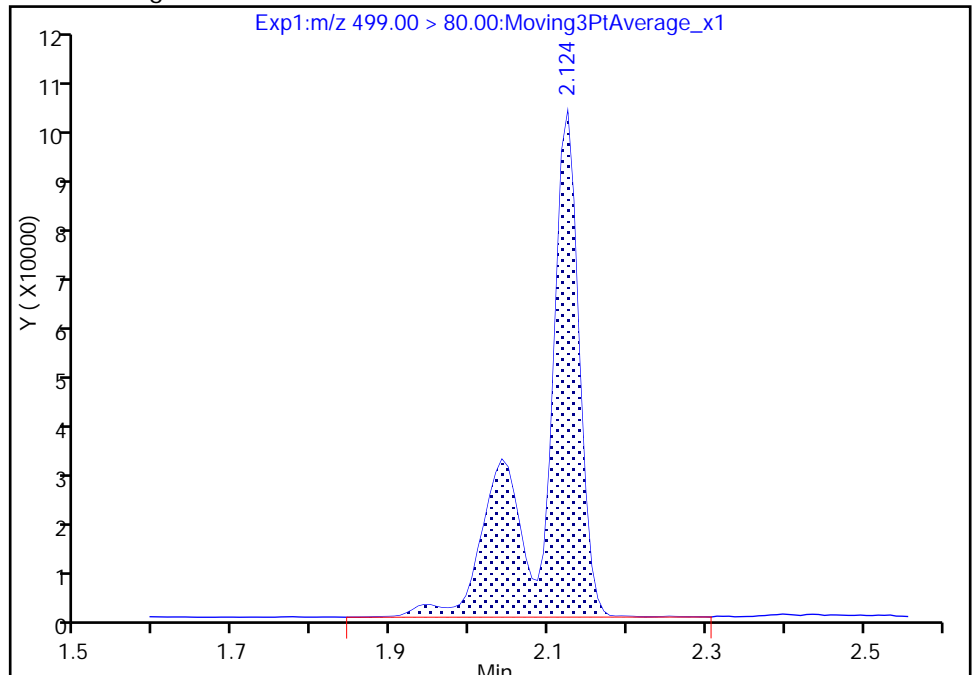
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 339345
Amount: 3.833062
Amount Units: ng/ml



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 16-Feb-2018 09:00:16 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:30 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:29:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2401851	19.9		11847	
298.90 > 99.00	1.381	1.381	0.0	1.000	1648571		1.46(0.00-0.00)	6533	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	1029524	9.47		13087	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.656	0.006	1.000	1039145	6.82		2484	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	208408	2.17		62.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.859	0.007		988244	10.0		9787	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.860	0.006	1.000	443975	4.67		19.7	
413.00 > 169.00	1.866	1.860	0.006	1.000	241410		1.84(0.00-0.00)	47.8	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	801200	8.95		1624	a
499.00 > 99.00	2.117	2.109	0.008	1.000	172636		4.64(0.00-0.00)	228	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.114	0.003		2714895	28.7		10005	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.122	0.002	1.000	255853	4.21		29.7	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.270	0.006	1.000	491558	9.49		5500	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_005.d

Injection Date: 16-Feb-2018 09:00:16

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

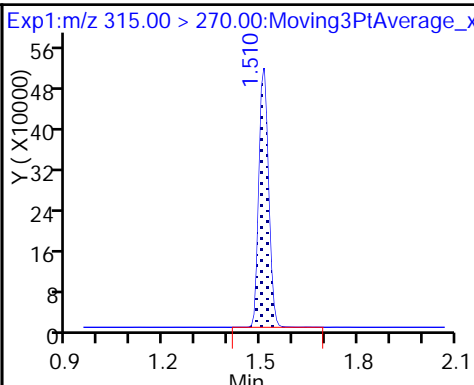
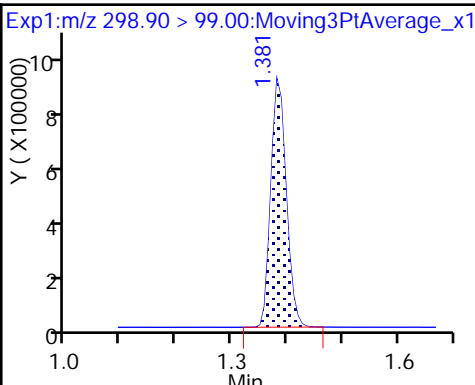
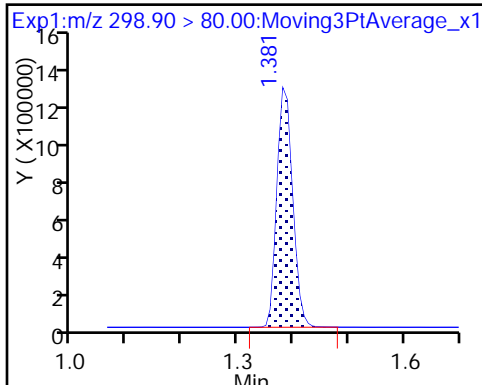
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

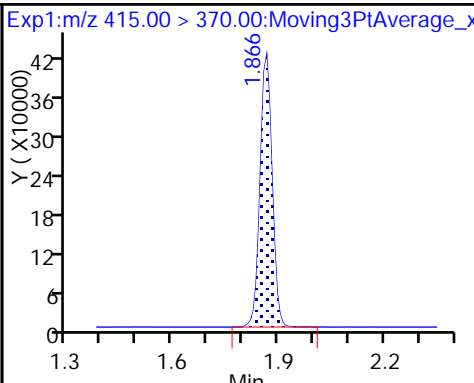
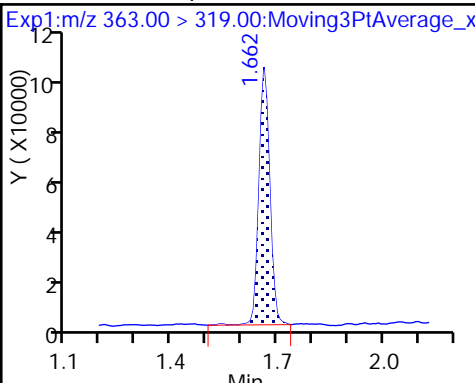
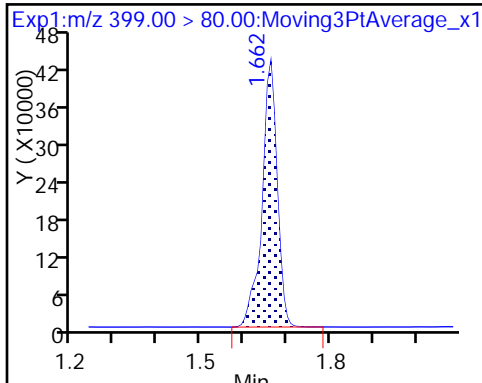
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

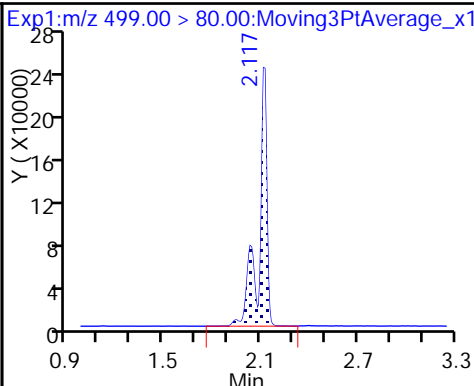
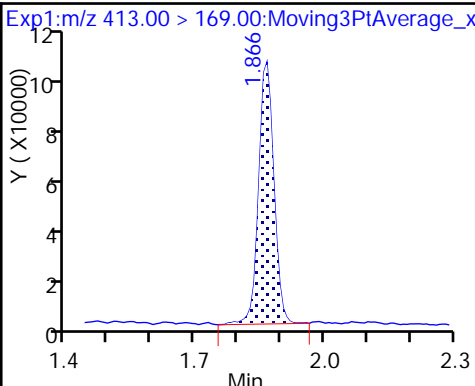
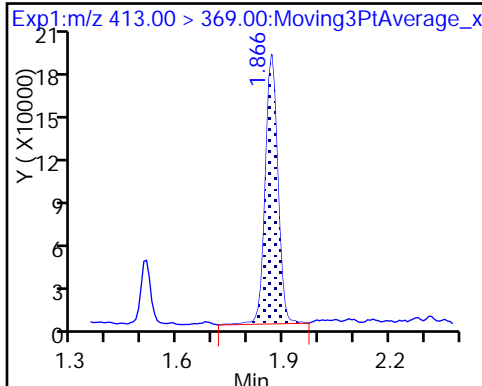
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

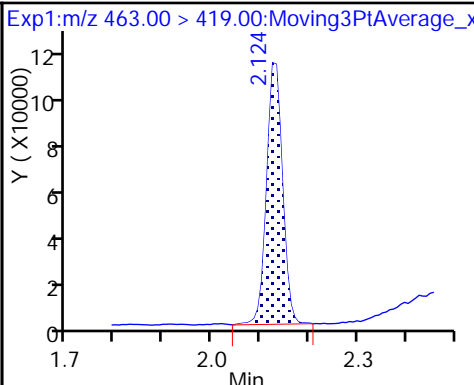
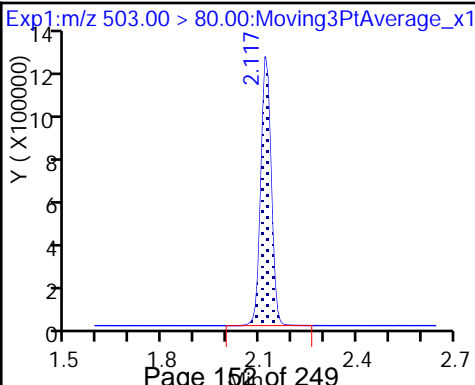
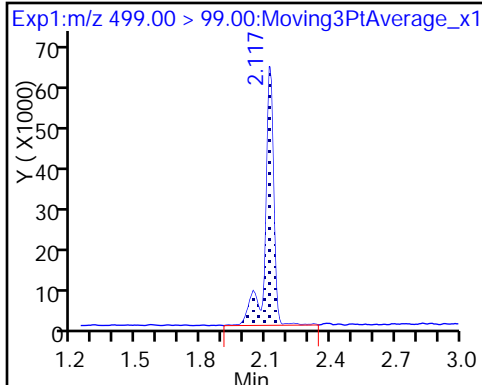
8 Perfluorooctane sulfonic acid (M)



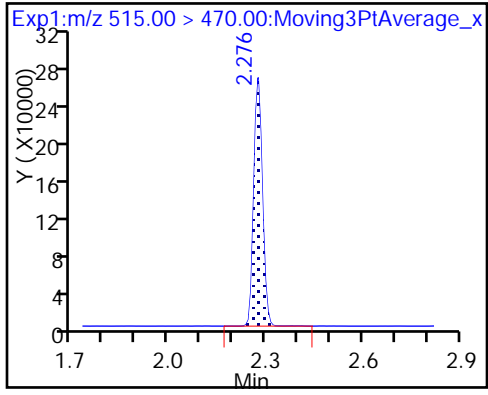
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

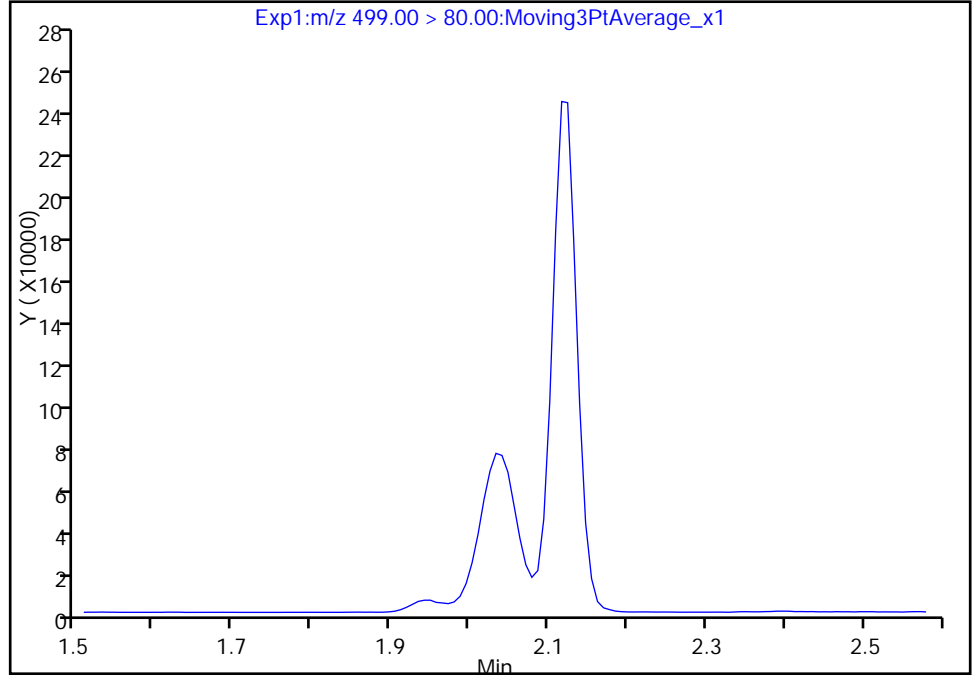
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_005.d
Injection Date: 16-Feb-2018 09:00:16 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

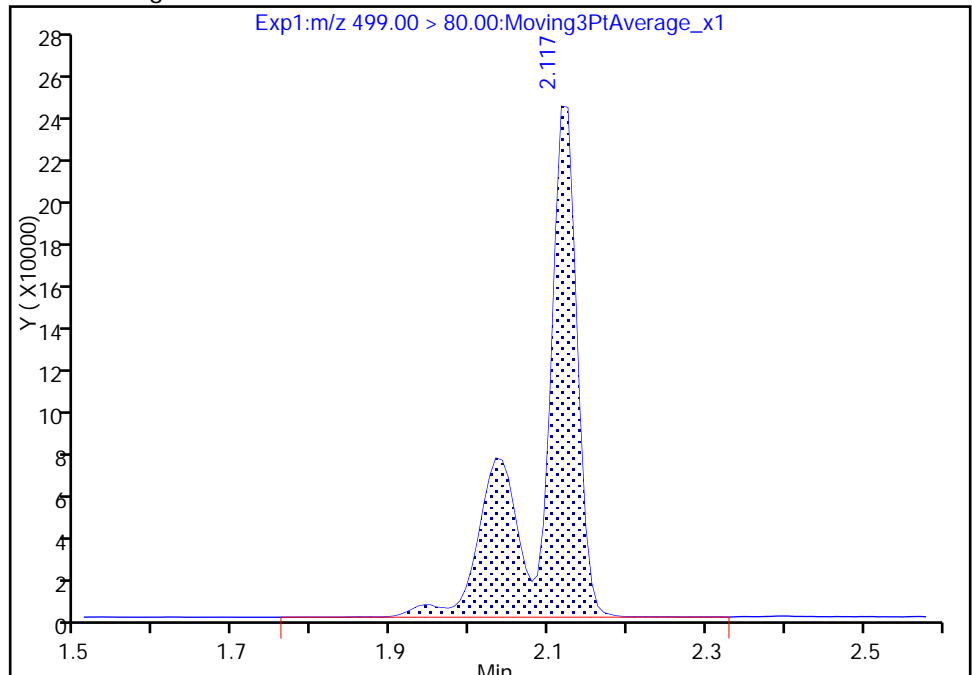
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 801200
Amount: 8.951348
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:29:26
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 16-Feb-2018 09:05:01 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:31 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:30:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	5386060	46.6		24881	
298.90 > 99.00	1.381	1.381	0.0	1.000	3691119		1.46(0.00-0.00)	13454	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1031304	9.48		13749	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	2300670	15.1		5477	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	467875	4.87		141	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.859	0.0		988820	10.0		11038	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.860	-0.001	1.000	956930	10.1		43.8	
413.00 > 169.00	1.859	1.860	-0.001	1.000	520439		1.84(0.00-0.00)	103	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	1821248	20.3		3507	a
499.00 > 99.00	2.117	2.109	0.008	1.000	390582		4.66(0.00-0.00)	507	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.114	0.003		2717621	28.7		11170	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.122	0.002	1.000	592583	9.74		77.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	462142	8.91		5257	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_006.d

Injection Date: 16-Feb-2018 09:05:01

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

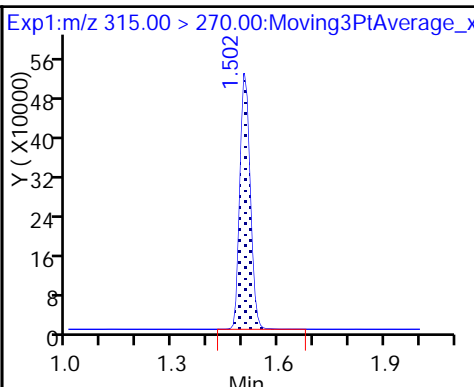
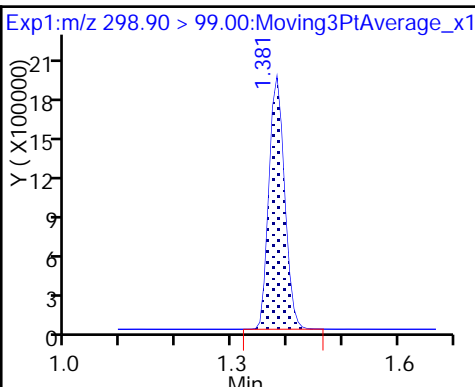
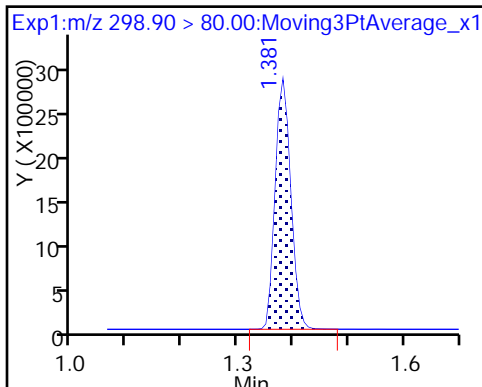
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

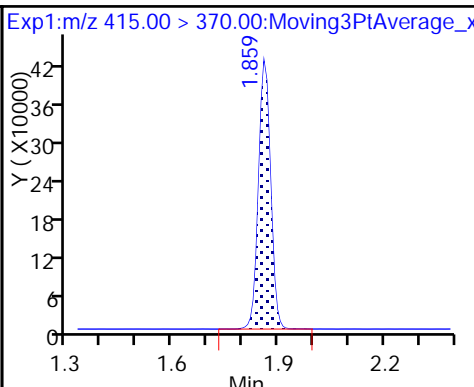
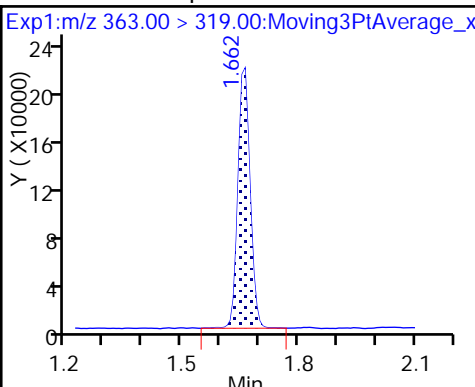
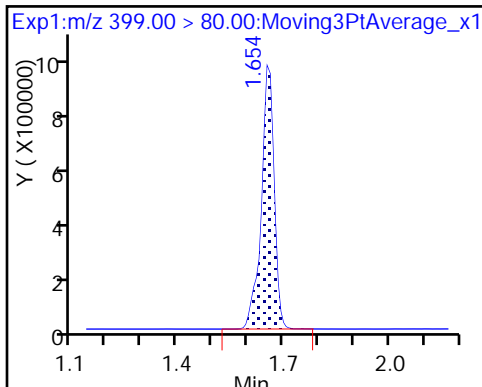
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

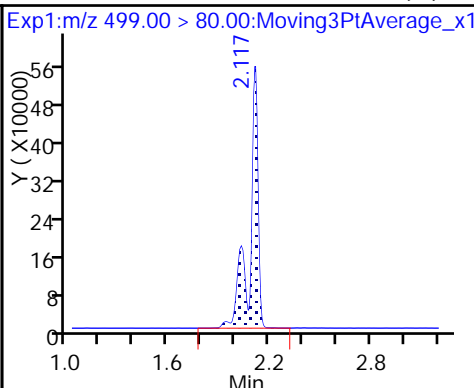
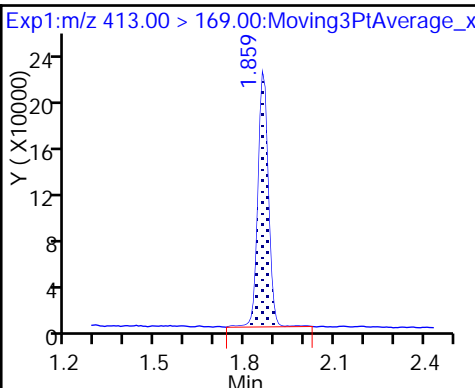
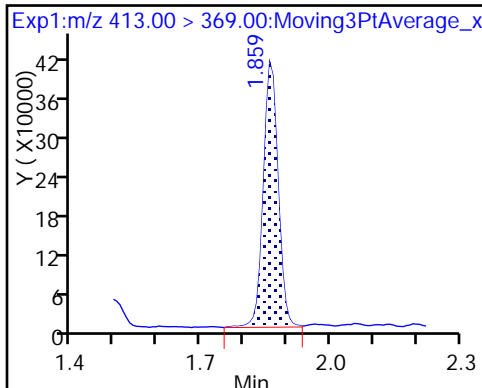
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

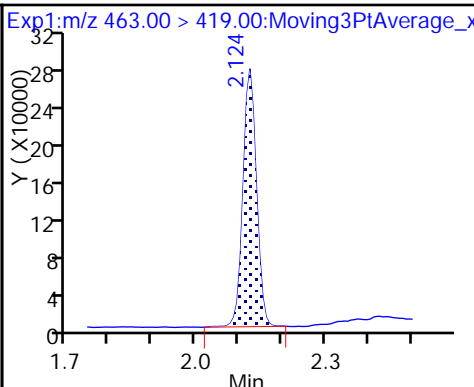
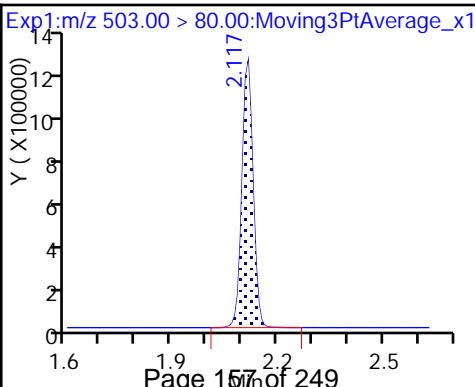
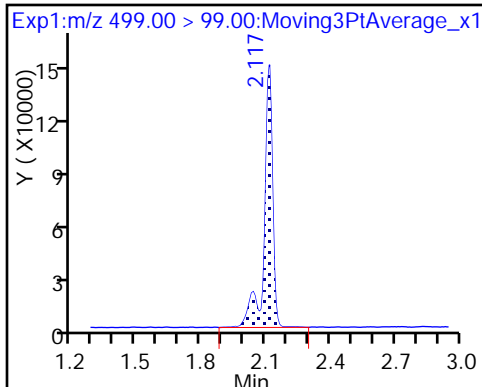
8 Perfluorooctane sulfonic acid (M)



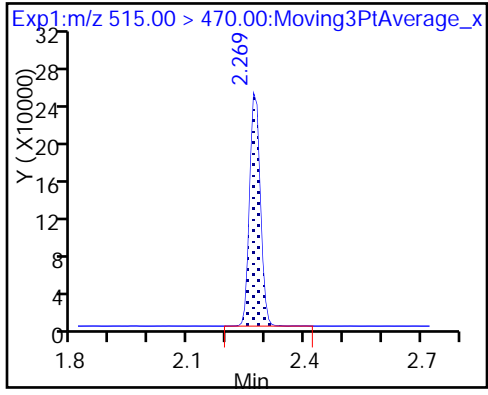
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

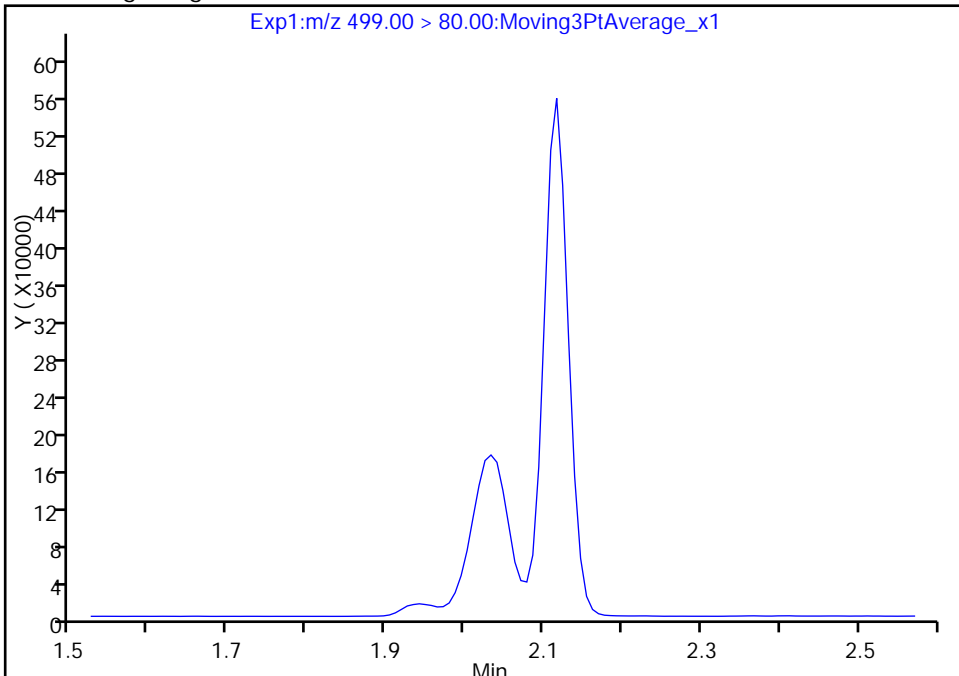
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_006.d
Injection Date: 16-Feb-2018 09:05:01 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

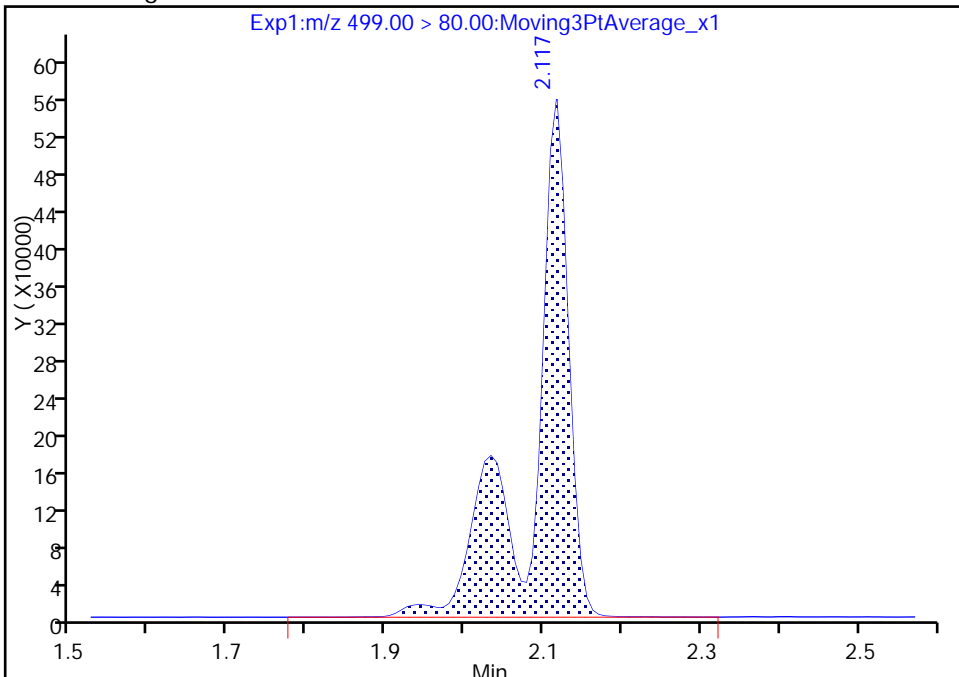
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.12
Area: 1821248
Amount: 20.327349
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:29:49
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 16-Feb-2018 09:09:42 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:32 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:30:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9625497	87.9		31459	
298.90 > 99.00	1.381	1.381	0.0	1.000	6951294		1.38(0.00-0.00)	19310	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1021204	10.5		12876	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	4635169	29.8		9685	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	919334	10.7		269	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.859	-0.008		884854	10.0		8810	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.860	-0.001	1.000	1711070	20.1		75.8	
413.00 > 169.00	1.859	1.860	-0.001	1.000	935401		1.83(0.00-0.00)	172	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	3707450	40.5		7539	a
499.00 > 99.00	2.109	2.109	0.0	1.000	789268		4.70(0.00-0.00)	1168	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2774986	28.7		12601	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	1157180	21.3		175	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	483499	10.4		5556	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L4_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_007.d

Injection Date: 16-Feb-2018 09:09:42

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

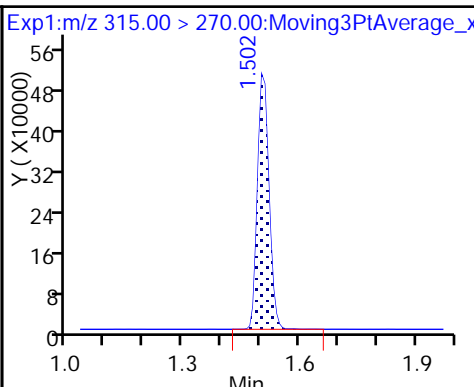
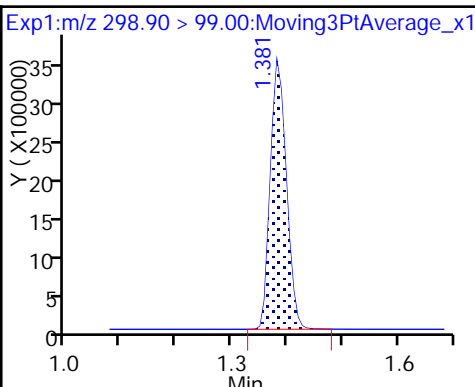
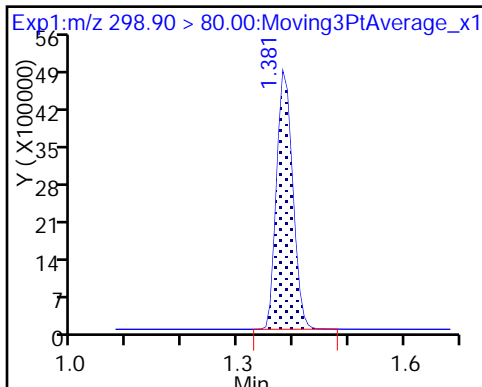
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

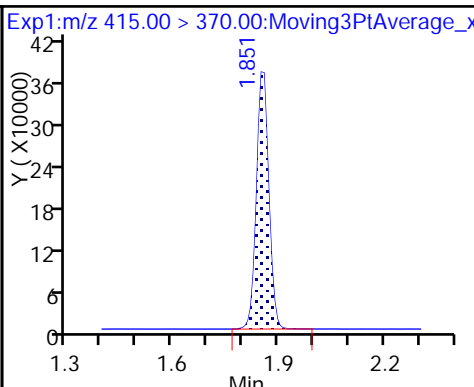
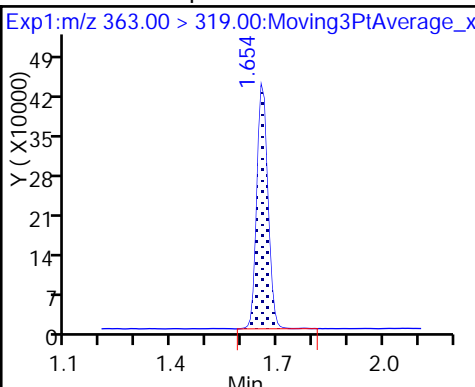
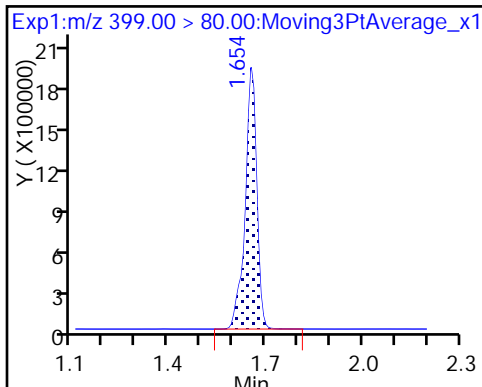
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

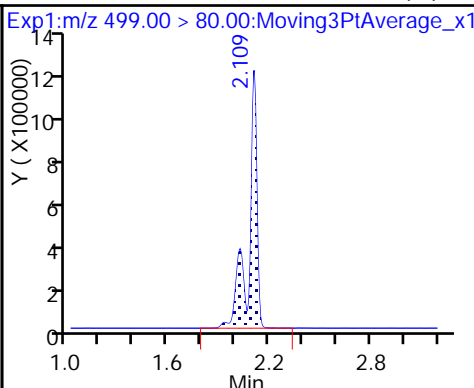
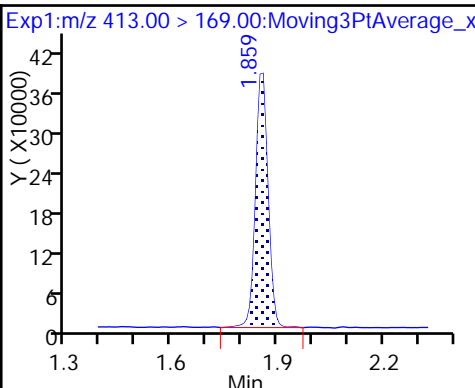
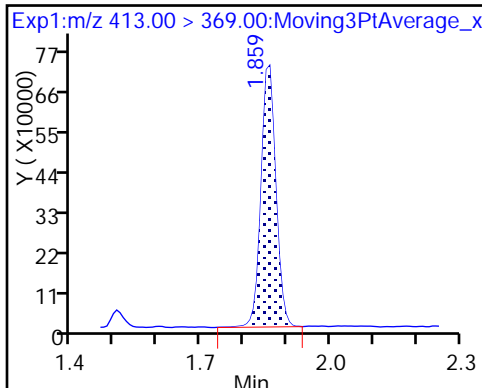
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

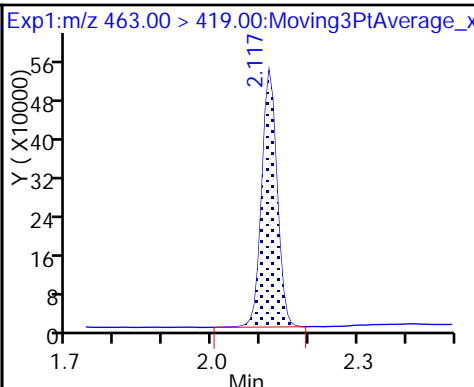
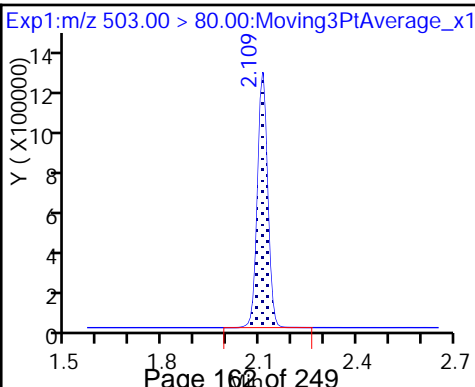
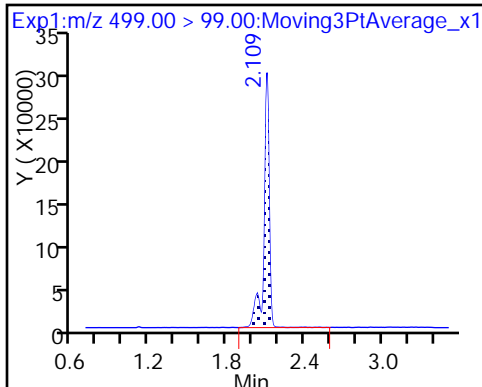
8 Perfluorooctane sulfonic acid (M)



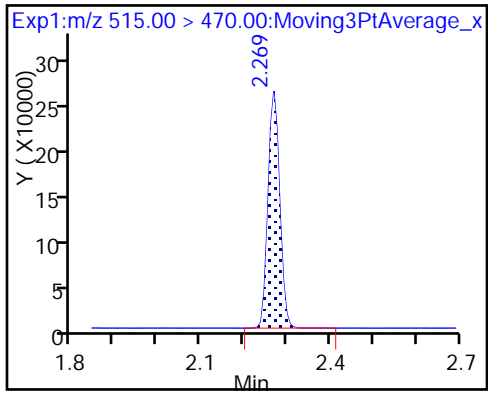
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

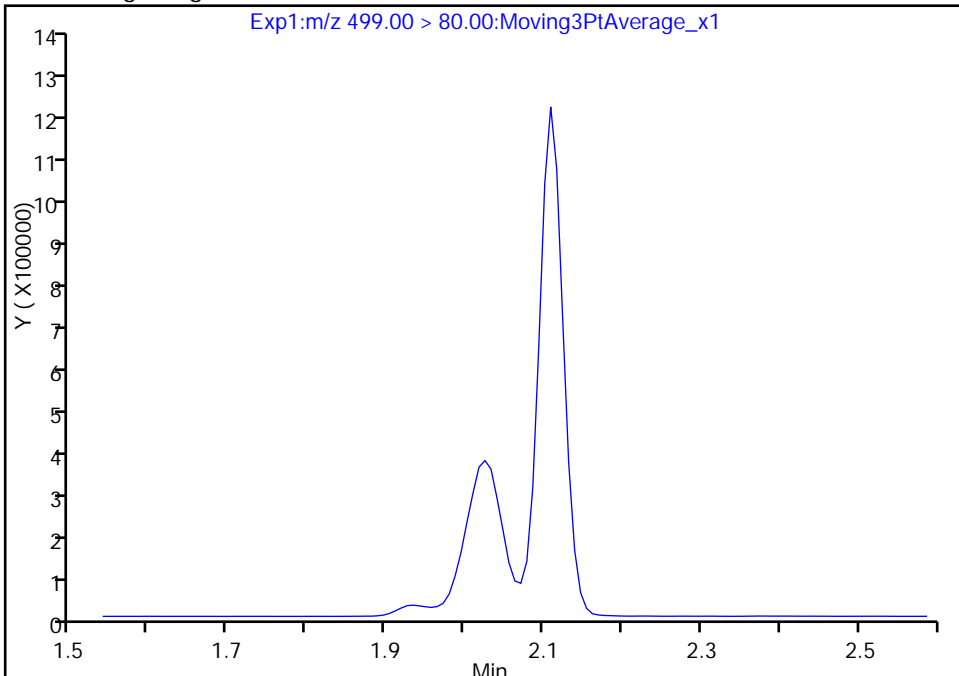
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_007.d
Injection Date: 16-Feb-2018 09:09:42 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

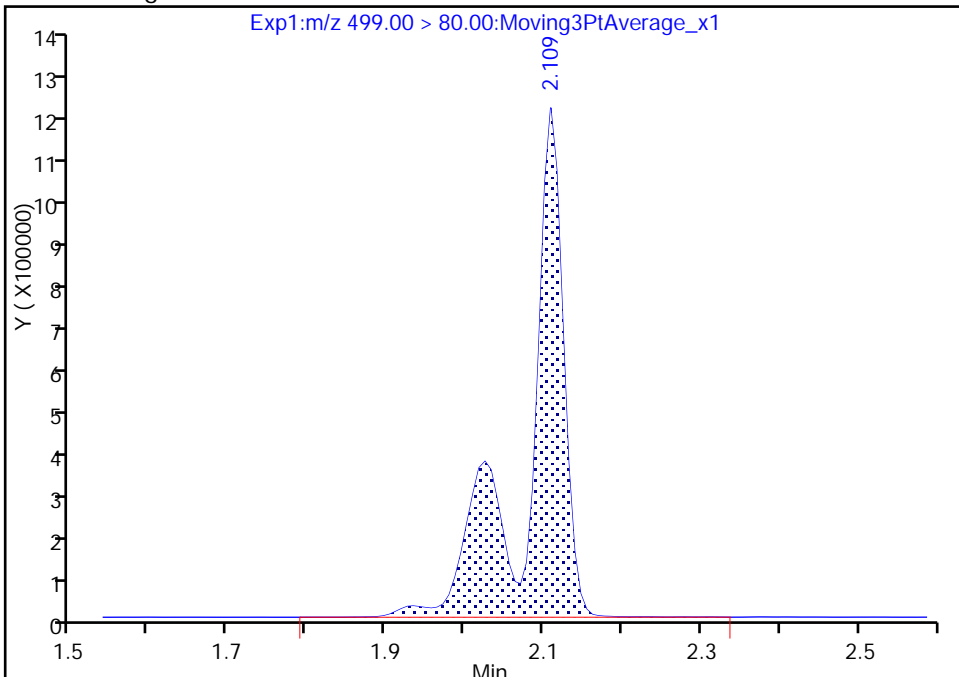
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 3707450
Amount: 40.524256
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:30:18
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 16-Feb-2018 09:14:23 ALS Bottle#: 5 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:33 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:31:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	13334361	136.5		33692	
298.90 > 99.00	1.381	1.381	0.0	1.000	9982883		1.34(0.00-0.00)	24528	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	998008	9.69		16387	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	7088297	46.4		14215	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	1334846	14.7		427	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.859	-0.008		936458	10.0		9383	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.860	-0.009	1.000	2767901	30.7		125	
413.00 > 169.00	1.851	1.860	-0.009	1.000	1502671		1.84(0.00-0.00)	280	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5544581	61.8		11632	a
499.00 > 99.00	2.109	2.109	0.0	1.000	1138506		4.87(0.00-0.00)	1480	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2722967	28.7		9525	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	1675602	29.1		264	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.270	-0.009	1.000	483740	9.85		5874	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_008.d

Injection Date: 16-Feb-2018 09:14:23

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

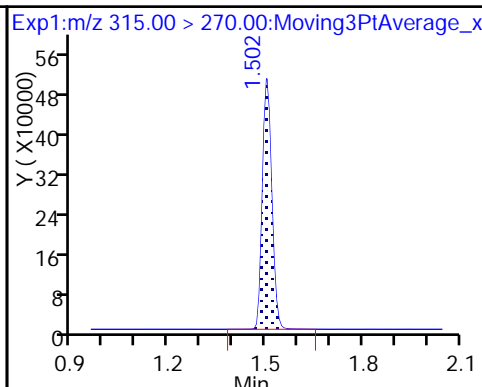
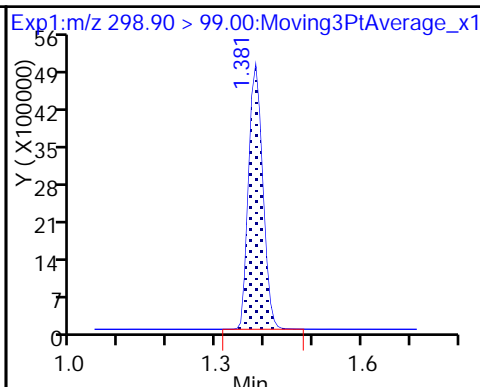
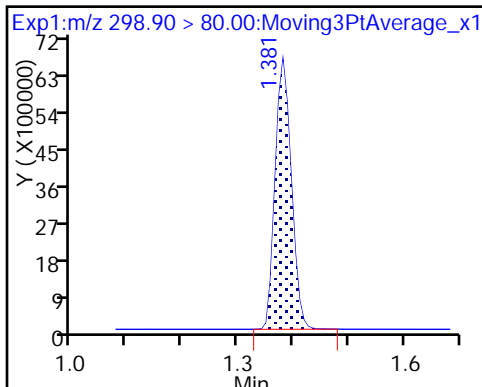
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

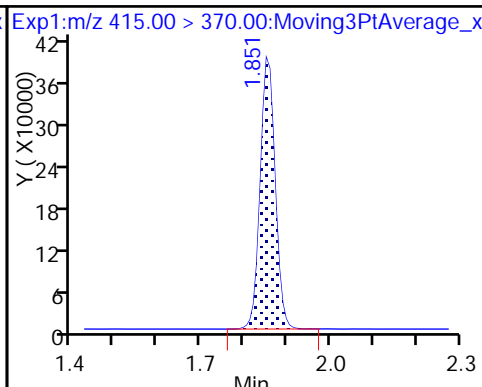
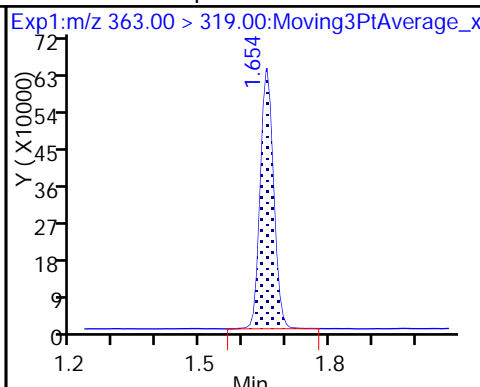
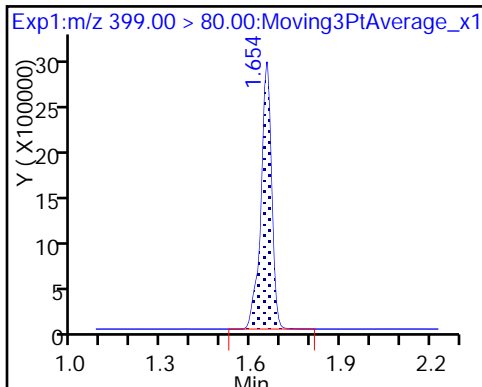
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

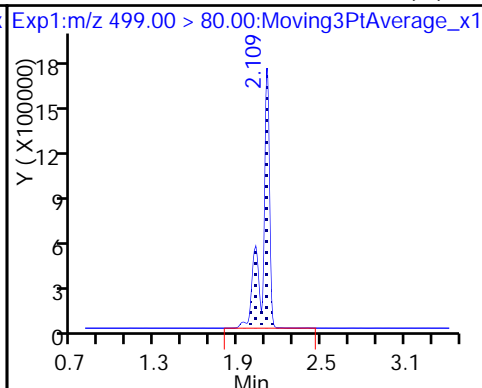
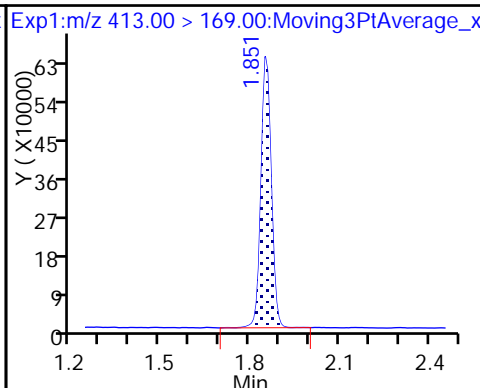
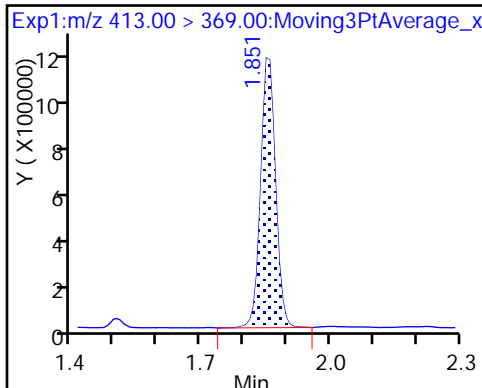
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

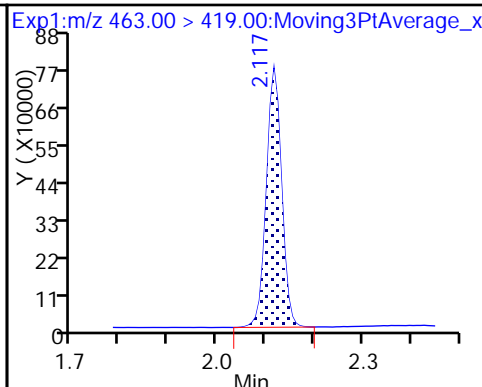
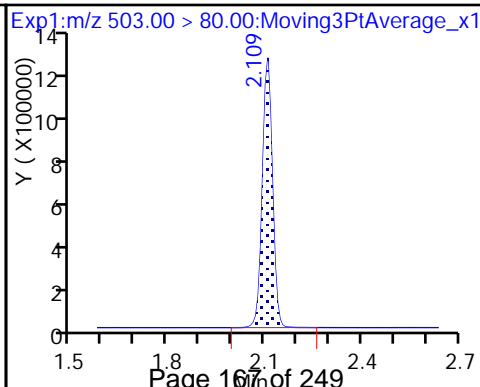
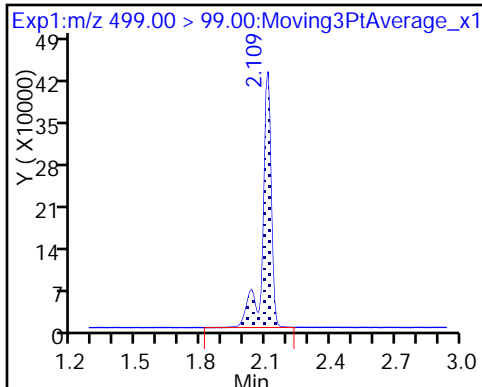
8 Perfluorooctane sulfonic acid (M)



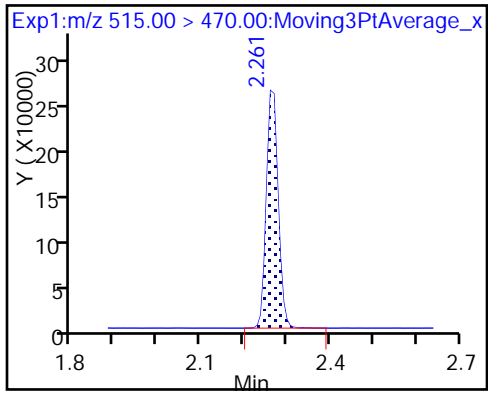
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

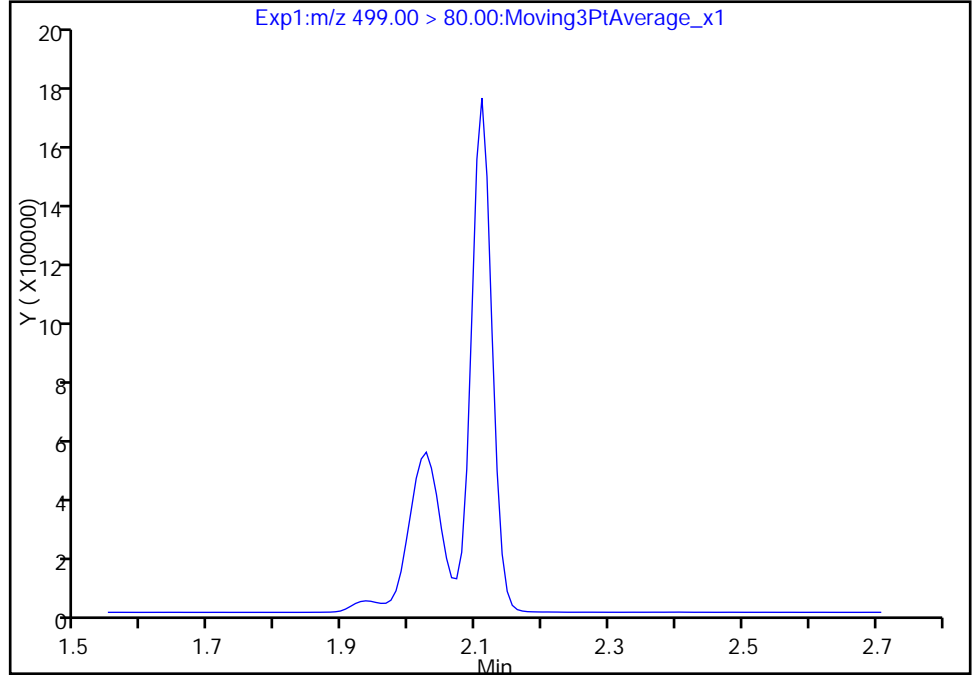
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_008.d
Injection Date: 16-Feb-2018 09:14:23 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

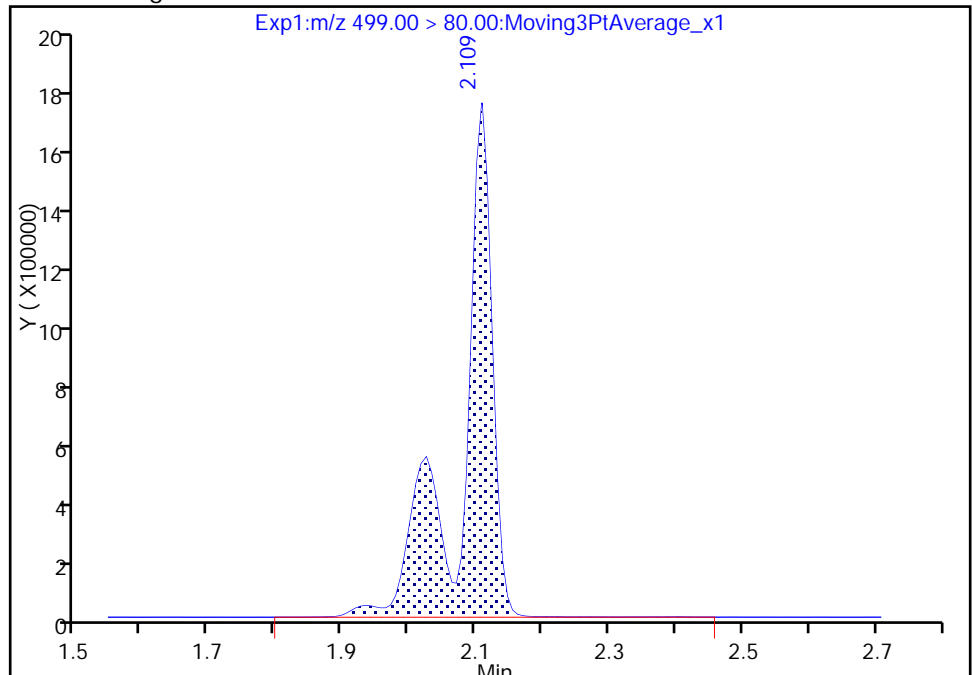
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 5544581
Amount: 61.762790
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:30:47

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 16-Feb-2018 09:19:04 ALS Bottle#: 6 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:34 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:31:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	16112512	179.6		29614	
298.90 > 99.00	1.381	1.381	0.0	1.000	12540779		1.28(0.00-0.00)	25956	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1037300	10.6		12797	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	9203547	59.7		15723	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	1755879	20.3		523	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.859	0.0		892615	10.0		10354	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.860	-0.001	1.000	3415564	39.8		147	
413.00 > 169.00	1.859	1.860	-0.001	1.000	1839701		1.86(0.00-0.00)	325	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	7252490	80.1		13357	a
499.00 > 99.00	2.109	2.109	0.0	1.000	1559390		4.65(0.00-0.00)	2143	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2745419	28.7		10250	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	2211715	40.3		388	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	480980	10.3		5555	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L6_00021

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Injection Date: 16-Feb-2018 09:19:04

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

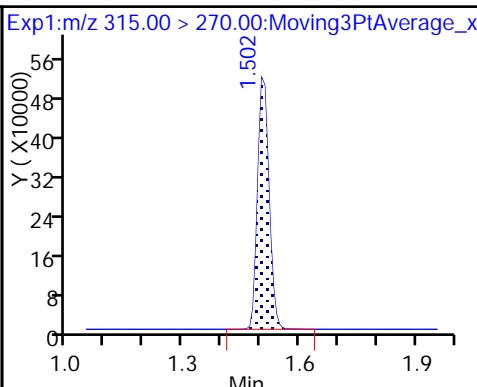
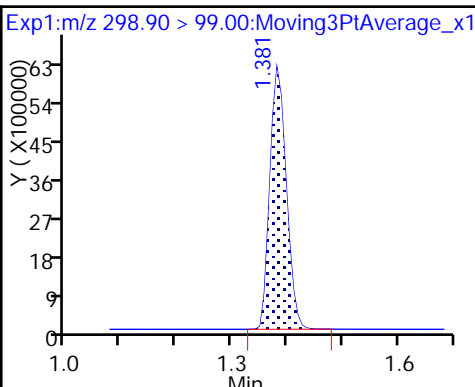
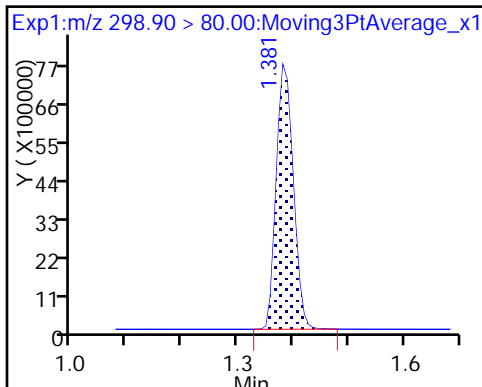
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

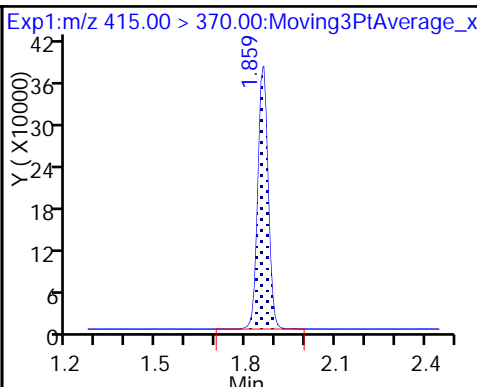
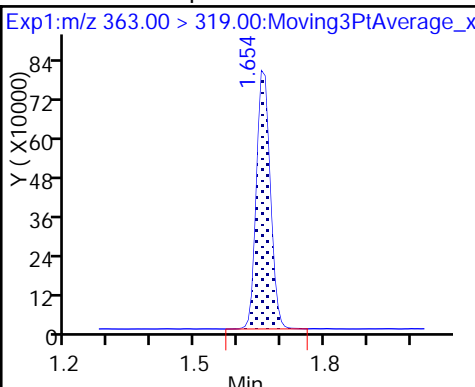
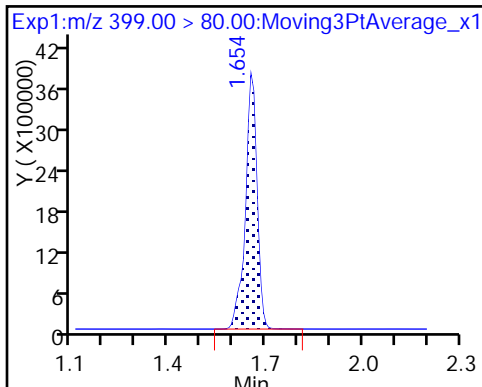
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

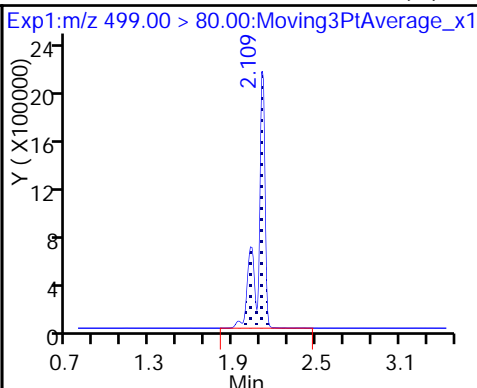
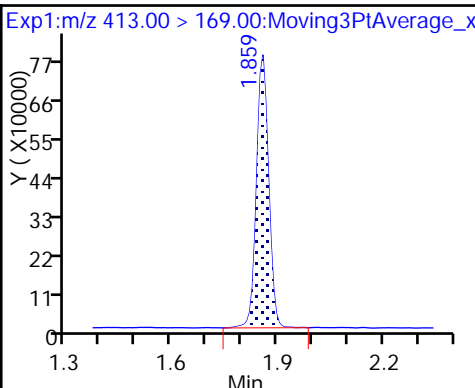
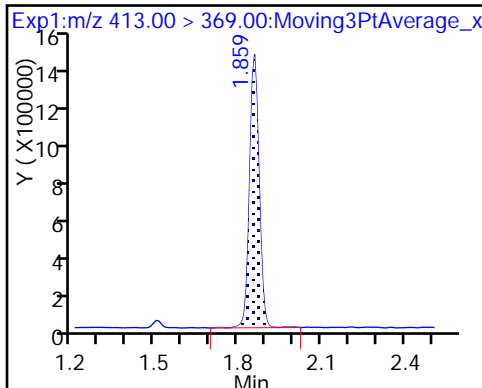
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

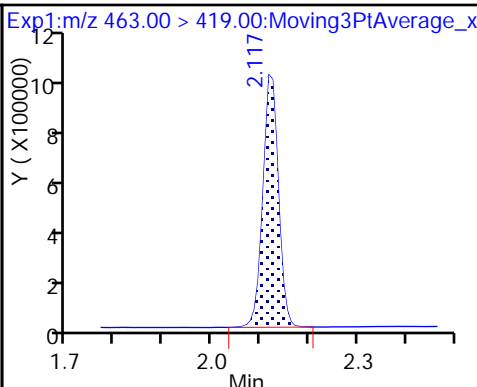
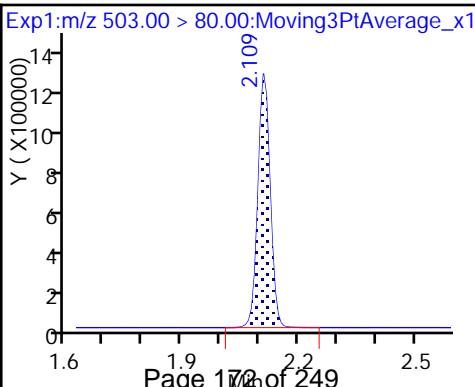
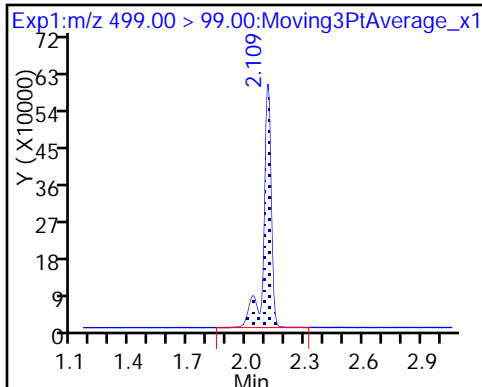
8 Perfluorooctane sulfonic acid (M)



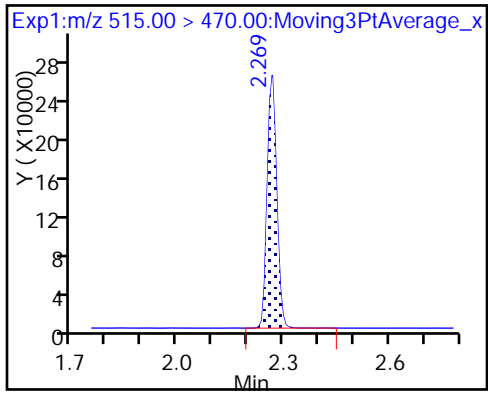
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

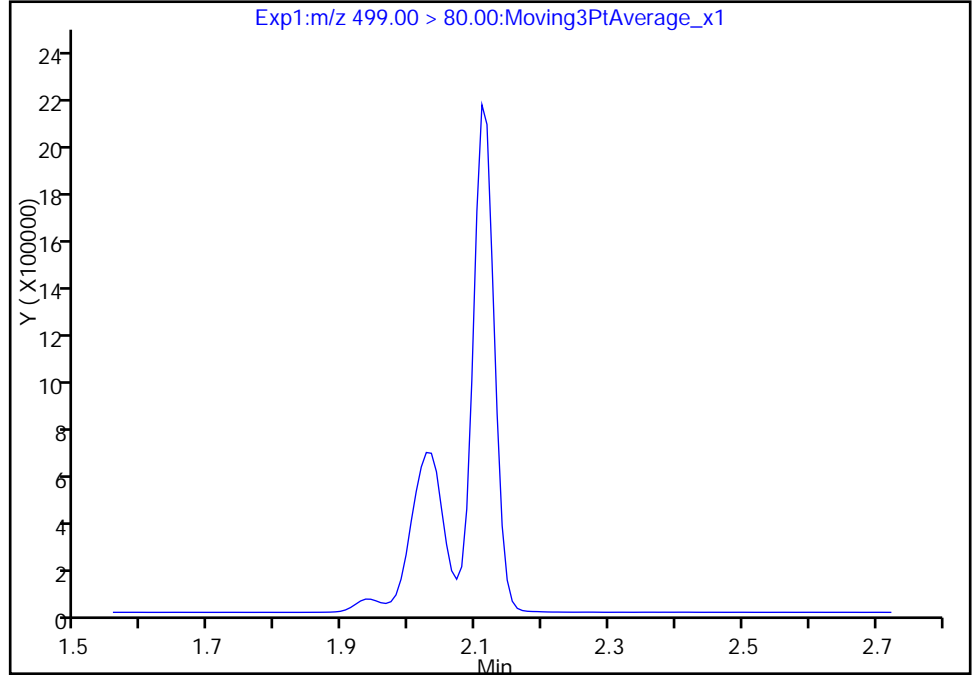
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
Injection Date: 16-Feb-2018 09:19:04 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

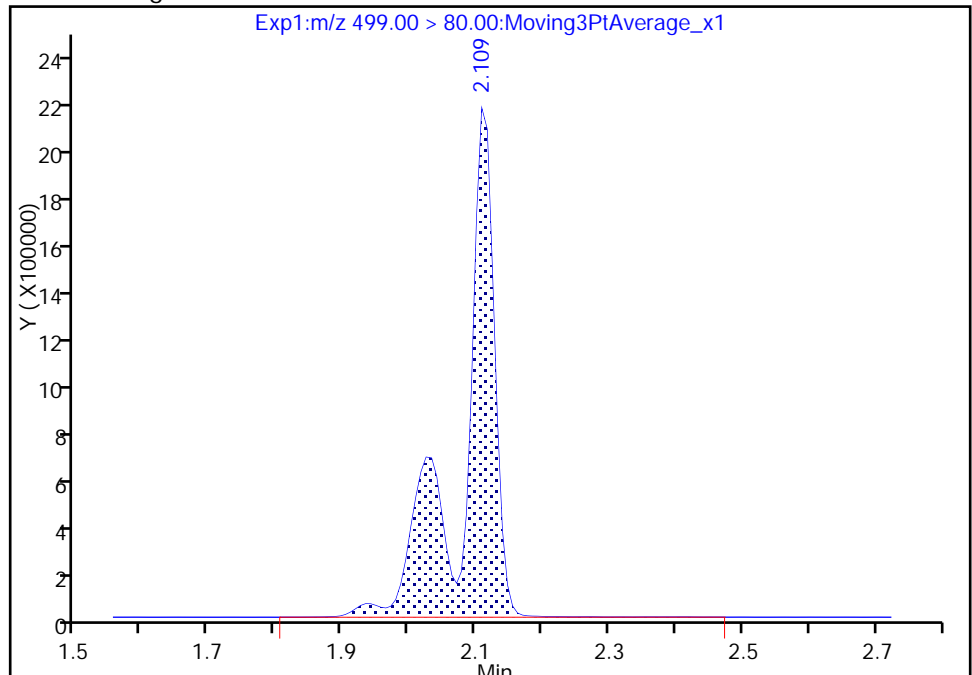
Not Detected
Expected RT: 2.11

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 7252490
Amount: 80.127031
Amount Units: ng/ml



Reviewer: roycea, 16-Feb-2018 10:31:12
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-208773/11 Calibration Date: 02/16/2018 09:28
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.238		19.4	20.0	-3.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9284		2.12	2.22	-4.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.706		7.07	6.67	6.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9302		4.32	4.47	-3.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9736		9.19	8.93	3.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.5986		4.32	4.45	-2.7	50.0
13C2 PFHxA	Ave	1.100	1.037		9.43	10.0	-5.7	30.0
13C2 PFDA	Ave	0.5243	0.5013		9.56	10.0	-4.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_011.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 16-Feb-2018 09:28:24 ALS Bottle#: 2 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub1
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:36 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:36:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.381	0.007	1.000	2300149	19.4		12090	
298.90 > 99.00	1.388	1.381	0.007	1.000	1585029		1.45(0.00-0.00)	6015	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	990640	9.43		13893	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.656	0.006	1.000	1056475	7.07		2665	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.658	0.004	1.000	197137	2.12		57.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.859	0.007		955394	10.0		10789	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.860	0.006	1.000	397164	4.32		16.3	
413.00 > 169.00	1.866	1.860	0.006	1.000	222384		1.79(0.00-0.00)	35.2	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	807120	9.19		1576	a
499.00 > 99.00	2.117	2.109	0.008	1.000	176184		4.58(0.00-0.00)	256	a
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.114	0.003		2663428	28.7		10092	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.122	0.002	1.000	254268	4.32		47.5	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.270	-0.002	1.000	478905	9.56		4880	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L2_00021

Amount Added: 1.00

Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_011.d

Injection Date: 16-Feb-2018 09:28:24

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

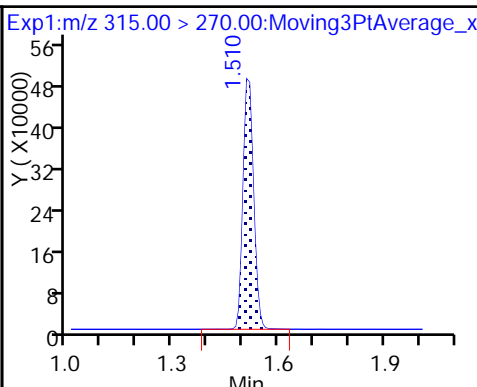
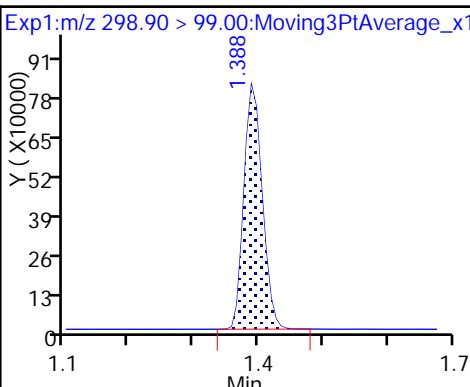
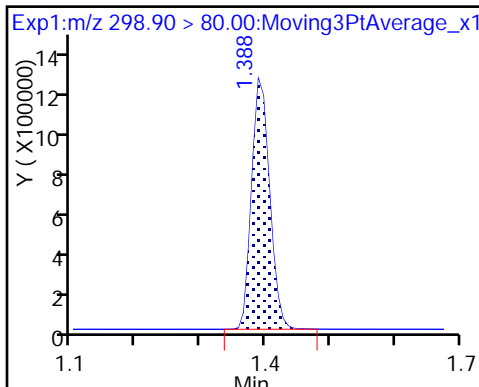
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

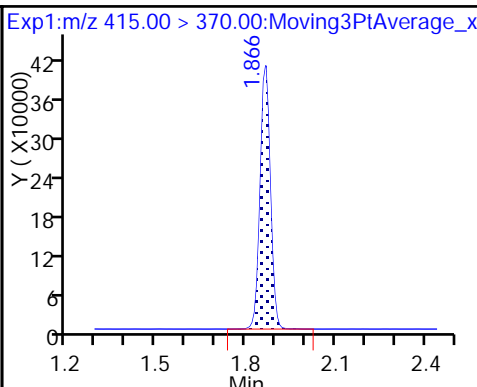
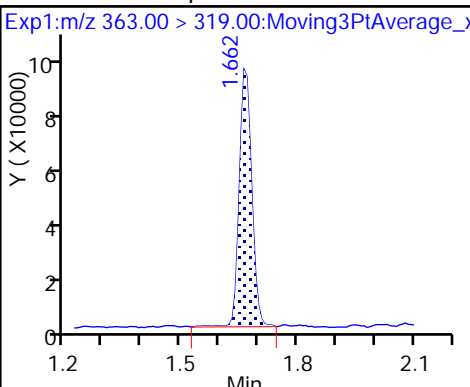
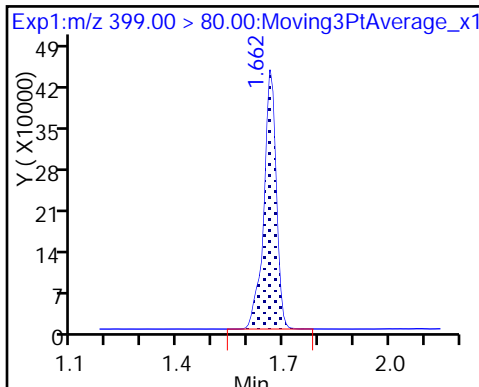
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

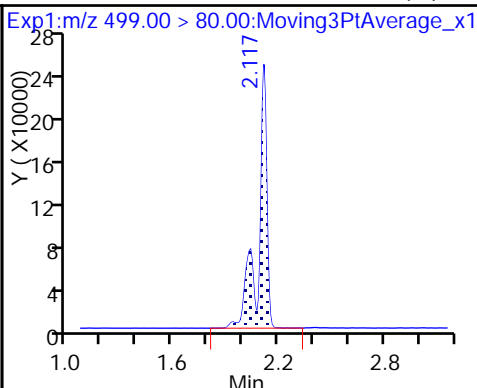
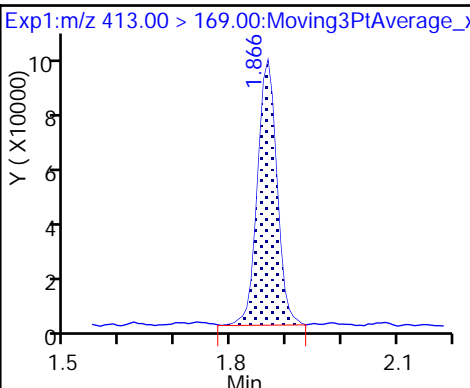
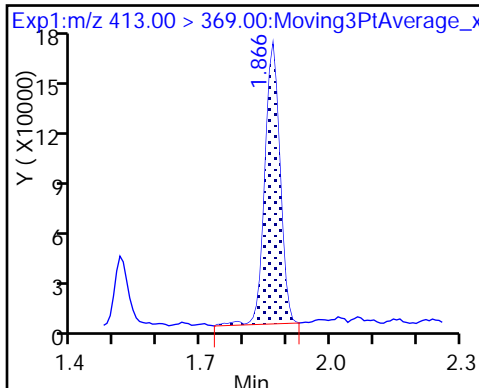
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

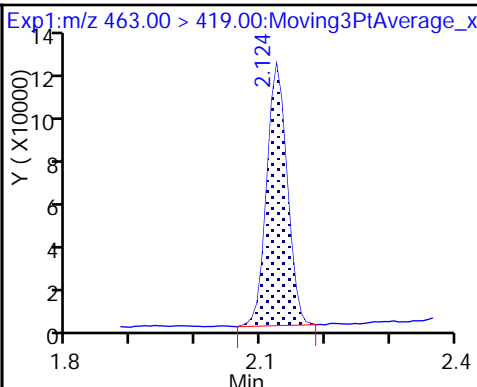
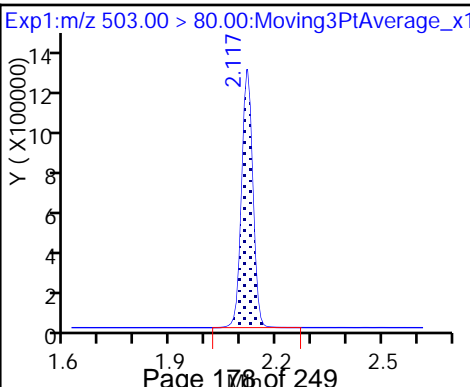
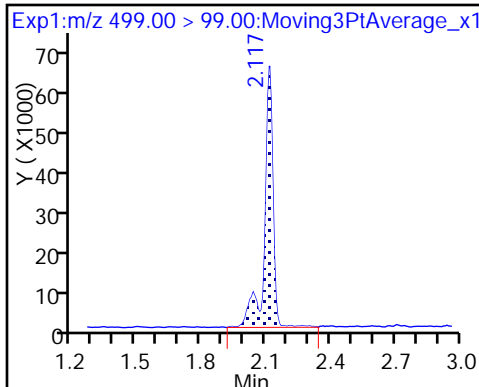
8 Perfluorooctane sulfonic acid (M)



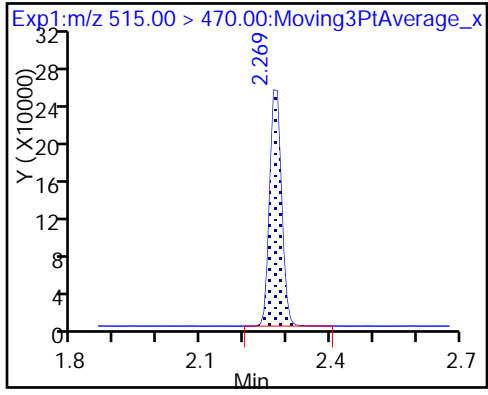
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

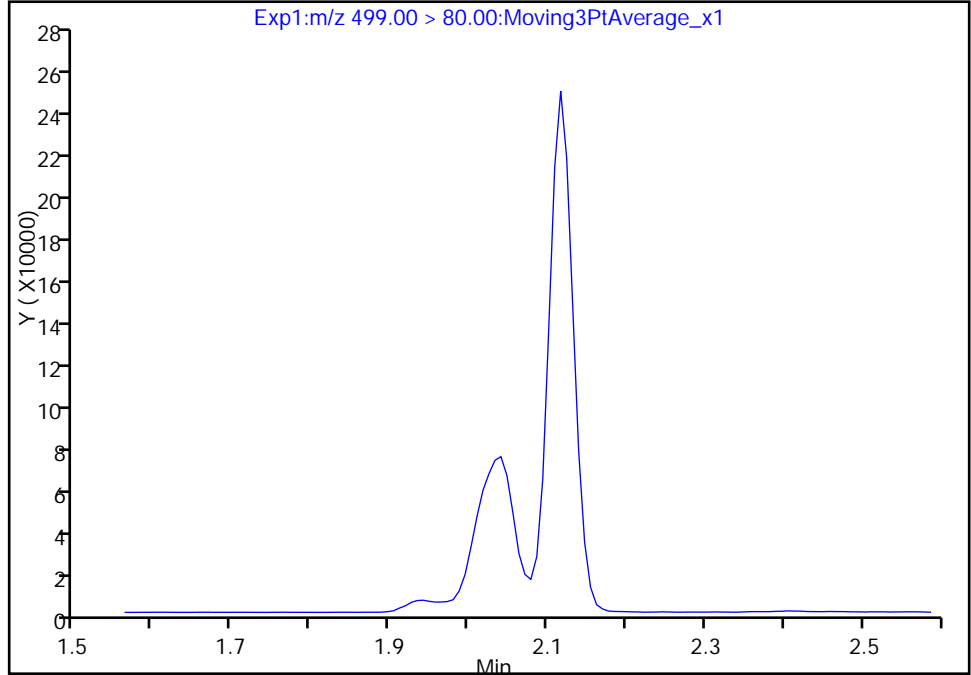
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_011.d
Injection Date: 16-Feb-2018 09:28:24 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

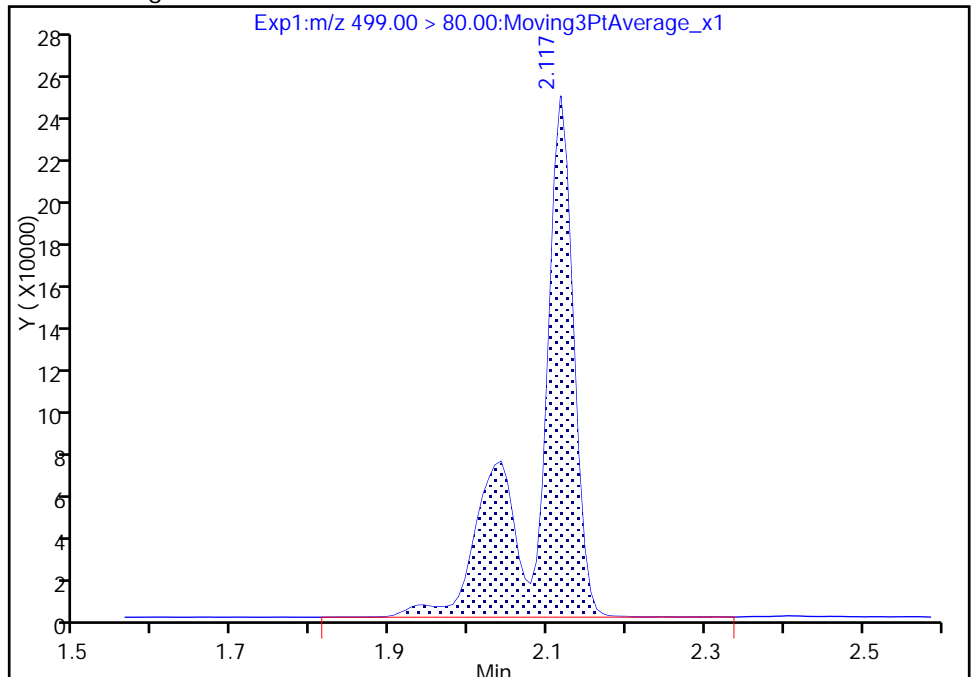
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.12
Area: 807120
Amount: 9.191739
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:36:29
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: ICV 320-208773/13 Calibration Date: 02/16/2018 09:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.108		100	100	0.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.997		10.3	10.0	2.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.686		21.1	20.2	4.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.8998		18.9	20.2	-6.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9852		21.0	20.2	4.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6774		22.2	20.2	10.1	30.0
13C2 PFHxA	Ave	1.100	1.125		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.5243	0.5347		10.2	10.0	2.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 16-Feb-2018 09:37:44 ALS Bottle#: 7 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Feb-2018 10:55:38 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK013

First Level Reviewer: roycea Date: 16-Feb-2018 10:38:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	10449615	100.3		32318	
298.90 > 99.00	1.381	1.381	0.0	1.000	7853681		1.33(0.00-0.00)	23897	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1001724	10.2		14259	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.656	-0.002	1.000	3204604	21.1		7050	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.658	-0.004	1.000	887129	10.3		270	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.859	-0.008		890238	10.0		9142	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.860	-0.009	1.000	1615503	18.9		66.9	
413.00 > 169.00	1.851	1.860	-0.009	1.000	895357		1.80(0.00-0.00)	148	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1873112	21.0		3471	a
499.00 > 99.00	2.109	2.109	0.0	1.000	375247		4.99(0.00-0.00)	509	a
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.114	-0.005		2703377	28.7		9042	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.122	-0.005	1.000	1215919	22.2		251	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.270	-0.009	1.000	475984	10.2		4647	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-ICV_00030

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_013.d

Injection Date: 16-Feb-2018 09:37:44

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

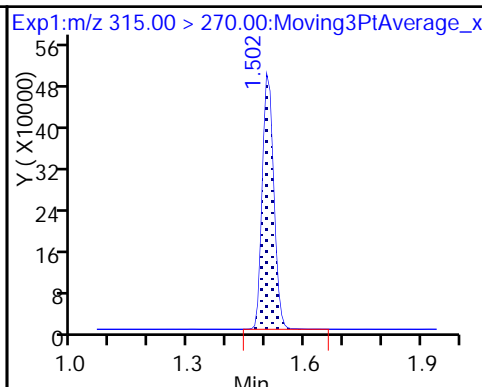
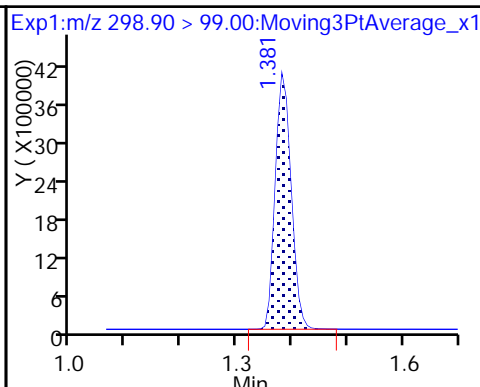
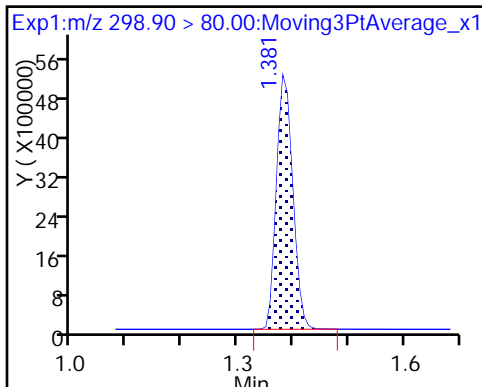
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

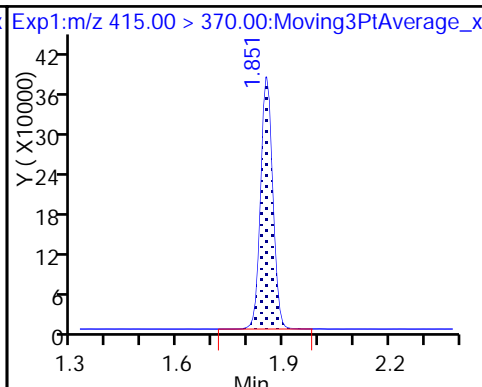
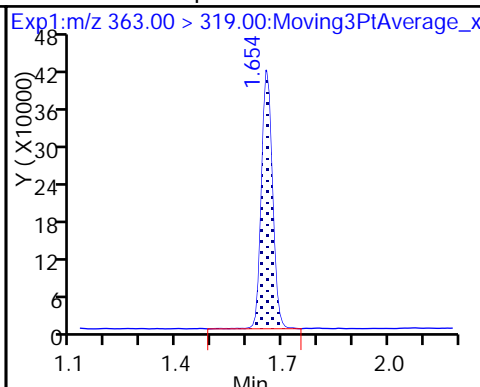
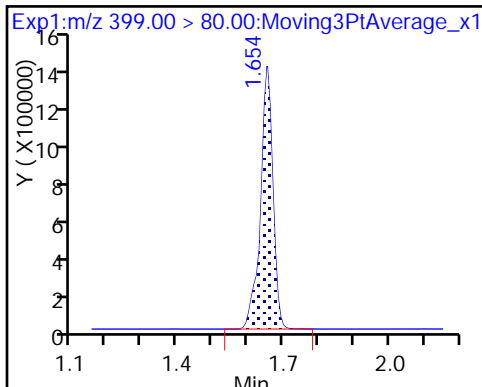
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

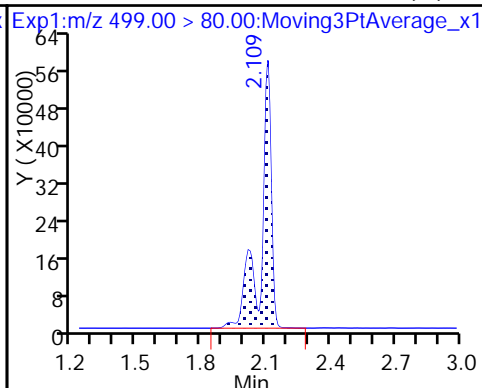
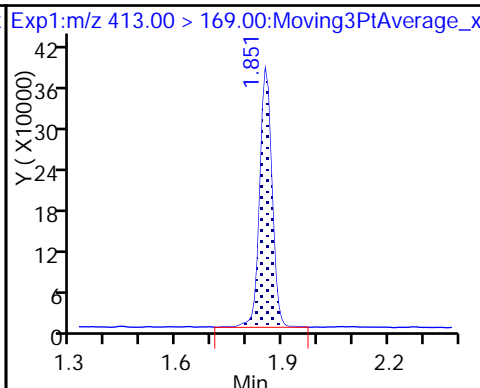
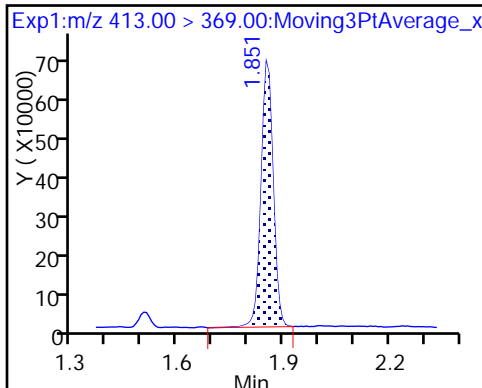
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

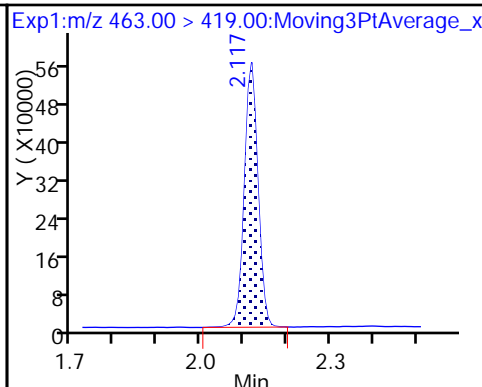
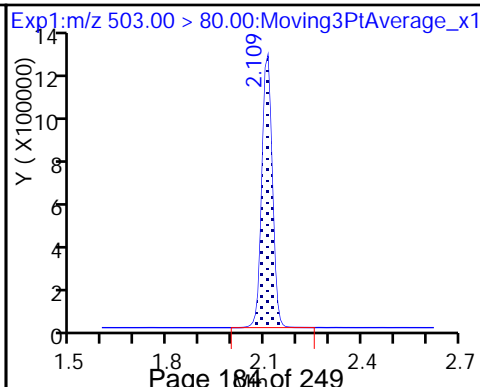
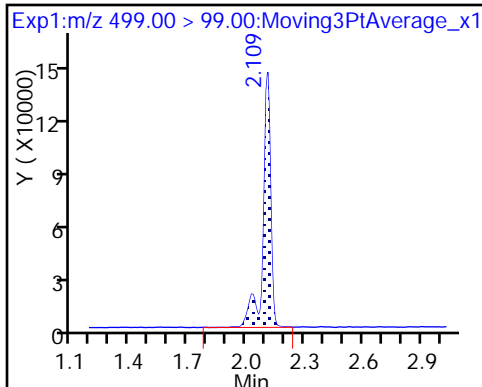
8 Perfluorooctane sulfonic acid (M)



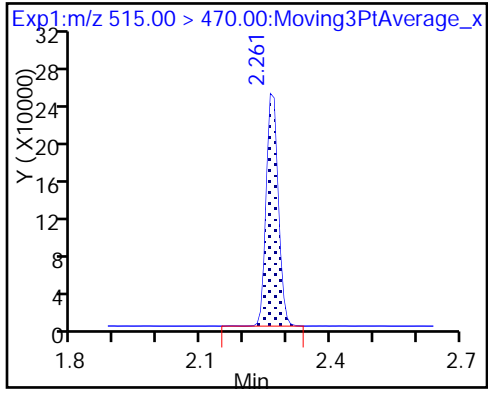
8 Perfluorooctane sulfonic acid

* 7 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

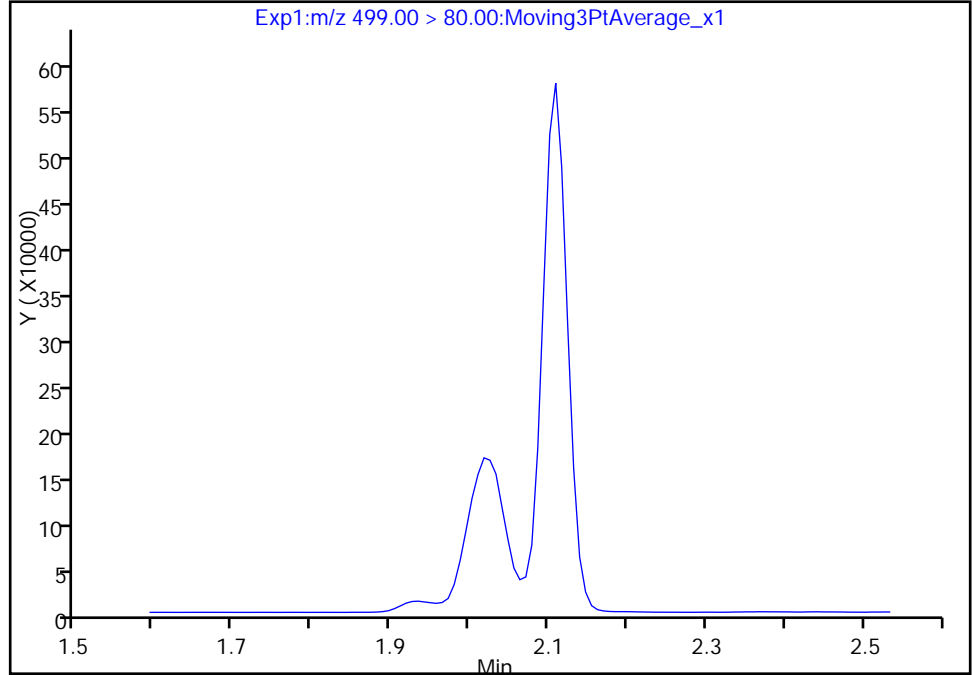
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_013.d
Injection Date: 16-Feb-2018 09:37:44 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

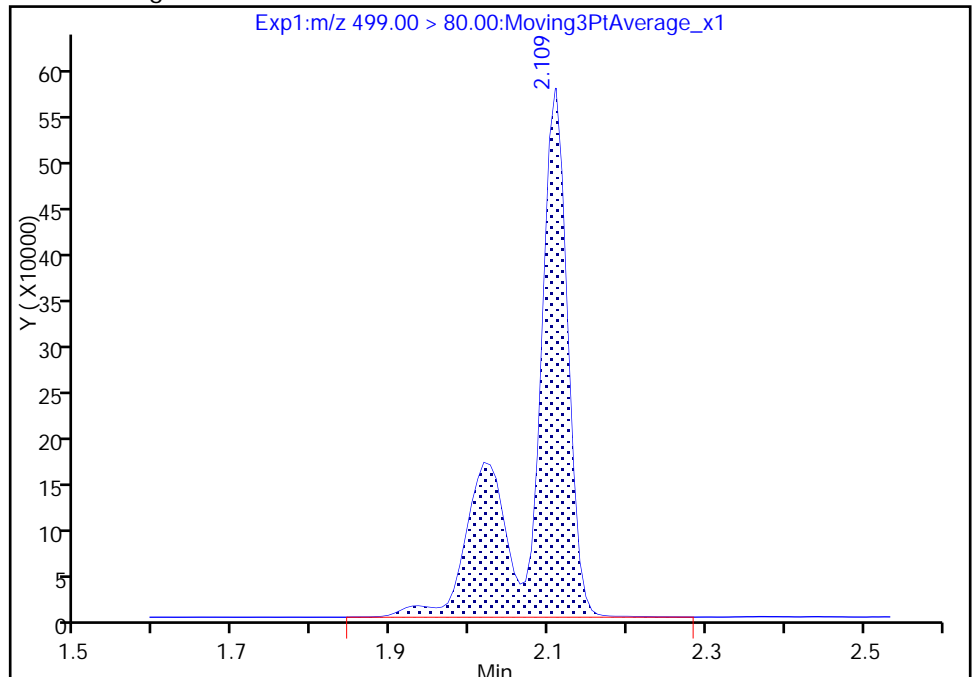
Not Detected
Expected RT: 2.11

Processing Integration Results



RT: 2.11
Area: 1873112
Amount: 21.016369
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 16-Feb-2018 10:37:38
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208812/1 Calibration Date: 02/16/2018 13:50
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_537C_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.169		42.9	45.0	-4.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.053		5.42	5.00	8.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.613		15.0	15.0	0.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9755		10.2	10.1	1.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9542		20.3	20.1	0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7222		11.7	10.0	17.4	30.0
13C2 PFHxA	Ave	1.100	1.164		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.5243	0.5611		10.7	10.0	7.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_028.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Feb-2018 13:50:26 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\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:43:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	5839955	42.9		28453	
298.90 > 99.00	1.358	1.358	0.0	1.000	4125048		1.42(0.00-0.00)	10766	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	1166779	10.6		14391	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	2686229	15.0		6243	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	527879	5.42		140	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		1002709	10.0		10681	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	983531	10.2		35.0	
413.00 > 169.00	1.798	1.798	0.0	1.000	558632		1.76(0.00-0.00)	92.3	
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		3182424	28.7		11604	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.056	2.048	0.008	1.000	2126628	20.3		5222	a
499.00 > 99.00	2.056	2.048	0.008	1.000	459503		4.63(0.00-0.00)	383	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.064	2.064	0.0	1.000	724431	11.7		126	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	562656	10.7		5961	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_028.d

Injection Date: 16-Feb-2018 13:50:26

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

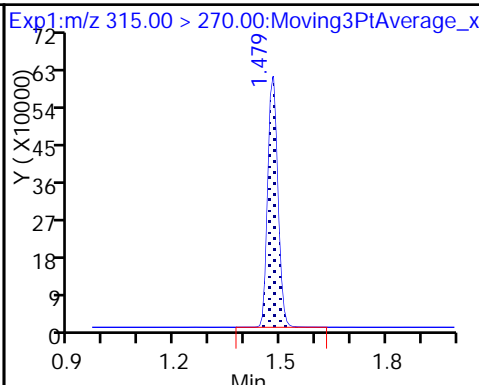
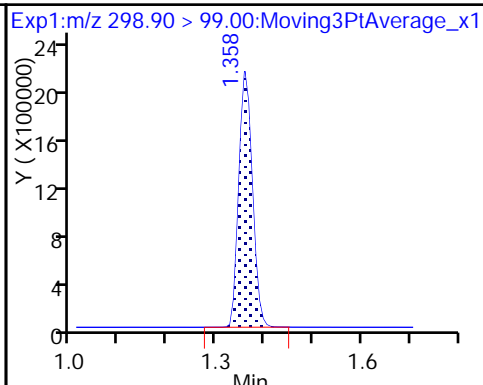
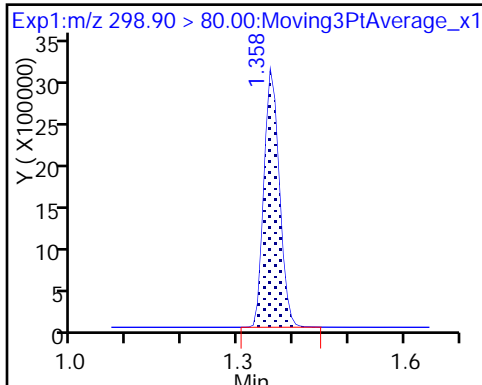
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

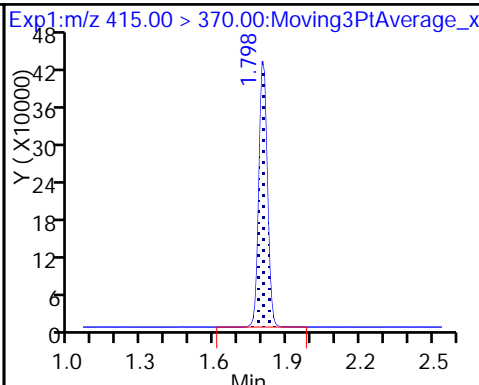
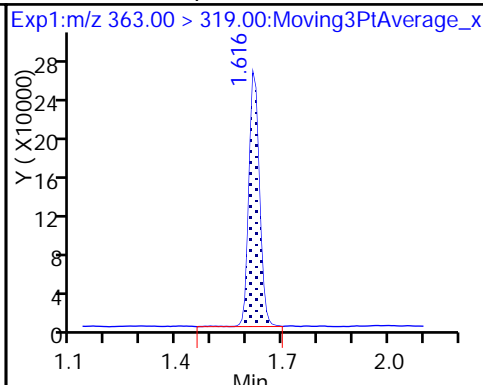
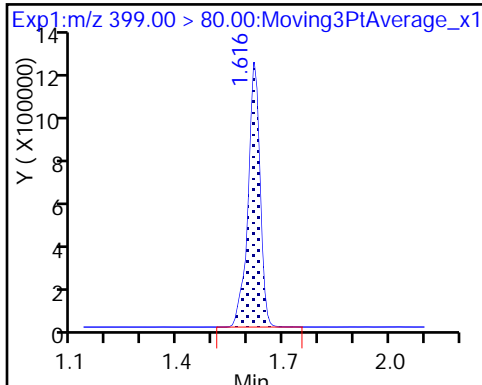
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

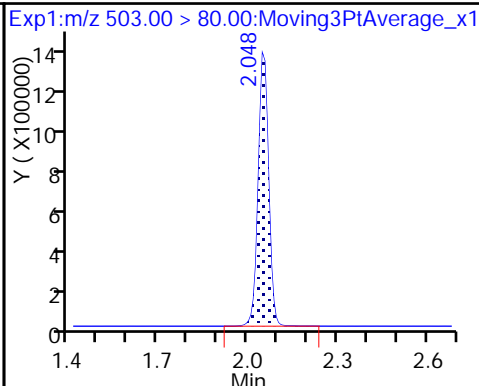
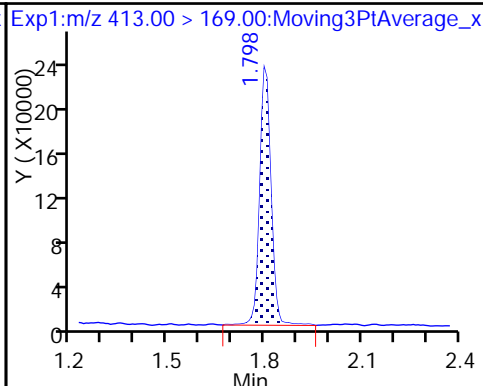
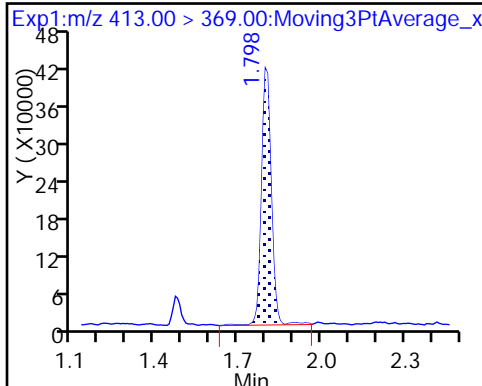
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

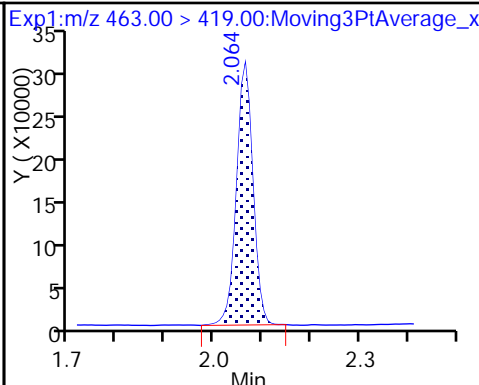
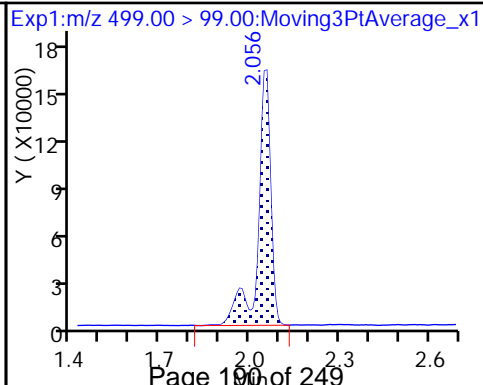
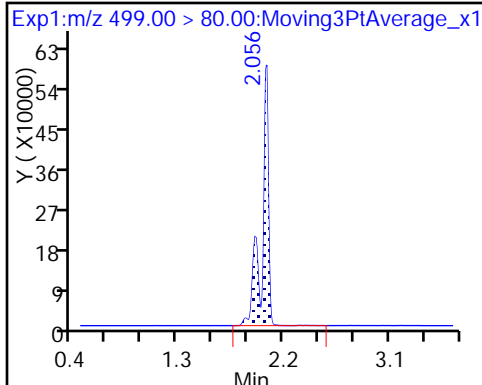
* 7 13C4 PFOS



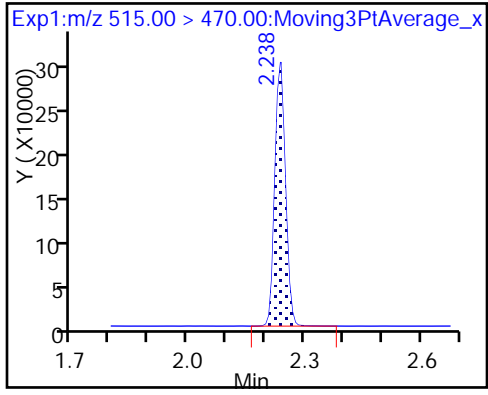
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

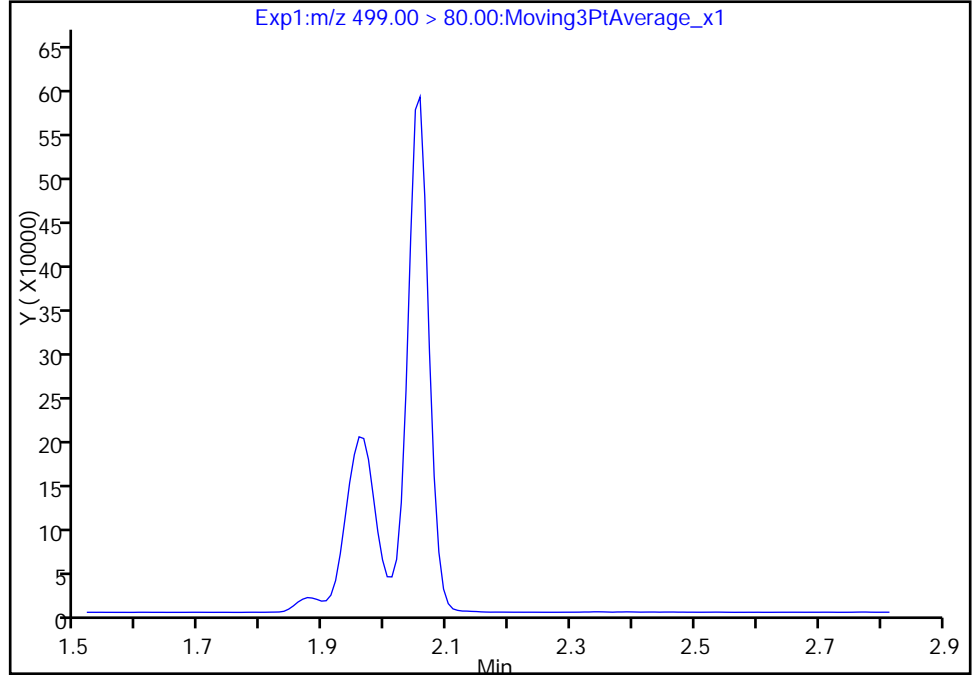
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_028.d
Injection Date: 16-Feb-2018 13:50:26 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

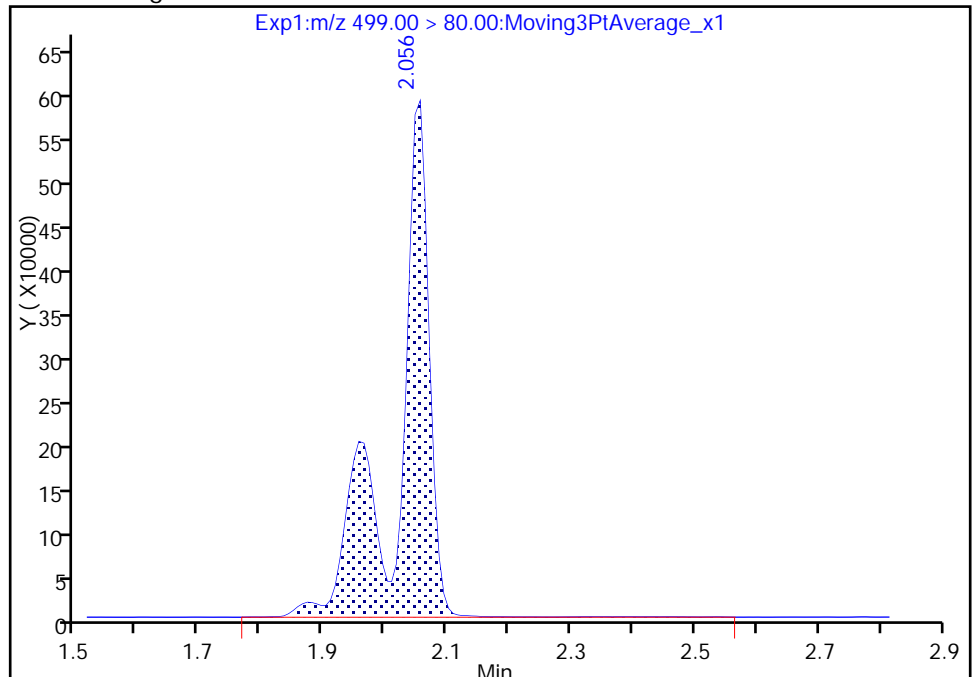
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.06
Area: 2126628
Amount: 20.269080
Amount Units: ng/ml



Reviewer: roycea, 17-Feb-2018 09:43:23

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208812/11 Calibration Date: 02/16/2018 14:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_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		1.001		130	135	-4.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.000		15.4	15.0	2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.643		45.9	45.0	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9818		30.8	30.2	2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.996		63.5	60.3	5.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6772		33.0	30.0	10.0	30.0
13C2 PFHxA	Ave	1.100	1.111		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.5243	0.5358		10.2	10.0	2.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208836/11 Calibration Date: 02/16/2018 14:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_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		1.001		130	135	-4.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.000		15.4	15.0	2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.643		45.9	45.0	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9818		30.8	30.2	2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.996		63.5	60.3	5.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6772		33.0	30.0	10.0	30.0
13C2 PFHxA	Ave	1.100	1.111		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.5243	0.5358		10.2	10.0	2.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_038.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Feb-2018 14:37:09 ALS Bottle#: 5 Worklist Smp#: 11
 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\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:47:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	13376232	129.5		38915	
298.90 > 99.00	1.358	1.358	0.0	1.000	10267931		1.30(0.00-0.00)	21749	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	1056175	10.1		12673	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	7317219	45.9		14895	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	1425366	15.4		367	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		950489	10.0		10127	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	2814970	30.8		110	
413.00 > 169.00	1.798	1.798	0.0	1.000	1488083		1.89(0.00-0.00)	253	
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		2838162	28.7		8072	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	5940005	63.5		11250	a
499.00 > 99.00	2.048	2.048	0.0	1.000	1220436		4.87(0.00-0.00)	968	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.064	2.064	0.0	1.000	1931617	33.0		277	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	509259	10.2		6174	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_038.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Feb-2018 14:37:09 ALS Bottle#: 5 Worklist Smp#: 11
 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\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:28 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:47:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	13376232	129.5		38915	
298.90 > 99.00	1.358	1.358	0.0	1.000	10267931		1.30(0.00-0.00)	21749	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	1056175	10.1		12673	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	7317219	45.9		14895	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	1425366	15.4		367	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		950489	10.0		10127	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	2814970	30.8		110	
413.00 > 169.00	1.798	1.798	0.0	1.000	1488083		1.89(0.00-0.00)	253	
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		2838162	28.7		8072	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	5940005	63.5		11250	a
499.00 > 99.00	2.048	2.048	0.0	1.000	1220436		4.87(0.00-0.00)	968	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.064	2.064	0.0	1.000	1931617	33.0		277	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	509259	10.2		6174	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L5_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_038.d

Injection Date: 16-Feb-2018 14:37:09

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

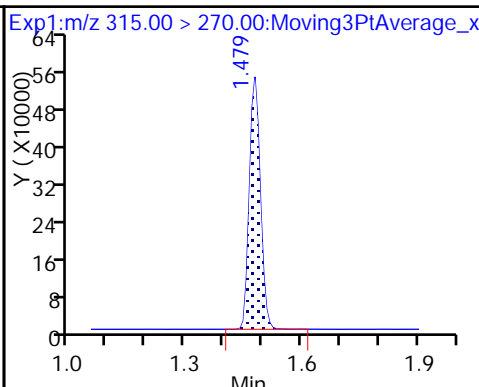
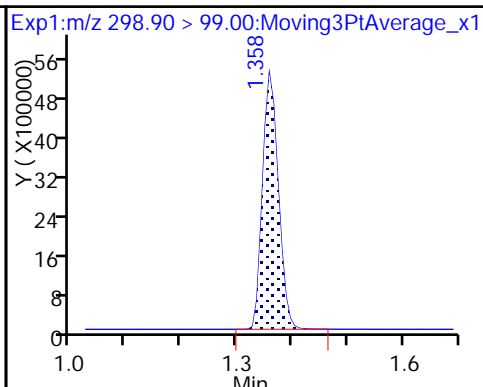
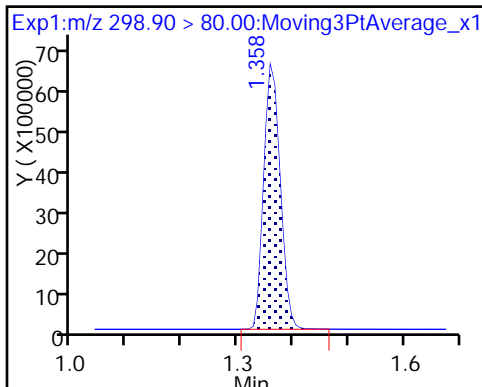
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

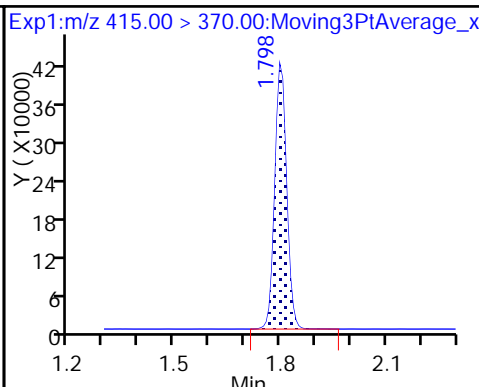
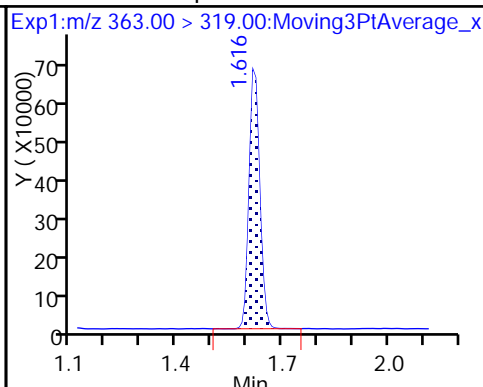
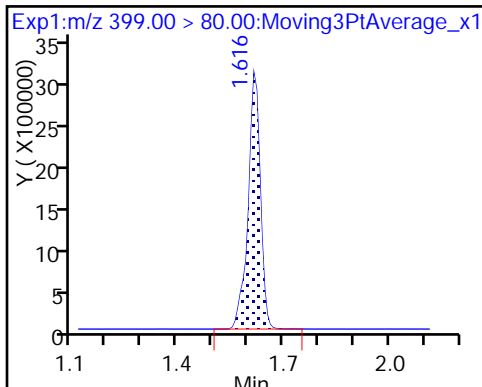
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

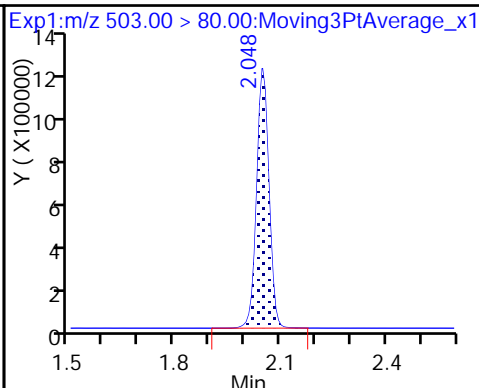
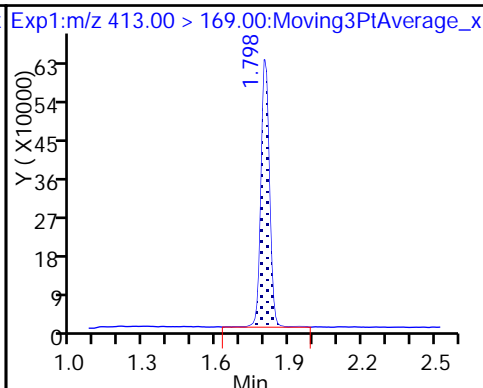
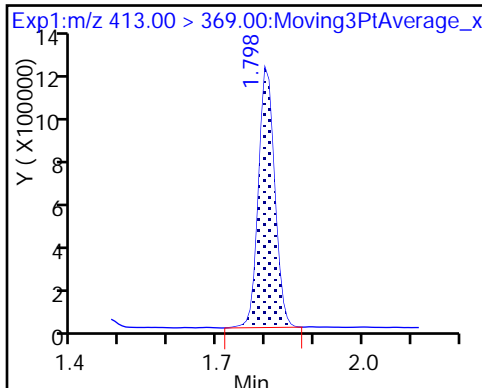
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

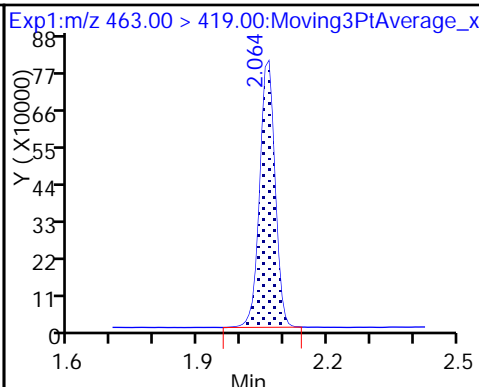
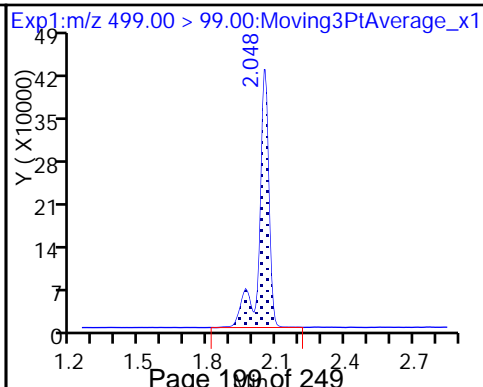
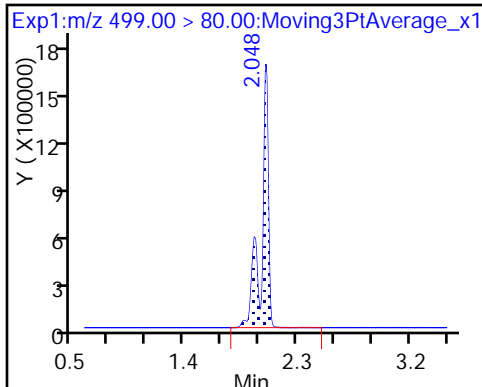
* 7 13C4 PFOS



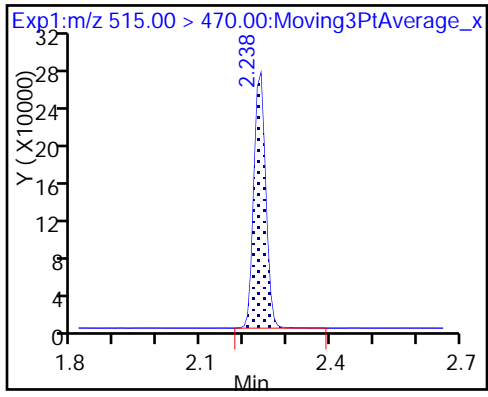
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_038.d

Injection Date: 16-Feb-2018 14:37:09

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

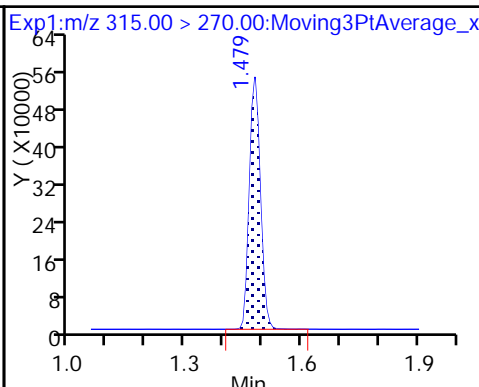
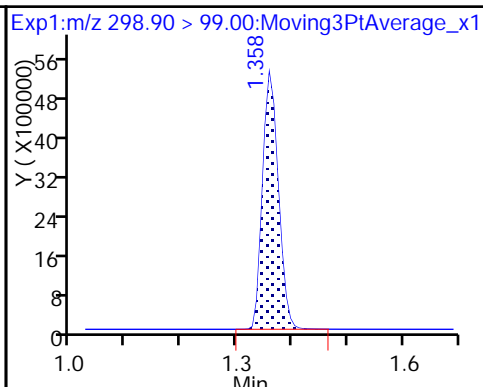
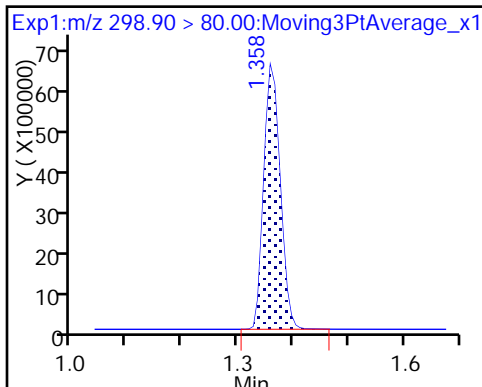
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

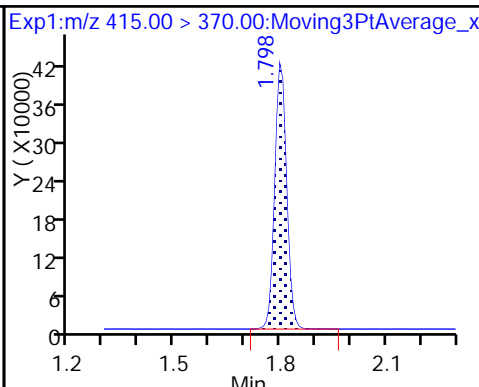
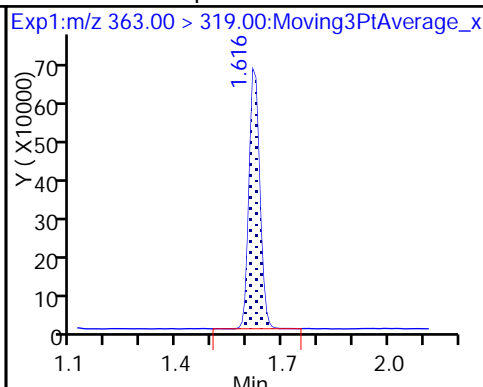
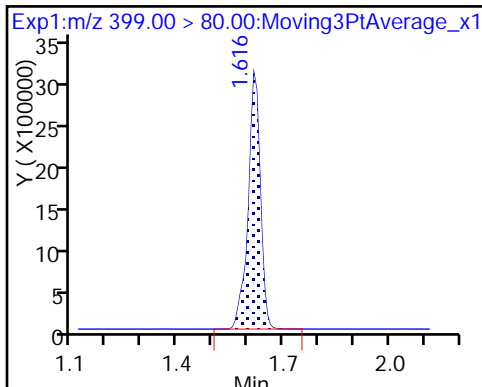
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

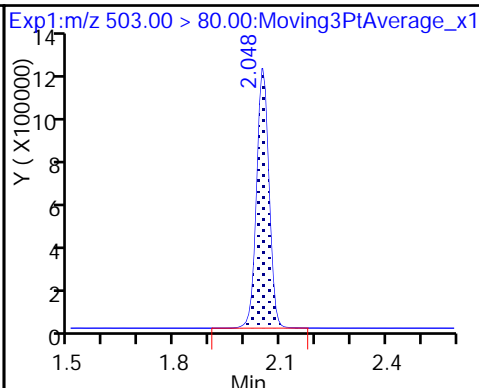
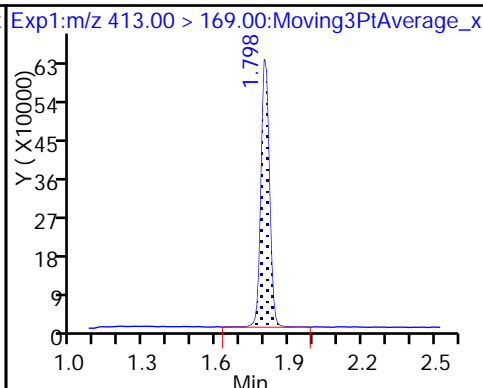
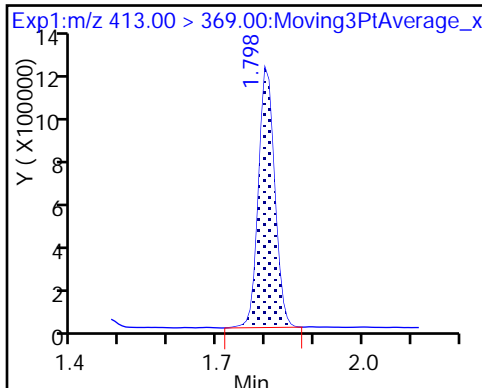
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

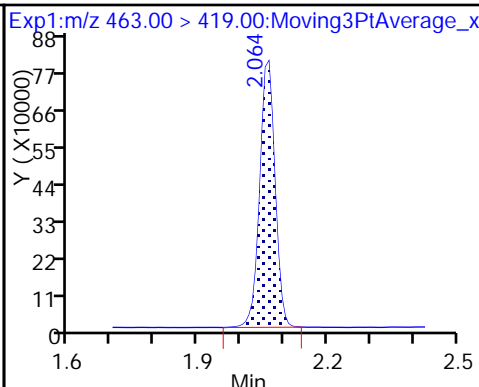
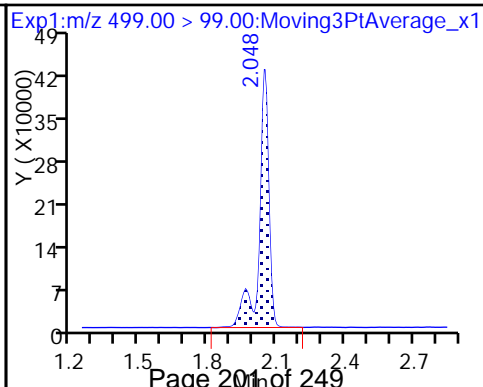
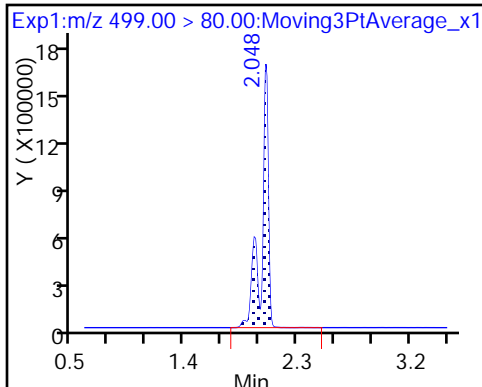
* 7 13C4 PFOS



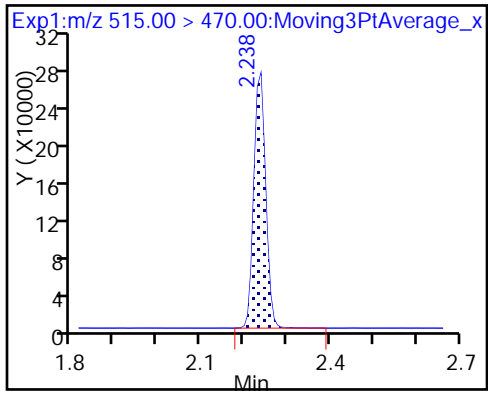
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

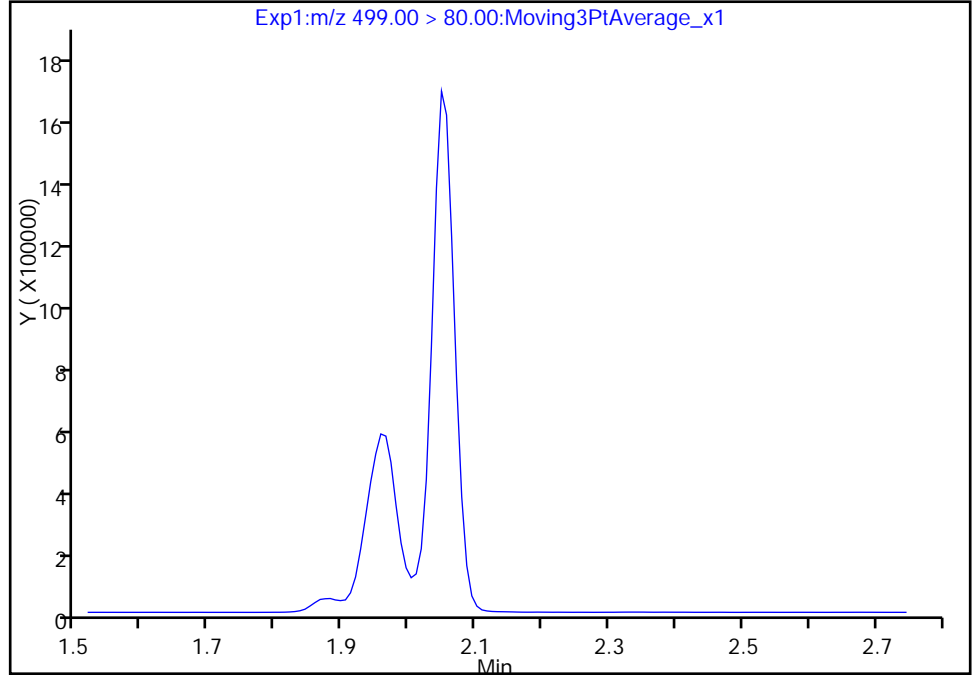
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Injection Date: 16-Feb-2018 14:37:09 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

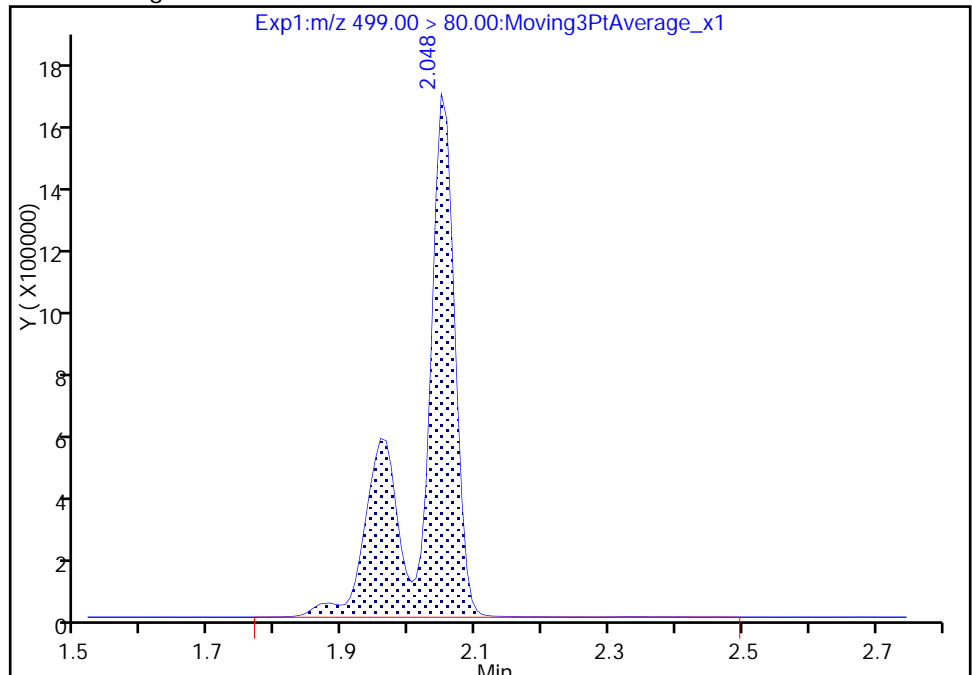
Not Detected
Expected RT: 2.05

Processing Integration Results



RT: 2.05
Area: 5940005
Amount: 63.481938
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 17-Feb-2018 09:47:26
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

TestAmerica Sacramento

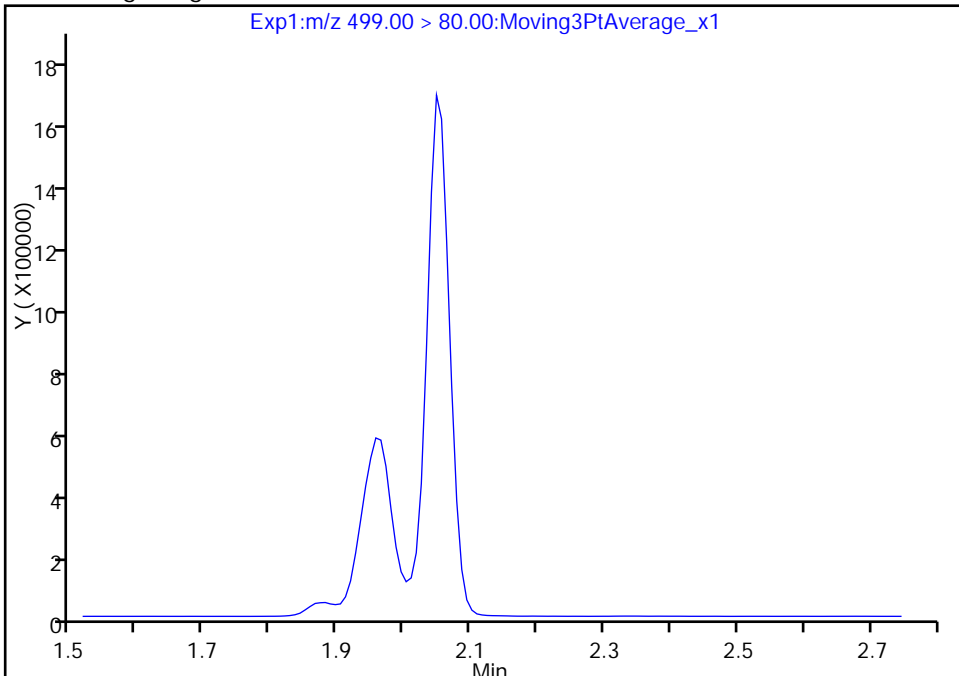
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Injection Date: 16-Feb-2018 14:37:09 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

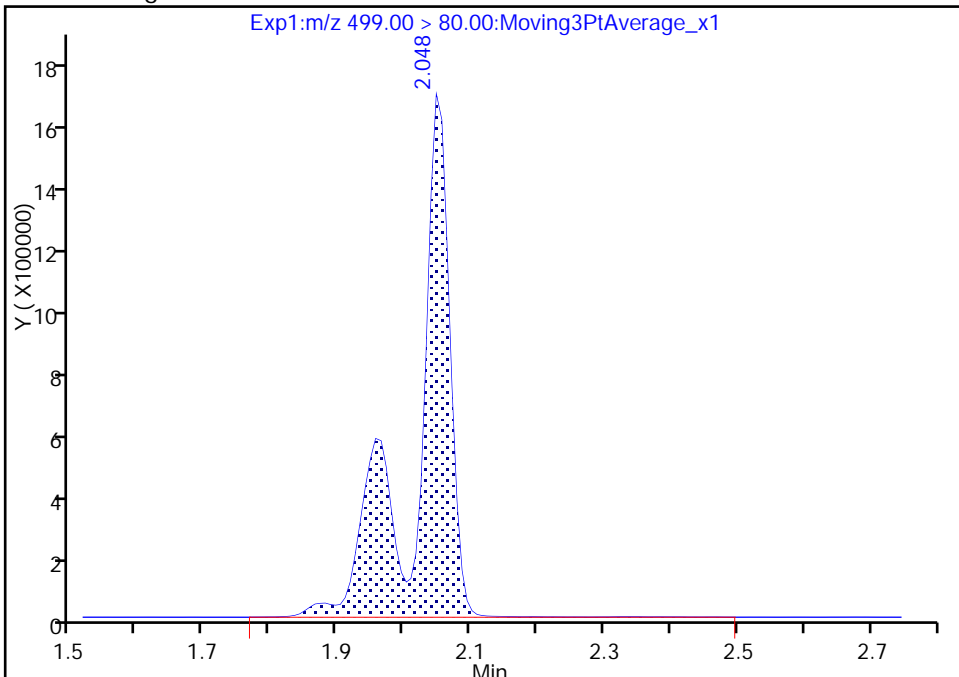
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 5940005
Amount: 63.481938
Amount Units: ng/ml



Reviewer: roycea, 17-Feb-2018 09:47:26
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208836/16 Calibration Date: 02/16/2018 15:00
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_537C_043.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.172		43.0	45.0	-4.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.645		15.3	15.0	2.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.051		5.41	5.00	8.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9767		10.2	10.1	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9602		20.4	20.1	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7174		11.7	10.0	16.6	30.0
13C2 PFHxA	Ave	1.100	1.150		10.5	10.0	4.5	30.0
13C2 PFDA	Ave	0.5243	0.5305		10.1	10.0	1.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_043.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Feb-2018 15:00:28 ALS Bottle#: 3 Worklist Smp#: 16
 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\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:26:01 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: barnettj Date: 17-Feb-2018 14:26:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.350	1.350	0.0	1.000	5288189	43.0		23395	
298.90 > 99.00	1.350	1.350	0.0	1.000	3785872		1.40(0.00-0.00)	10499	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.472	1.472	0.0	1.000	1068141	10.5		16392	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.608	1.608	0.0	1.000	2474698	15.3		5711	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	488152	5.41		124	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		928919	10.0		8758	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	912305	10.2		36.0	
413.00 > 169.00	1.798	1.798	0.0	1.000	507715		1.80(0.00-0.00)	90.4	
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		2875305	28.7		9098	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	1933446	20.4		4484	a
499.00 > 99.00	2.048	2.048	0.0	1.000	407606		4.74(0.00-0.00)	298	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.056	2.056	0.0	1.000	666630	11.7		100	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.231	2.231	0.0	1.000	492805	10.1		5490	

QC Flag Legend

Review Flags

a - User Assigned ID

Reagents:

LC537-L3_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_043.d

Injection Date: 16-Feb-2018 15:00:28

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

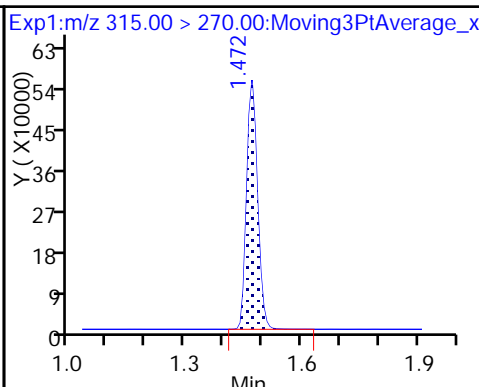
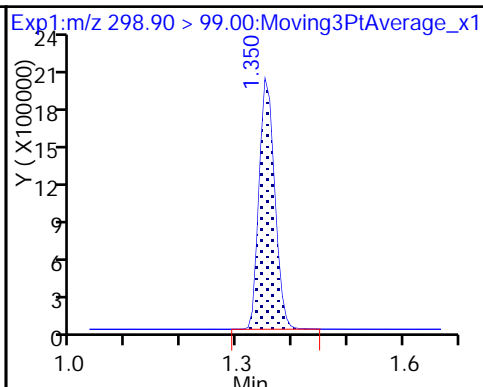
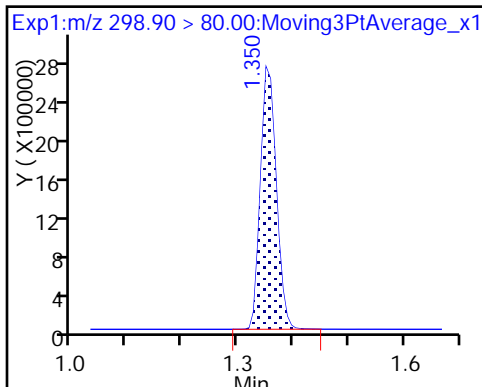
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

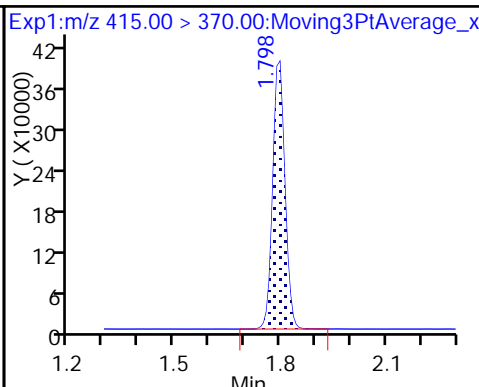
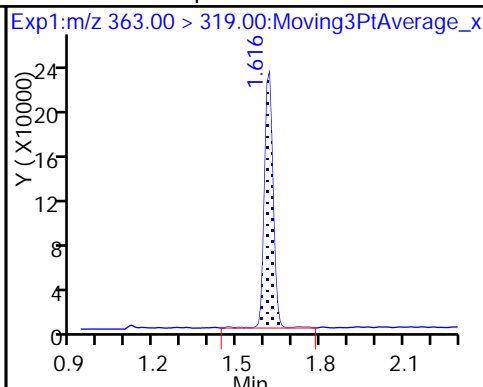
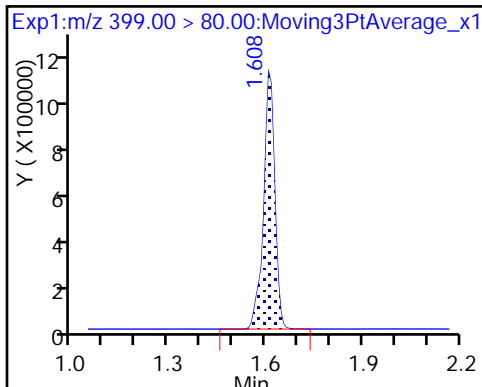
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

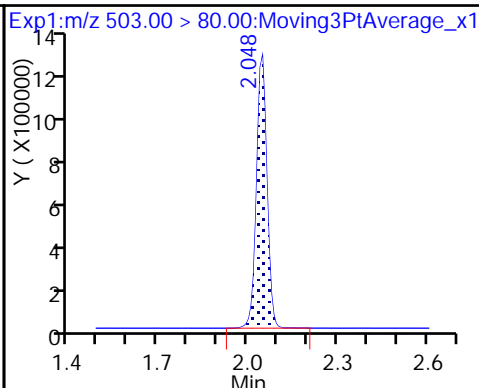
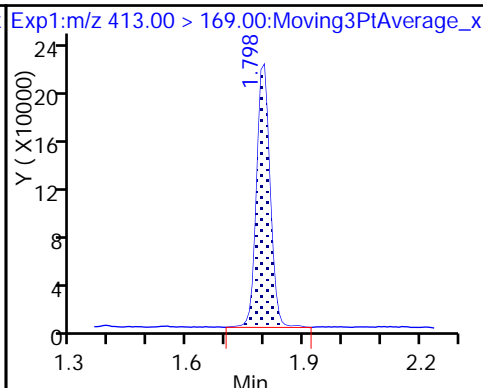
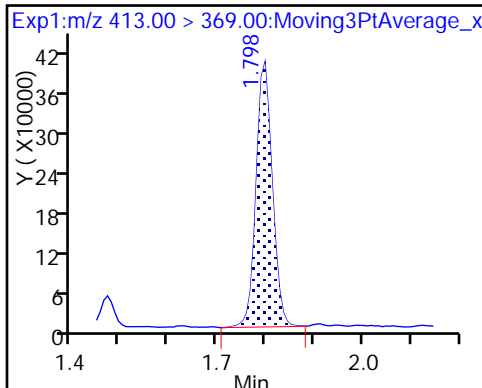
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

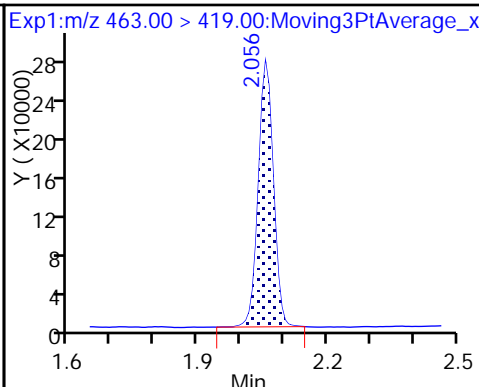
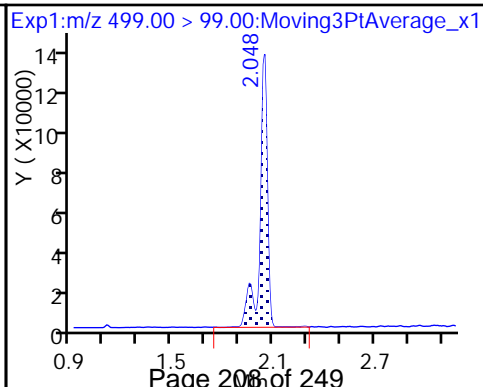
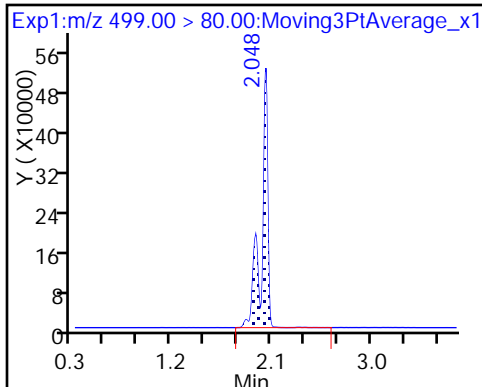
* 7 13C4 PFOS



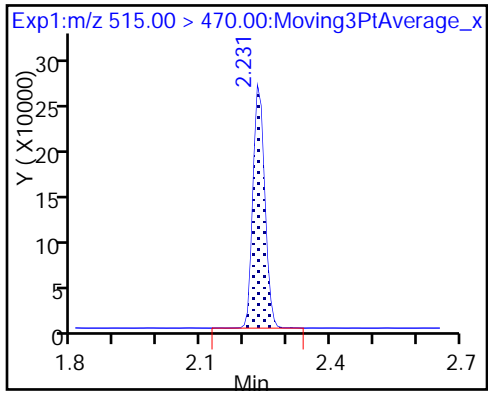
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

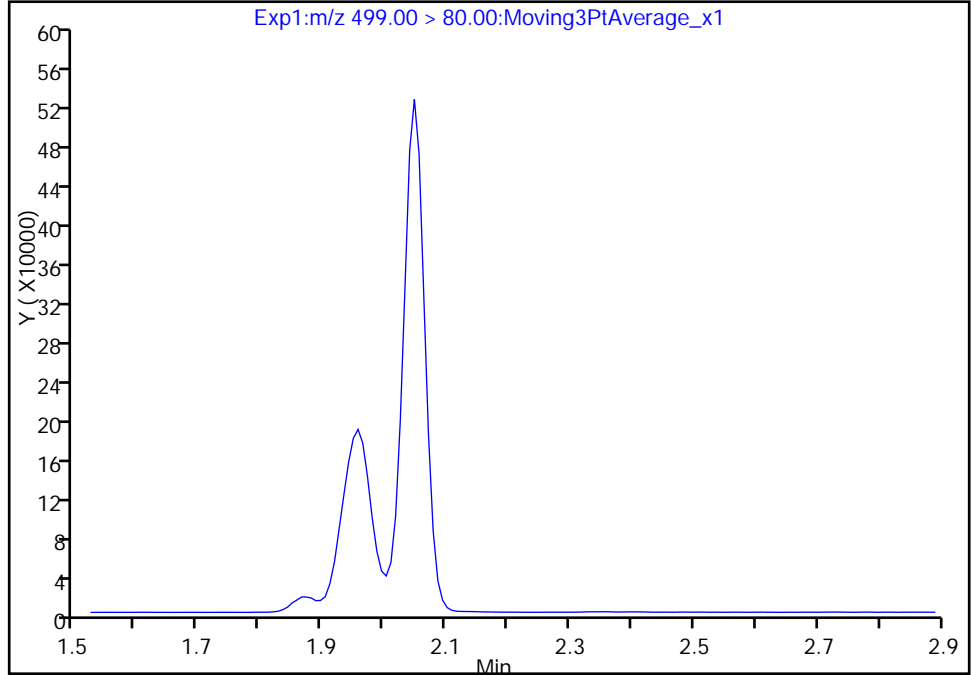
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Injection Date: 16-Feb-2018 15:00:28 Instrument ID: A8_N
Lims ID: CCV L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

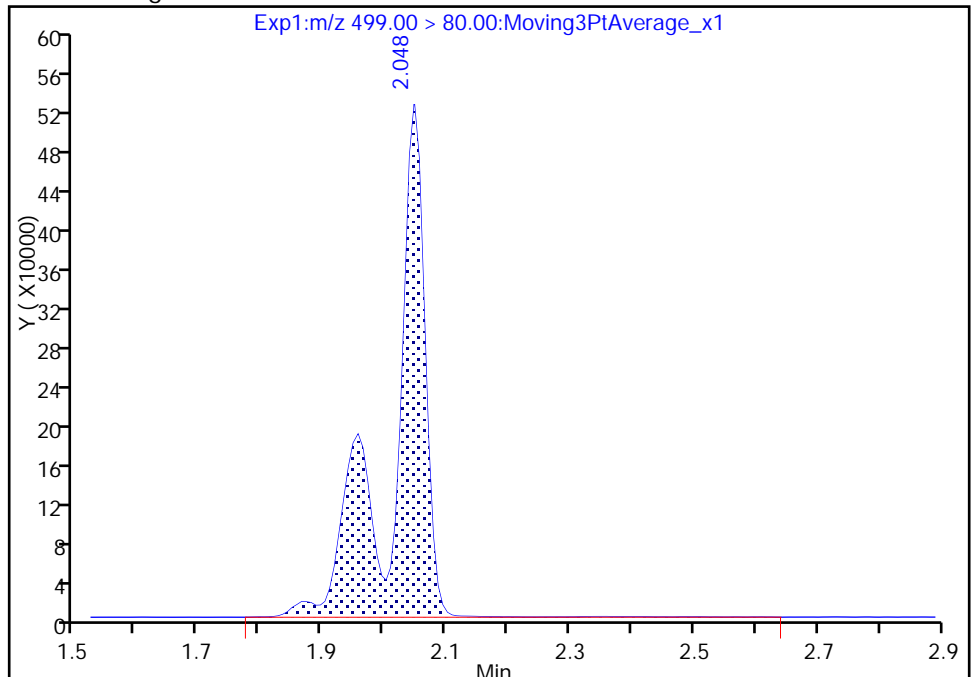
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 1933446
Amount: 20.396172
Amount Units: ng/ml



Reviewer: roycea, 17-Feb-2018 09:48:27

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-208144/1-A
 Matrix: Water Lab File ID: 2018.02.16_537C_030.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.0 (mL) Date Analyzed: 02/16/2018 13:59
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 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	96		70-130
STL00996	13C2 PFDA	145	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_030.d
 Lims ID: MB 320-208144/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Feb-2018 13:59:45 ALS Bottle#: 18 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-208144/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d

Column 1 : Det: EXP1
 Process Host: XAWRK009

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.472	1.479	-0.007	1.000	1165497	9.63	16398	
* 6 13C2-PFOA	415.00 > 370.00	1.798	1.798	0.0		1100471	10.0	9297	
* 7 13C4 PFOS	503.00 > 80.00	2.048	2.048	0.0		3359503	28.7	2439	
\$ 10 13C2 PFDA	515.00 > 470.00	2.231	2.238	-0.007	1.000	835520	14.5	9830	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_030.d

Injection Date: 16-Feb-2018 13:59:45

Instrument ID: A8_N

Lims ID: MB 320-208144/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

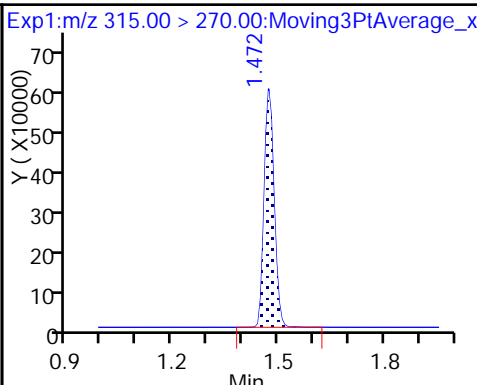
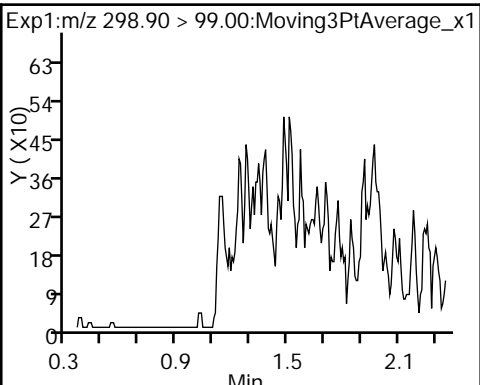
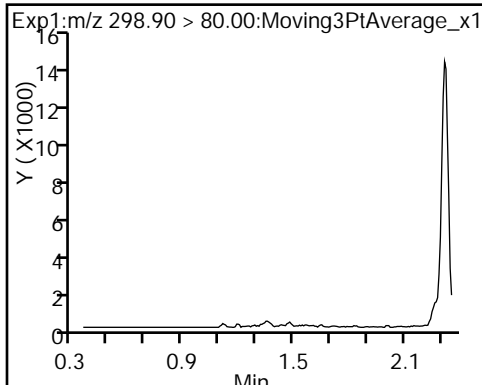
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

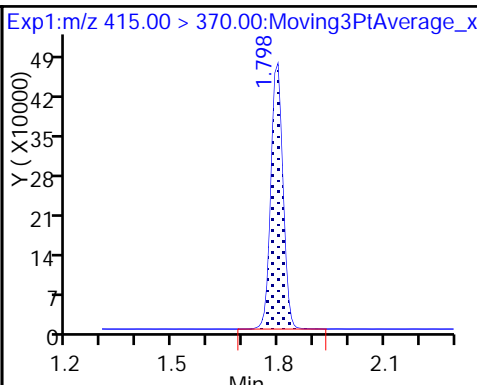
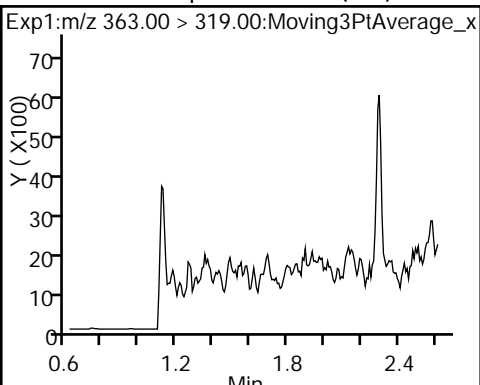
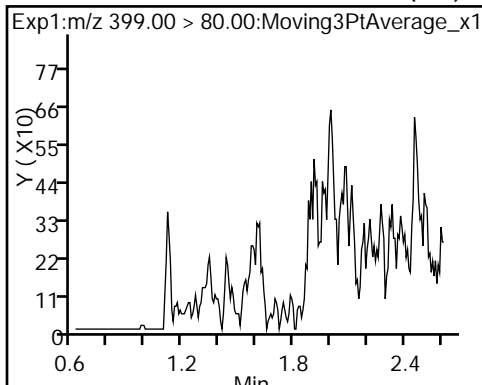
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid (ND)

4 Perfluoroheptanoic acid (ND)

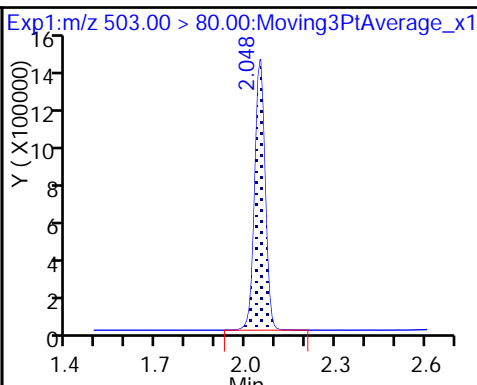
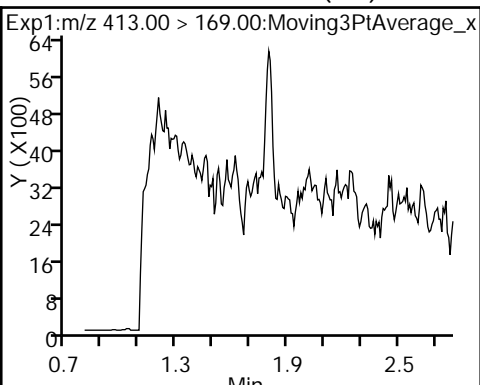
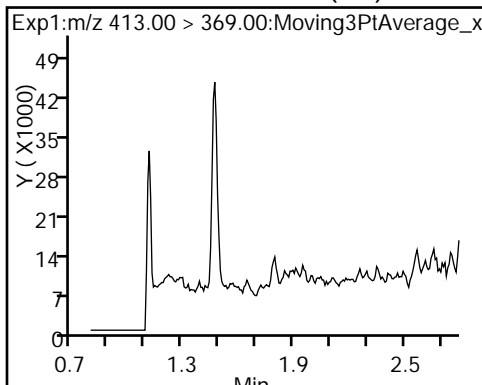
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

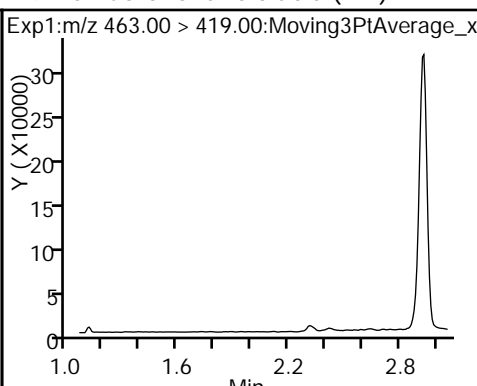
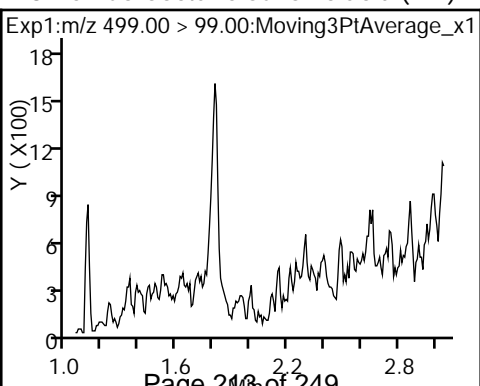
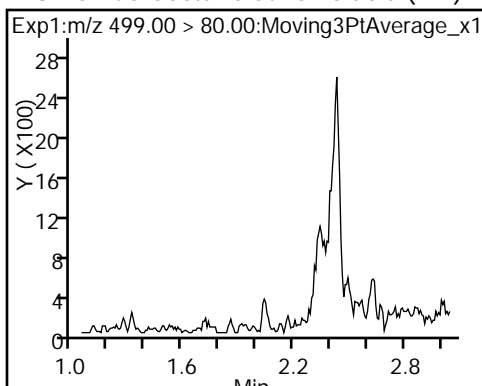
* 7 13C4 PFOS



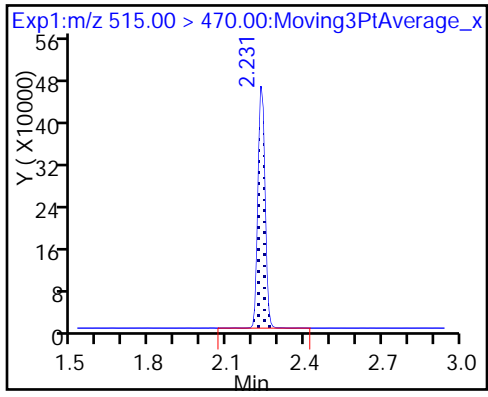
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_030.d
 Lims ID: MB 320-208144/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Feb-2018 13:59:45 ALS Bottle#: 18 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-208144/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.63	96.29
\$ 10 13C2 PFDA	10.0	14.5	144.82

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-208144/2-A
 Matrix: Water Lab File ID: 2018.02.16_537C_031.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.0 (mL) Date Analyzed: 02/16/2018 14:04
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	219	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	103		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	115		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	159		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	55.1		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	415		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	142	Q	70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_031.d
 Lims ID: LCS 320-208144/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Feb-2018 14:04:26 ALS Bottle#: 19 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-208144/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:45:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	11413908	103.9		16648	
298.90 > 99.00	1.358	1.358	0.0	1.000	8495234		1.34(0.00-0.00)	17102	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.479	1.479	0.0	1.000	966719	9.02		13657	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	6420165	39.8		11927	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	1305133	13.8		329	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		974838	10.0		10131	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	2422254	25.8		98.4	
413.00 > 169.00	1.798	1.798	0.0	1.000	1351901		1.79(0.00-0.00)	226	
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		2870865	28.7		2731	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.056	2.048	0.008	1.000	5192594	54.9		9982	a
499.00 > 99.00	2.048	2.048	0.0	0.996	1093946		4.75(0.00-0.00)	798	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.064	2.064	0.0	1.000	1727716	28.8		83.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.238	2.238	0.0	1.000	727832	14.2		8153	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_031.d

Injection Date: 16-Feb-2018 14:04:26

Instrument ID: A8_N

Lims ID: LCS 320-208144/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

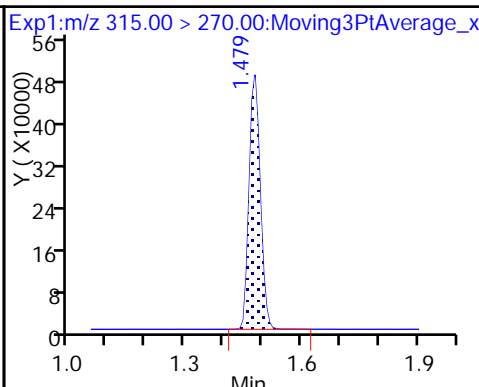
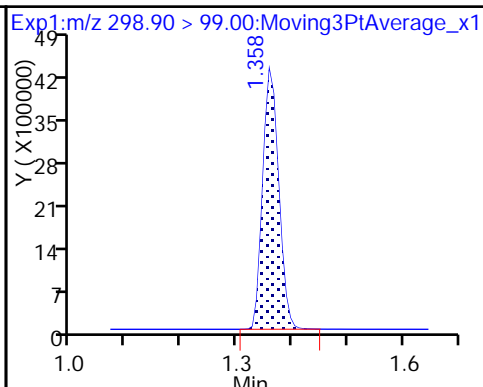
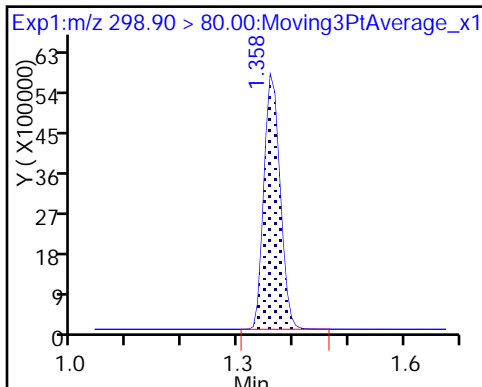
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

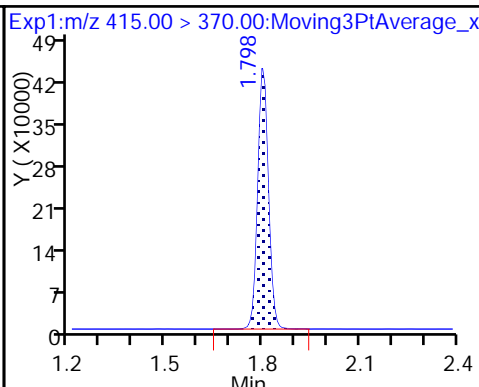
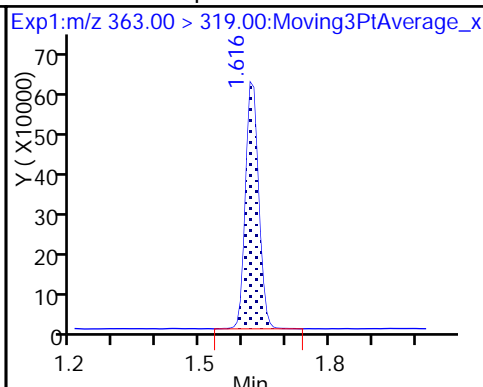
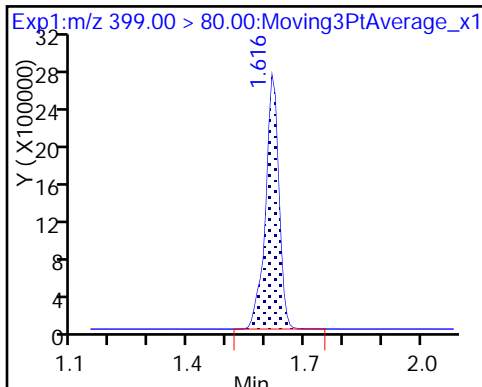
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

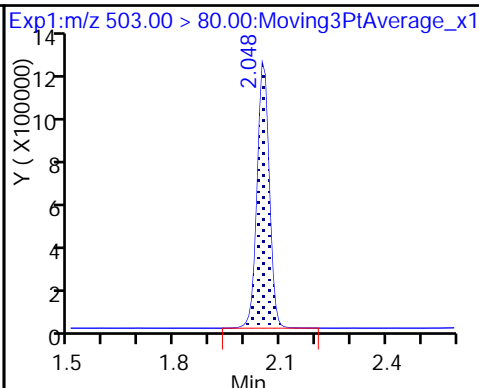
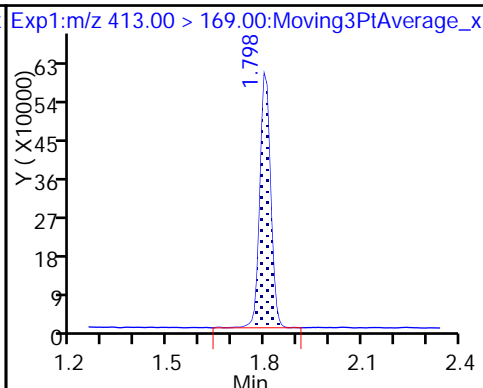
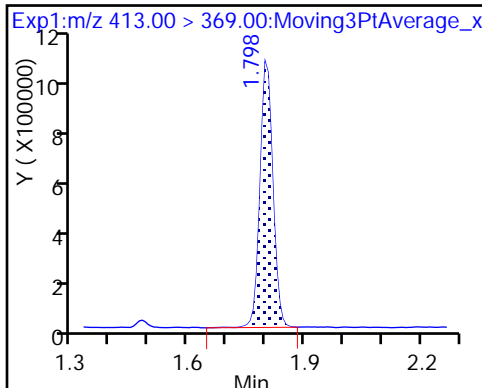
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

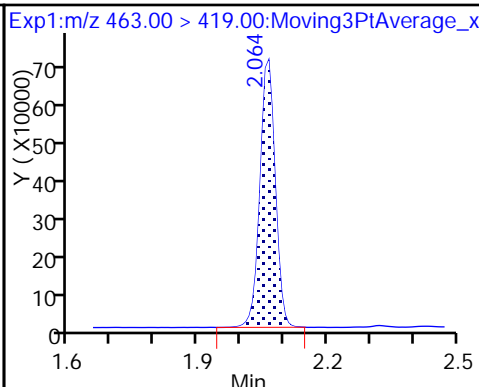
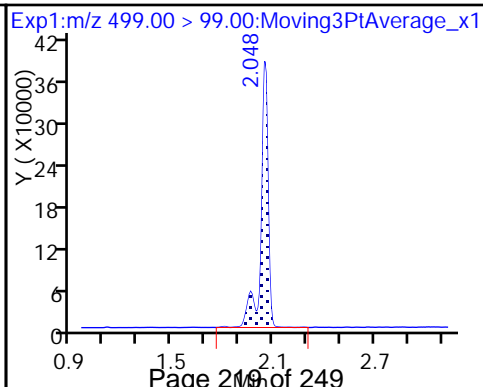
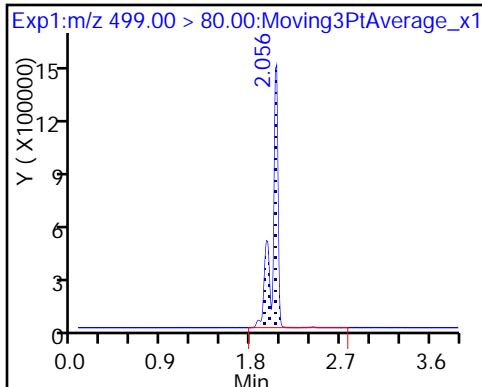
* 7 13C4 PFOS



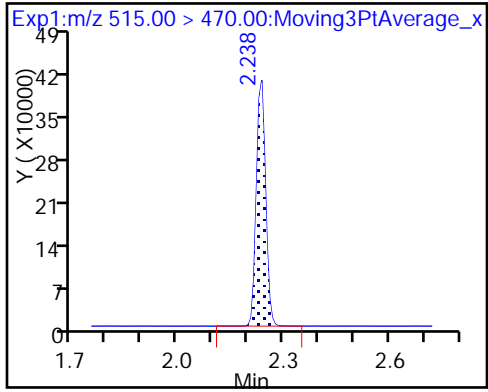
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_031.d
 Lims ID: LCS 320-208144/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Feb-2018 14:04:26 ALS Bottle#: 19 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-208144/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:45:15

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.02	90.16
\$ 10 13C2 PFDA	10.0	14.2	142.41

TestAmerica Sacramento

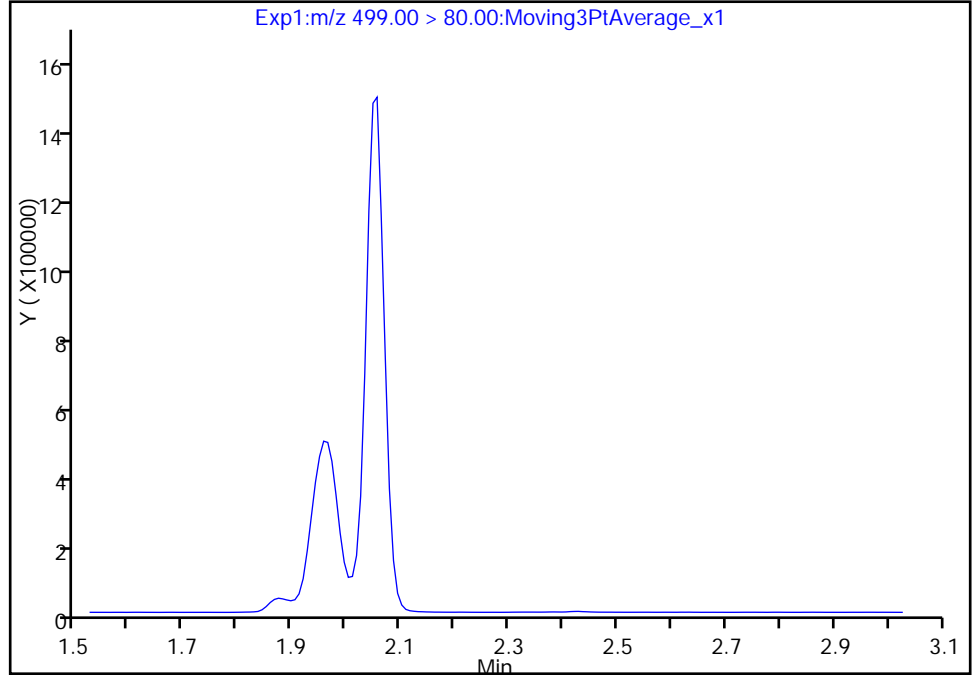
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Injection Date: 16-Feb-2018 14:04:26 Instrument ID: A8_N
Lims ID: LCS 320-208144/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

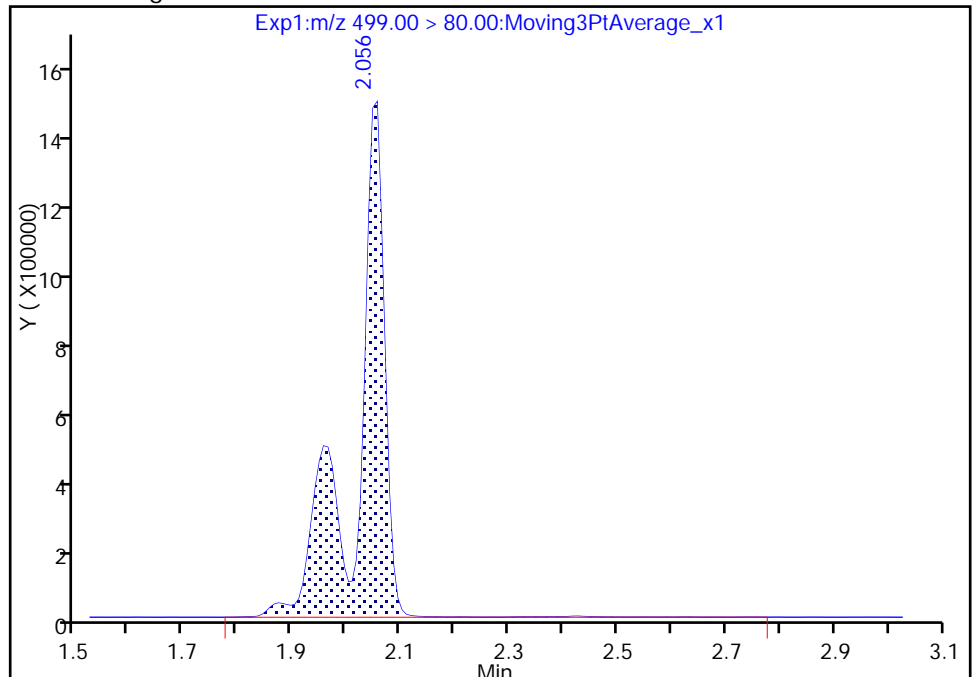
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.06
Area: 5192594
Amount: 54.862064
Amount Units: ng/ml



Reviewer: roycea, 17-Feb-2018 09:44:53
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-208144/3-A
 Matrix: Water Lab File ID: 2018.02.16_537C_032.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.0 (mL) Date Analyzed: 02/16/2018 14:09
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	212	M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	101		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	111		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	158		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	53.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	400		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	103		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_032.d
 Lims ID: LCSD 320-208144/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 16-Feb-2018 14:09:07 ALS Bottle#: 20 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-208144/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:45:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.358	1.358	0.0	1.000	12490500	100.1		31432	
298.90 > 99.00	1.358	1.358	0.0	1.000	9504694		1.31(0.00-0.00)	18381	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.472	1.479	-0.007	1.000	1124138	9.20		14409	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.616	1.616	0.0	1.000	7187487	39.6		13385	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.616	1.616	0.0	1.000	1430732	13.3		382	
* 6 13C2-PFOA									
415.00 > 370.00	1.798	1.798	0.0		1111442	10.0		10742	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.798	1.798	0.0	1.000	2692076	25.2		105	
413.00 > 169.00	1.798	1.798	0.0	1.000	1481394		1.82(0.00-0.00)	261	
* 7 13C4 PFOS									
503.00 > 80.00	2.048	2.048	0.0		3236345	28.7		7668	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.048	2.048	0.0	1.000	5655874	53.0		10435	a
499.00 > 99.00	2.048	2.048	0.0	1.000	1205081		4.69(0.00-0.00)	863	a
9 Perfluorononanoic acid									
463.00 > 419.00	2.056	2.064	-0.008	1.000	1903955	27.8		106	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.231	2.238	-0.007	1.000	599854	10.3		6685	

QC Flag Legend

Review Flags

a - User Assigned ID

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_032.d

Injection Date: 16-Feb-2018 14:09:07

Instrument ID: A8_N

Lims ID: LCSD 320-208144/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

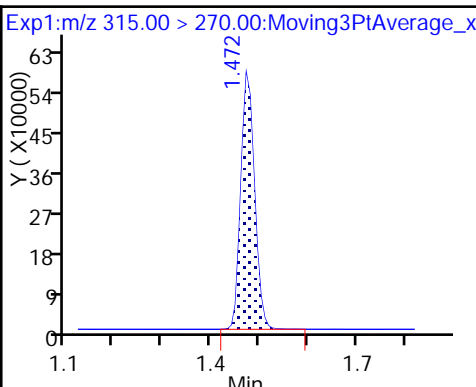
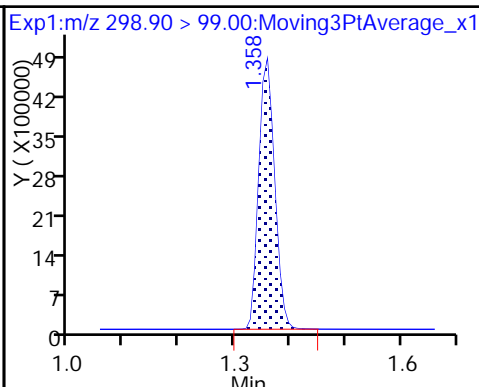
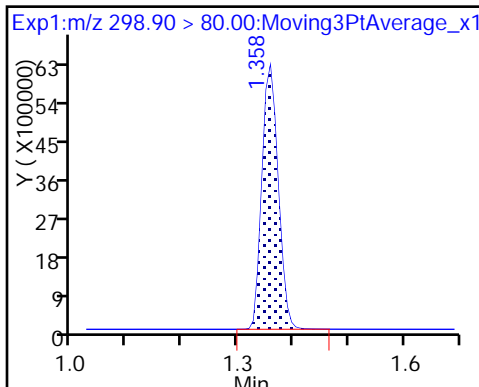
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

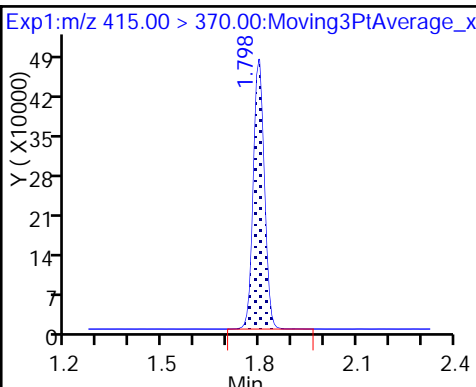
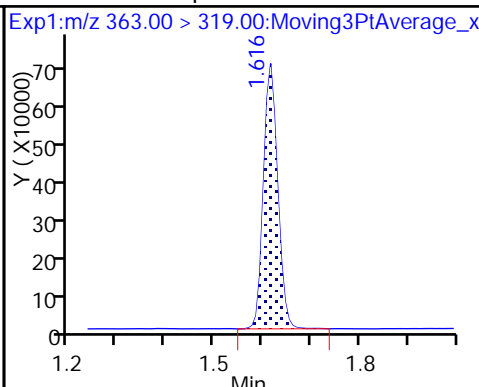
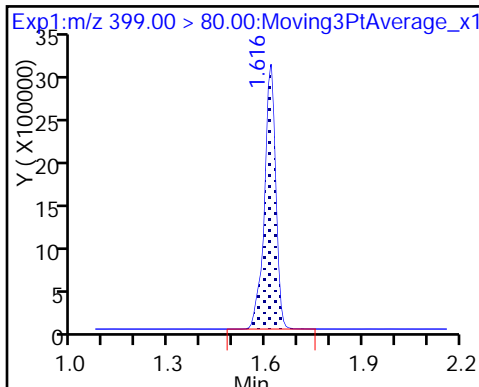
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

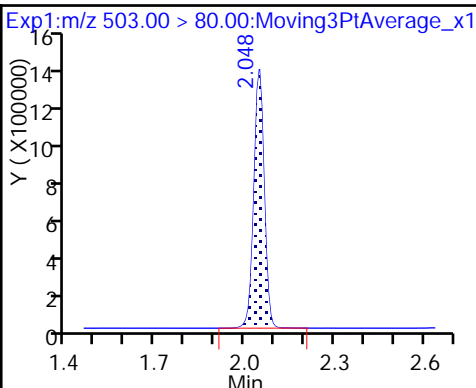
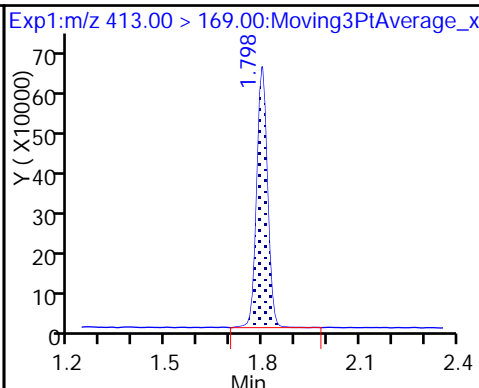
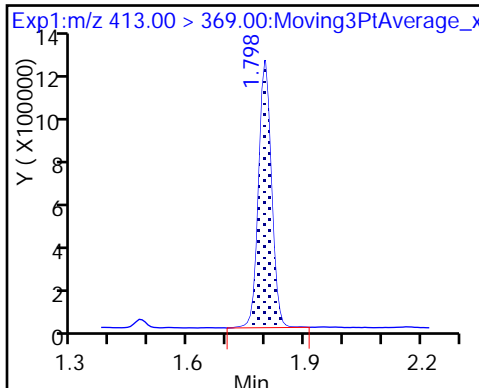
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

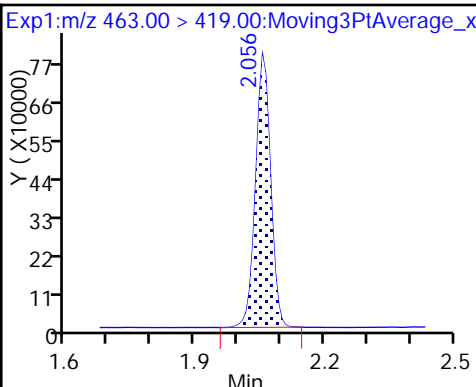
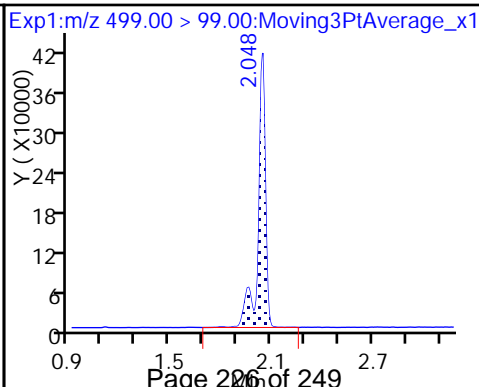
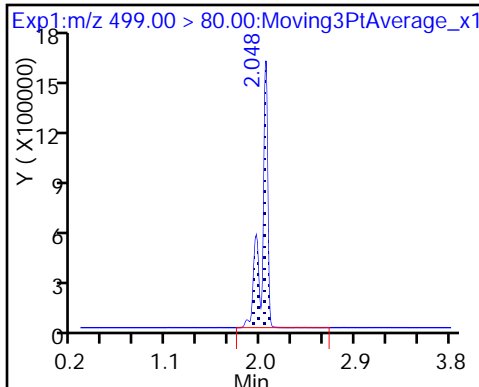
* 7 13C4 PFOS



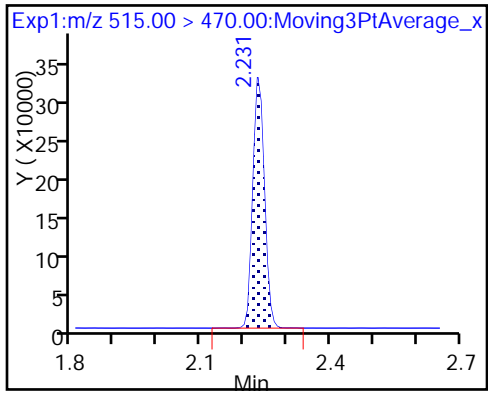
8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_032.d
 Lims ID: LCSD 320-208144/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 16-Feb-2018 14:09:07 ALS Bottle#: 20 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-208144/3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 17-Feb-2018 14:24:19 Calib Date: 16-Feb-2018 09:19:04
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180216-54164.b\2018.02.016_537ICAL_009.d
 Column 1 : Det: EXP1
 Process Host: XAWRK009

First Level Reviewer: roycea Date: 17-Feb-2018 09:45:31

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.20	91.96
\$ 10 13C2 PFDA	10.0	10.3	102.94

TestAmerica Sacramento

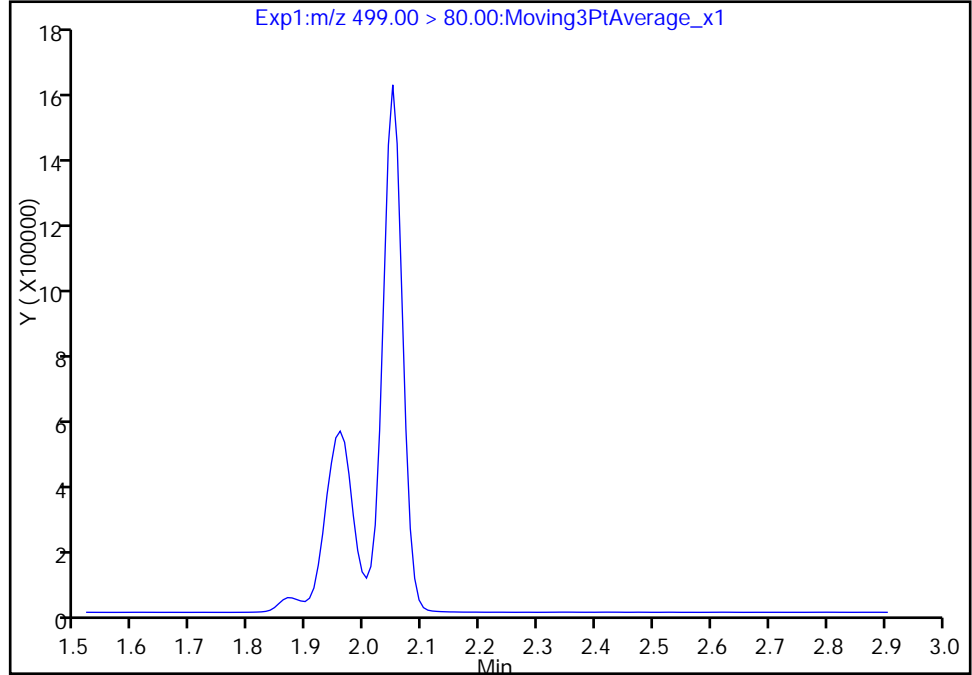
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_032.d
Injection Date: 16-Feb-2018 14:09:07 Instrument ID: A8_N
Lims ID: LCSD 320-208144/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

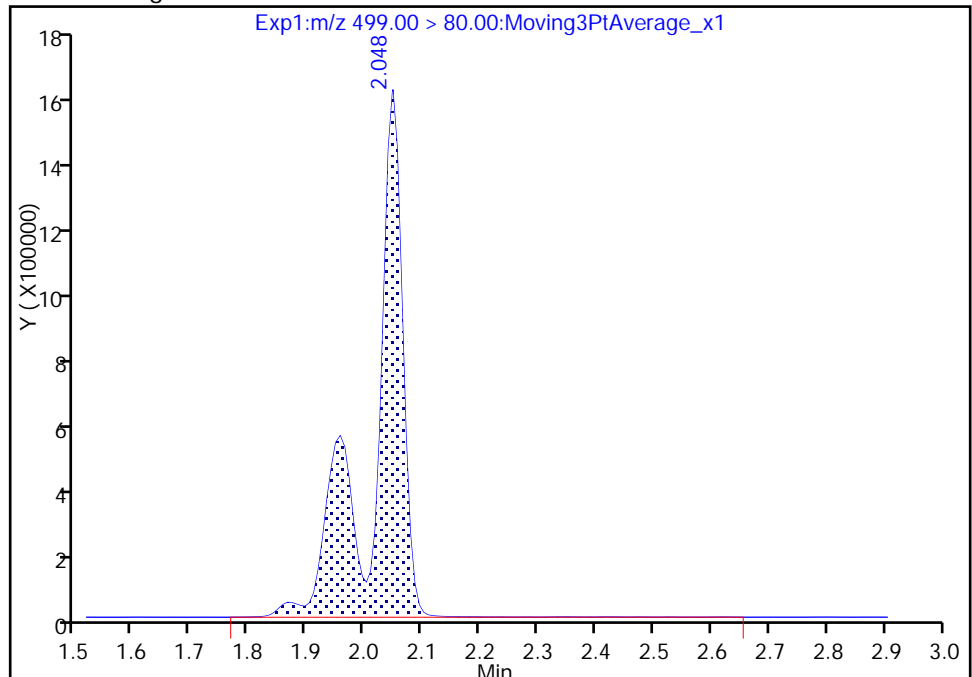
Not Detected
Expected RT: 2.05

Processing Integration Results



RT: 2.05
Area: 5655874
Amount: 53.008494
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 17-Feb-2018 09:45:22
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/16/2018 08:55

Analysis Batch Number: 208773 End Date: 02/16/2018 09:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-208773/4		02/16/2018 08:55	1	2018.02.016_537 ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-208773/5		02/16/2018 09:00	1	2018.02.016_537 ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-208773/6		02/16/2018 09:05	1	2018.02.016_537 ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-208773/7 ICISAV		02/16/2018 09:09	1	2018.02.016_537 ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-208773/8		02/16/2018 09:14	1	2018.02.016_537 ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-208773/9		02/16/2018 09:19	1	2018.02.016_537 ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:23	1		GeminiC18 3x100 3(mm)
CCVL 320-208773/11		02/16/2018 09:28	1	2018.02.016_537 ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:33	1		GeminiC18 3x100 3(mm)
ICV 320-208773/13		02/16/2018 09:37	1	2018.02.016_537 ICAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/16/2018 13:50

Analysis Batch Number: 208812 End Date: 02/16/2018 14:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-208812/1 CCVIS		02/16/2018 13:50	1	2018.02.16_537C 028.d	GeminiC18 3x100 3(mm)
MB 320-208144/1-A		02/16/2018 13:59	1	2018.02.16_537C 030.d	GeminiC18 3x100 3(mm)
LCS 320-208144/2-A		02/16/2018 14:04	1	2018.02.16_537C 031.d	GeminiC18 3x100 3(mm)
LCSD 320-208144/3-A		02/16/2018 14:09	1	2018.02.16_537C 032.d	GeminiC18 3x100 3(mm)
320-35900-1		02/16/2018 14:13	1	2018.02.16_537C 033.d	GeminiC18 3x100 3(mm)
320-35900-2		02/16/2018 14:18	1	2018.02.16_537C 034.d	GeminiC18 3x100 3(mm)
320-35900-3		02/16/2018 14:23	1	2018.02.16_537C 035.d	GeminiC18 3x100 3(mm)
320-35900-4		02/16/2018 14:27	1	2018.02.16_537C 036.d	GeminiC18 3x100 3(mm)
320-35900-5		02/16/2018 14:32	1	2018.02.16_537C 037.d	GeminiC18 3x100 3(mm)
CCV 320-208812/11 CCVIS		02/16/2018 14:37	1	2018.02.16_537C 038.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/16/2018 14:37

Analysis Batch Number: 208836 End Date: 02/16/2018 15:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-208836/11 CCVIS		02/16/2018 14:37	1	2018.02.16_537C 038.d	GeminiC18 3x100 3(mm)
320-35900-6		02/16/2018 14:46	1	2018.02.16_537C 040.d	GeminiC18 3x100 3(mm)
320-35900-7		02/16/2018 14:51	1	2018.02.16_537C 041.d	GeminiC18 3x100 3(mm)
320-35900-8		02/16/2018 14:55	1	2018.02.16_537C 042.d	GeminiC18 3x100 3(mm)
CCV 320-208836/16 CCVIS		02/16/2018 15:00	1	2018.02.16_537C 043.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Batch Number: 208144 Batch Start Date: 02/13/18 10:20 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 02/14/18 16:17

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00026
MB 320-208144/1		537, 537				250.0 mL	1.0 mL	7 SU	
LCS 320-208144/2		537, 537				250.0 mL	1.0 mL	7 SU	100 uL
LCSD 320-208144/3		537, 537				250.0 mL	1.0 mL	7 SU	100 uL
320-35900-A-1	NAWC-020818-RW-142	537, 537	T	277.73 g	26.93 g	250.8 mL	1.0 mL	7 SU	
320-35900-A-2	NAWC-020818-FRB-142	537, 537	T	278.30 g	28.20 g	250.1 mL	1.0 mL	7 SU	
320-35900-A-3	WGNA-020818-RW-3556	537, 537	T	277.47 g	27.38 g	250.1 mL	1.0 mL	7 SU	
320-35900-A-4	WGNA-020818-FRB-3556	537, 537	T	282.00 g	27.92 g	254.1 mL	1.0 mL	7 SU	
320-35900-A-5	NAWC-020818-RW-324	537, 537	T	273.96 g	27.25 g	246.7 mL	1.0 mL	7 SU	
320-35900-A-6	NAWC-020818-FRB-324	537, 537	T	277.68 g	29.60 g	248.1 mL	1.0 mL	7 SU	
320-35900-A-7	WGNA-020818-RW-0335	537, 537	T	274.68 g	27.05 g	247.6 mL	1.0 mL	7 SU	
320-35900-A-8	WGNA-020818-FRB-0335	537, 537	T	276.80 g	28.07 g	248.7 mL	1.0 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00055	LC537-SU 00057	AnalysisComment			
MB 320-208144/1		537, 537		100 uL	100 uL	C1 ND			
LCS 320-208144/2		537, 537		100 uL	100 uL	C1 ND			
LCSD 320-208144/3		537, 537		100 uL	100 uL	C1 ND			
320-35900-A-1	NAWC-020818-RW-142	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-2	NAWC-020818-FRB-142	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-3	WGNA-020818-RW-3556	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-4	WGNA-020818-FRB-3556	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-5	NAWC-020818-RW-324	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-6	NAWC-020818-FRB-324	537, 537	T	100 uL	100 uL	C1 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.: 320-35900-1

SDG No.: _____

Batch Number: 208144 Batch Start Date: 02/13/18 10:20 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 02/14/18 16:17

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00055	LC537-SU 00057	AnalysisComment			
320-35900-A-7	WGNA-020818-RW-0335	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-8	WGNA-020818-FRB-0335	537, 537	T	100 uL	100 uL	C1 ND			

Batch Notes	
Analyst ID - Aliquot Step	KMK
Batch Comment	Sample labels match Client ID's: KMK 2-13-18
Analyst ID - Concentration	SKD/KMK
Analyst ID - Final Volume Step	KMK
Internal Standard ID#	1099355
Manifold ID	7
Methanol ID	1152898
pH Indicator ID	2517
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	TWL
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	KMK
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge Lot ID	6369499-05
Trizma ID	SLBR4303V
Reagent Water ID	2-9-18

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.

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THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

A8

Job No: 35900 Instrument ID & Date: 2-16-18 ICAL Batch: 208773
Extraction Batch: 208144 Worklist #: 54176, 54210 TALS Batch: 208812, 208836,

208940

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

1st Level Reviewer / Date: JRB 2-17-18 2nd Level Reviewer / Date: Jan 2/20/18

NCM # and Comments: 116516, 116517

A8

Instrument ID & Date: 2-16-18 Worklist#: 54164

ICAL Batch: 208773,208774 Calibration ID number: 37889,37890

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

1st Level Reviewer / Date: JRB 2-16-18

2nd Level Reviewer / Date: CBW 2-16-18

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16FEB2018_537C

Worklist Number: 54176

Instrument Name: A8_N

Chrom Method: 537_A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b

QC Batching: Enabled

Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 208812
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 MB 320-208144/1-A	# 3 MB 320-208144/1-A
# 4 LCS 320-208144/2-A	# 4 LCS 320-208144/2-A
# 5 LCSD 320-208144/3-A	# 5 LCSD 320-208144/3-A
# 6 320-35900-A-1-A	# 6 320-35900-A-1-A
# 7 320-35900-A-2-A	# 7 320-35900-A-2-A
# 8 320-35900-A-3-A	# 8 320-35900-A-3-A
# 9 320-35900-A-4-A	# 9 320-35900-A-4-A
#10 320-35900-A-5-A	#10 320-35900-A-5-A
#11 CCV L5	#11 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 208836
#11 CCV L5	#11 CCV L5
#12 RB	#12 RB
#13 320-35900-A-6-A	#13 320-35900-A-6-A
#14 320-35900-A-7-A	#14 320-35900-A-7-A
#15 320-35900-A-8-A	#15 320-35900-A-8-A
#16 CCV L3	#16 CCV L3
#17 RB	#17 RB

No CCV L. Ran after ICAL.

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 16FEB2018_537C

Worklist Num: 54176

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L3	320-0054176-001	CCVIS	16-Feb-2018 13:50:26	2018.02.16_537C_028.d	3	1.0		sv
RB	320-0054176-002	RB	16-Feb-2018 13:55:06	2018.02.16_537C_029.d	8	1.0		sv
MB 320-208144/1-A	320-0054176-003	MB	16-Feb-2018 13:59:45	2018.02.16_537C_030.d	18	1.0		sv
LCS 320-208144/2-A	320-0054176-004	LCS	16-Feb-2018 14:04:26	2018.02.16_537C_031.d	19	1.0		sv
LCSD 320-208144/3-A	320-0054176-005	LCSD	16-Feb-2018 14:09:07	2018.02.16_537C_032.d	20	1.0		sv
320-35900-A-1-A	320-0054176-006	Client	16-Feb-2018 14:13:47	2018.02.16_537C_033.d	21	1.0	NAWC-020818-RW-142	sv
320-35900-A-2-A	320-0054176-007	Client	16-Feb-2018 14:18:27	2018.02.16_537C_034.d	22	1.0	NAWC-020818-FRB-142	sv
320-35900-A-3-A	320-0054176-008	Client	16-Feb-2018 14:23:07	2018.02.16_537C_035.d	23	1.0	WGNA-020818-RW-3556	sv
320-35900-A-4-A	320-0054176-009	Client	16-Feb-2018 14:27:48	2018.02.16_537C_036.d	24	1.0	WGNA-020818-FRB-3556	sv
320-35900-A-5-A	320-0054176-010	Client	16-Feb-2018 14:32:28	2018.02.16_537C_037.d	25	1.0	NAWC-020818-RW-324	sv
CCV L5	320-0054176-011	CCVIS	16-Feb-2018 14:37:09	2018.02.16_537C_038.d	5	1.0		sv
RB	320-0054176-012	RB	16-Feb-2018 14:41:49	2018.02.16_537C_039.d	8	1.0		sv
320-35900-A-6-A	320-0054176-013	Client	16-Feb-2018 14:46:28	2018.02.16_537C_040.d	26	1.0	NAWC-020818-FRB-324	sv
320-35900-A-7-A	320-0054176-014	Client	16-Feb-2018 14:51:07	2018.02.16_537C_041.d	27	1.0	WGNA-020818-RW-0335	sv
320-35900-A-8-A	320-0054176-015	Client	16-Feb-2018 14:55:46	2018.02.16_537C_042.d	28	1.0	WGNA-020818-FRB-0335	sv
CCV L3	320-0054176-016	CCVIS	16-Feb-2018 15:00:28	2018.02.16_537C_043.d	3	1.0		sv
RB	320-0054176-017	RB	16-Feb-2018 15:05:09	2018.02.16_537C_044.d	8	1.0		sv

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 17FEB2018_537B Worklist Number: 54210
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180217-54210.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 208938
# 1 CCV L3	# 1 CCV L3
# 2 RB	# 2 RB
# 3 320-36020-A-6-A	# 3 320-36020-A-6-A
# 4 CCV L5	# 4 CCV L5

QC Batch: 2	LC 537 ICAL Raw Batch: 208940
# 4 CCV L5	# 4 CCV L5
# 5 RB	# 5 RB
# 6 MB 320-208144/1-A	# 6 MB 320-208144/1-A
# 7 LCS 320-208144/2-A	# 7 LCS 320-208144/2-A
# 8 320-35900-A-5-A	# 8 320-35900-A-5-A
# 9 320-35900-A-8-A	# 9 320-35900-A-8-A
#10 CCV L3	#10 CCV L3
#11 RB	#11 RB

CCV in AB 208921

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 17FEB2018_537B Worklist Num: 54210
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180217-54210.b
 Analysis Type: SemiVOA Creator: Royce, Amani A
 Inj Volume: 2.00 Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L3	320-0054210-001	CCVIS	17-Feb-2018 12:55:50	2018.02.17_537AA_010.d	3	1.0		sv
RB	320-0054210-002	RB	17-Feb-2018 13:00:30	2018.02.17_537AA_011.d	8	1.0		sv
320-36020-A-6-A	320-0054210-003	Client	17-Feb-2018 13:05:09	2018.02.17_537AA_012.d	37	1.0	C0AA5	sv
CCV L5	320-0054210-004	CCVIS	17-Feb-2018 13:09:48	2018.02.17_537AA_013.d	5	1.0		sv
RB	320-0054210-005	RB	17-Feb-2018 13:14:30	2018.02.17_537AA_014.d	8	1.0		sv
MB 320-208144/1-A	320-0054210-006	MB	17-Feb-2018 13:19:08	2018.02.17_537AA_015.d	44	1.0		sv
LCS 320-208144/2-A	320-0054210-007	LCS	17-Feb-2018 13:23:47	2018.02.17_537AA_016.d	45	1.0		sv
320-35900-A-5-A	320-0054210-008	Client	17-Feb-2018 13:28:27	2018.02.17_537AA_017.d	46	1.0	NAWC-020818-RW-324	sv
320-35900-A-8-A	320-0054210-009	Client	17-Feb-2018 13:33:07	2018.02.17_537AA_018.d	47	1.0	WGNA-020818-FRB-0335	sv
CCV L3	320-0054210-010	CCVIS	17-Feb-2018 13:37:47	2018.02.17_537AA_019.d	3	1.0		sv
RB	320-0054210-011	RB						

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 17FEB2018_537A

Worklist Num: 54205

Instrument: A8_N

Method: 537_A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180217-54205.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCVL	320-0054205-001	CCVL	17-Feb-2018 10:42:28	2018.02.17_537A_005.d	2	1.0		sv
CCV L5	320-0054205-002	CCVIS	17-Feb-2018 10:47:09	2018.02.17_537A_006.d	5	1.0		sv
RB	320-0054205-003	RB	17-Feb-2018 10:51:49	2018.02.17_537A_007.d	8	1.0		sv
320-36020-A-1-A	320-0054205-004	Client	17-Feb-2018 10:56:28	2018.02.17_537A_008.d	32	1.0	COAAO	sv
320-36017-A-1-A	320-0054205-005	Client	17-Feb-2018 11:01:10	2018.02.17_537A_009.d	40	1.0	SEA-MW534-DW001	sv
CCV L3	320-0054205-006	CCVIS	17-Feb-2018 11:05:51	2018.02.17_537A_010.d	3	1.0		sv
RB	320-0054205-007	RB	17-Feb-2018 11:10:31	2018.02.17_537A_011.d	8	1.0		sv

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Kolstad, Kate M

AK 2/15/18

AK 2/17/18

Batch Number: 320-208144

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End: 2/14/2018 4:17:00PM

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-208144/1 N/A	N/A		250.0 mL	7			N/A	N/A	N/A	CI ND R1	
			1.0 mL								
2 LCS-320-208144/2 N/A	N/A		250.0 mL	7			N/A	N/A	N/A	CI ND R1	
			1.0 mL								
3 LCSD-320-208144/3 N/A	N/A		250.0 mL	7			N/A	N/A	N/A	CI ND	
			1.0 mL								
320-35900-A-1 (537_DOD5)	N/A (320-35900-1)	277.73 g	250.8 mL	7			2/13/18	16_Days	4	CI ND	
		26.93 g	1.0 mL								
320-35900-A-2 (537_DOD5)	N/A (320-35900-1)	278.30 g	250.1 mL	7			2/13/18	16_Days	4	CI ND	
		28.20 g	1.0 mL								
320-35900-A-3 (537_DOD5)	N/A (320-35900-1)	277.47 g	250.1 mL	7			2/13/18	16_Days	4	CI ND	
		27.38 g	1.0 mL								
320-35900-A-4 (537_DOD5)	N/A (320-35900-1)	282.00 g	254.1 mL	7			2/13/18	16_Days	4	CI ND	
		27.92 g	1.0 mL								
320-35900-A-5 (537_DOD5)	N/A (320-35900-1)	273.96 g	246.7 mL	7			2/13/18	16_Days	4	CI ND R1	
		27.25 g	1.0 mL								
320-35900-A-6 (537_DOD5)	N/A (320-35900-1)	277.68 g	248.1 mL	7			2/13/18	16_Days	4	CI ND	
		29.60 g	1.0 mL								
320-35900-A-7 (537_DOD5)	N/A (320-35900-1)	274.68 g	247.6 mL	7			2/13/18	16_Days	4	CI ND	
		27.05 g	1.0 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-208144


Analyst: Kolstad, Kate M

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End: 2/14/2018 4:17:00PM

11

320-35900-A-8 (537_DOD5)	N/A (320-35900-1)	276.80 g	248.7 mL	7			2/13/18	16_Days	4	CI ND	TZI	
		28.07 g	1.0 mL									

Batch Notes

Manifold ID 7

pH Indicator ID 2517

Trizma ID SLBR4303V

SPE Cartridge Lot ID 6369499-05

Methanol ID 1152898

Reagent Water ID 2-9-18

Internal Standard ID# 1099355

Pipette ID M16387D

Analyst ID - TA Reagent Drop KMK

Analyst ID - TA Reagent Drop JNS

Witness

Analyst ID - SU Reagent Drop KMK

Analyst ID - SU Reagent Drop JNS

Witness

Analyst ID - IS Reagent Drop KMK

Analyst ID - IS Reagent Drop TWL

Witness

Analyst ID - Concentration SKD/KMK

Analyst ID - Aliquot Step KMK

Analyst ID - Final Volume Step KMK

Batch Comment Sample labels match Client ID's: KMK 2-13-18

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-208144

Analyst: Kolstad, Kate M

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End:

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-208144

Analyst: Kolstad, Kate M

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-208144/1	LC537-SU_00057	100 uL	1.0 mL		JNS 2/13/18
LCS 320-208144/2	LC537-HSP_00026	100 uL	1.0 mL		↓
LCS 320-208144/2	LC537-SU_00057	100 uL	1.0 mL		
LCSD 320-208144/3	LC537-HSP_00026	100 uL	1.0 mL		
LCSD 320-208144/3	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-1	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-2	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-3	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-4	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-5	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-6	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-7	LC537-SU_00057	100 uL	1.0 mL		
320-35900-A-8	LC537-SU_00057	100 uL	1.0 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-208144

Analyst: Kolstad, Kate M

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End:

Other Reagents:

Reagent

Amount/Units

Lot#:

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Shipping and Receiving Documents



320-35900 Chain of Custody

TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Andy Frebowitz				Site Contact: Mary Kay Bond			Date: 2/8/2018		COC No:		
TetraTech		Tel/Fax: 610.382.1170				Lab Contact: Dave Alltucker			Carrier: FedEx		1 of 1 COCs		
234 Mall Boulevard Suite 260		Analysis Turnaround Time				Filtered Sample (Y/N)		Perform MS / MSD (Y / N)		EPA 537 UCMR3		Sampler: Mary Kay Bond	
King of Prussia, PA 19406		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS										For Lab Use Only:	
610-382-1174		TAT if different from Below 21										Walk-in Client:	
610-491-9688		<input type="checkbox"/> 2 weeks										Lab Sampling:	
Project Name: WE04		<input type="checkbox"/> 1 week										Job / SDG No.:	
Site: WE04		<input type="checkbox"/> 2 days											
P O # 1132358 (through EarthToxics)		<input type="checkbox"/> 1 day											
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.						Sample Specific Notes:	
NAWC-020818-RW-142		2/8/2018	08:10	G	DW	2	N	N	Y				
NAWC-020818-FRB-142		2/8/2018	08:05	G	DW	2	N	N	Y			Field Reagent Blank	
WGNA-020818-RW-3556		2/8/2018	10:10	G	DW	2	N	N	Y				
WGNA-020818-FRB-3556		2/8/2018	10:05	G	DW	2	N	N	Y			Field Reagent Blank	
NAWC-020818-RW-324		2/8/2018	11:10	G	DW	2	N	N	Y				
NAWC-020818-FRB-324		2/8/2018	11:05	G	DW	2	N	N	Y			Field Reagent Blank	
WGNA-020818-RW-0335		2/8/2018	12:40	G	DW	2	N	N	Y				
WGNA-020818-FRB-0335		2/8/2018	12:35	G	DW	2	N	N	Y			Field Reagent Blank	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma							6						
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months						
Fed Ex Tracking: 7714 2340 0152													
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:			Cooler Temp. (°C): Obs'd: 3.5		Corr'd:		Therm ID No.: AK2				
Relinquished by: <i>Mary Kay Bond</i>		Company: Tetra Tech		Date/Time: 2/8/2018 16:00		Received by: <i>[Signature]</i>		Company: <i>Tetra Sac</i>		Date/Time: 2/9/18 940			
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:			
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:			

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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-35900-1

Login Number: 35900

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	452211, 452210
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "10", "ng/L", "J M", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.8", "1.0", "16", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.5", "ng/L", "J M", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.8", "1.0", "8.0", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.8", "1.0", "12", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.8", "1.0", "36", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "2.4", "ng/L", "J M", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.8", "1.0", "4.0", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.8", "1.0", "20", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "STL00993", "13C2
PFHxA", "35", "ng/L", "", "-99", "DL", "", "SURR", "87", "", "-99", "LOQ", "YES", "39.9", "", "250.8", "1.0", "0", ""

"NAWC-020818-RW-142", "537", "RES", "320-35900-1", "TALSAC", "STL00996", "13C2
PFDA", "41", "ng/L", "", "-99", "DL", "", "SURR", "102", "", "-99", "LOQ", "YES", "39.9", "", "250.8", "1.0", "0", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.1", "1.0", "16", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.1", "1.0", "8.0", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.1", "1.0", "12", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.1", "1.0", "36", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.1", "1.0", "4.0", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.1", "1.0", "20", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "STL00993", "13C2
PFHxA", "38", "ng/L", "", "-99", "DL", "", "SURR", "95", "", "-99", "LOQ", "YES", "40.0", "", "250.1", "1.0", "0", ""

"NAWC-020818-FRB-142", "537", "RES", "320-35900-2", "TALSAC", "STL00996", "13C2
PFDA", "42", "ng/L", "", "-99", "DL", "", "SURR", "106", "", "-99", "LOQ", "YES", "40.0", "", "250.1", "1.0", "0", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "28", "ng/L", "J M", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.1", "1.0", "16", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "17", "ng/L", "J M", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.1", "1.0", "8.0", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.1", "1.0", "12", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.1", "1.0", "36", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "4.8", "ng/L", "J", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.1", "1.0", "4.0", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.1", "1.0", "20", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "STL00993", "13C2
PFHxA", "32", "ng/L", "", "-99", "DL", "", "SURR", "81", "", "-99", "LOQ", "YES", "40.0", "", "250.1", "1.0", "0", ""

"WGNA-020818-RW-3556", "537", "RES", "320-35900-3", "TALSAC", "STL00996", "13C2
PFDA", "49", "ng/L", "", "-99", "DL", "", "SURR", "122", "", "-99", "LOQ", "YES", "40.0", "", "250.1", "1.0", "0", ""

"WGNA-020818-FRB-3556", "537", "RES", "320-35900-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "16", "ng/L", "U", "6.7", "DL", "", "TRG", "", "", "39", "LOQ", "YES", "-99", "", "254.1", "1.0", "16", ""

"WGNA-020818-FRB-3556", "537", "RES", "320-35900-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "7.9", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "254.1", "1.0", "7.9", ""

"WGNA-020818-FRB-3556", "537", "RES", "320-35900-4", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid

(PFHxS),"12","ng/L","U","5.4","DL","","TRG","","","30","LOQ","YES",-99","","254.1","1.0","12",""
"WGNA-020818-FRB-3556","537","RES","320-35900-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"35","ng/L","U","16","DL","","TRG","","","89","LOQ","YES",-99","","254.1","1.0","35",""
"WGNA-020818-FRB-3556","537","RES","320-35900-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.9","ng/L","U","1.9","DL","","TRG","","","9.8","LOQ","YES",-99","","254.1","1.0","3.9",""
"WGNA-020818-FRB-3556","537","RES","320-35900-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","7.9","DL","","TRG","","","24","LOQ","YES",-99","","254.1","1.0","20",""
"WGNA-020818-FRB-3556","537","RES","320-35900-4","TALSAC","STL00993","13C2
PFHxA),"33","ng/L","","-99","DL","","SURR","83","","-99","LOQ","YES","39.4","","254.1","1.0","0",""
"WGNA-020818-FRB-3556","537","RES","320-35900-4","TALSAC","STL00996","13C2
PFDA),"48","ng/L","","-99","DL","","SURR","122","","-99","LOQ","YES","39.4","","254.1","1.0","0",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"42","ng/L","M","6.9","DL","","TRG","","","41","LOQ","YES",-99","","246.7","1.0","16",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"29","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES",-99","","246.7","1.0","8.1",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"16","ng/L","J","5.6","DL","","TRG","","","30","LOQ","YES",-99","","246.7","1.0","12",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES",-99","","246.7","1.0","36",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.8","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES",-99","","246.7","1.0","4.1",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES",-99","","246.7","1.0","20",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","STL00993","13C2
PFHxA),"38","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","40.5","","246.7","1.0","0",""
"NAWC-020818-RW-324","537","RES","320-35900-5","TALSAC","STL00996","13C2
PFDA),"54","ng/L","Q","-99","DL","","SURR","134","","-99","LOQ","YES","40.5","","246.7","1.0","0",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.9","DL","","TRG","","","40","LOQ","YES",-99","","248.1","1.0","16",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"8.1","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","248.1","1.0","8.1",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES",-99","","248.1","1.0","12",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES",-99","","248.1","1.0","36",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","248.1","1.0","4.0",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES",-99","","248.1","1.0","20",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","STL00993","13C2
PFHxA),"37","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","40.3","","248.1","1.0","0",""
"NAWC-020818-FRB-324","537","RES","320-35900-6","TALSAC","STL00996","13C2
PFDA),"49","ng/L","","-99","DL","","SURR","121","","-99","LOQ","YES","40.3","","248.1","1.0","0",""
"WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"19","ng/L","J M","6.9","DL","","TRG","","","40","LOQ","YES",-99","","247.6","1.0","16",""
"WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"23","ng/L","","2.8","DL","","TRG","","","20","LOQ","YES",-99","","247.6","1.0","8.1",""
"WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"7.6","ng/L","J","5.6","DL","","TRG","","","30","LOQ","YES",-99","","247.6","1.0","12",""
"WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","TRG","","","91","LOQ","YES",-99","","247.6","1.0","36",""
"WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"6.5","ng/L","J","1.9","DL","","TRG","","","10","LOQ","YES",-99","","247.6","1.0","4.0",""
"WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"20","ng/L","U","8.1","DL","","TRG","","","24","LOQ","YES",-99","","247.6","1.0","20","","WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","40.4","","247.6","1.0","0","","WGNA-020818-RW-0335","537","RES","320-35900-7","TALSAC","STL00996","13C2
PFDA","41","ng/L","","-99","DL","","SURR","102","","-99","LOQ","YES","40.4","","247.6","1.0","0","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES",-99","","248.7","1.0","16","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","248.7","1.0","8.0","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES",-99","","248.7","1.0","12","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES",-99","","248.7","1.0","36","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES",-99","","248.7","1.0","4.0","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES",-99","","248.7","1.0","20","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","40.2","","248.7","1.0","0","","WGNA-020818-FRB-0335","537","RES","320-35900-8","TALSAC","STL00996","13C2
PFDA","56","ng/L","Q",-99,"DL","","SURR","140","","-99","LOQ","YES","40.2","","248.7","1.0","0","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","219","ng/L","M","6.8","DL","","SPK","98","","40","LOQ","YES","223","","250.0","1.0","16","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","103","ng/L","","2.8","DL","","SPK","92","","20","LOQ","YES","112","","250.0","1.0","8.0","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","159","ng/L","","5.5","DL","","SPK","96","","30","LOQ","YES","167","","250.0","1.0","12","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","415","ng/L","","16","DL","","SPK","83","","90","LOQ","YES","500","","250.0","1.0","36","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","55.1","ng/L","","1.9","DL","","SPK","99","","10","LOQ","YES","55.6","","250.0","1.0","4.0","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","115","ng/L","","8.0","DL","","SPK","104","","24","LOQ","YES","111","","250.0","1.0","20","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","STL00993","13C2
PFHxA","36.1","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","40.0","","250.0","1.0","0","","LCS 320-208144/2-A","537","RES","LCS 320-208144/2-A","TALSAC","STL00996","13C2
PFDA","57.0","ng/L","Q",-99,"DL","","SURR","142","","-99","LOQ","YES","40.0","","250.0","1.0","0","","LCSD 320-208144/3-A","537","RES","LCSD 320-208144/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","212","ng/L","M","6.8","DL","","SPK","95","3","40","LOQ","YES","223","LCS 320-208144/2-A","250.0","1.0","16","","LCSD 320-208144/3-A","537","RES","LCSD 320-208144/3-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","101","ng/L","","2.8","DL","","SPK","90","3","20","LOQ","YES","112","LCS 320-208144/2-A","250.0","1.0","8.0","","LCSD 320-208144/3-A","537","RES","LCSD 320-208144/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","158","ng/L","","5.5","DL","","SPK","95","1","30","LOQ","YES","167","LCS 320-208144/2-A","250.0","1.0","12","","LCSD 320-208144/3-A","537","RES","LCSD 320-208144/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","400","ng/L","","16","DL","","SPK","80","4","90","LOQ","YES","500","LCS 320-208144/2-A","250.0","1.0","36","","LCSD 320-208144/3-A","537","RES","LCSD 320-208144/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","53.0","ng/L","","1.9","DL","","SPK","95","4","10","LOQ","YES","55.6","LCS 320-208144/2-A","250.0","1.0","4.0","","LCSD 320-208144/3-A","537","RES","LCSD 320-208144/3-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","111","ng/L","","8.0","DL","","SPK","100","3","24","LOQ","YES","111","LCS 320-208144/2-

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PFHxA", "36.8", "ng/L", "", "-99", "DL", "", "SURR", "92", "", "-99", "LOQ", "YES", "40.0", "LCS 320-208144/2-
A", "250.0", "1.0", "0", ""
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(PFOS)", "16", "ng/L", "U", "6.8", "DL", "", "TRG", "", "", "40", "LOQ", "YES", "-99", "", "250.0", "1.0", "16", ""
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(PFOA)", "8.0", "ng/L", "U", "2.8", "DL", "", "TRG", "", "", "20", "LOQ", "YES", "-99", "", "250.0", "1.0", "8.0", ""
"MB 320-208144/1-A", "537", "RES", "MB 320-208144/1-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "U", "5.5", "DL", "", "TRG", "", "", "30", "LOQ", "YES", "-99", "", "250.0", "1.0", "12", ""
"MB 320-208144/1-A", "537", "RES", "MB 320-208144/1-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "36", "ng/L", "U", "16", "DL", "", "TRG", "", "", "90", "LOQ", "YES", "-99", "", "250.0", "1.0", "36", ""
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(PFHpA)", "4.0", "ng/L", "U", "1.9", "DL", "", "TRG", "", "", "10", "LOQ", "YES", "-99", "", "250.0", "1.0", "4.0", ""
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(PFNA)", "20", "ng/L", "U", "8.0", "DL", "", "TRG", "", "", "24", "LOQ", "YES", "-99", "", "250.0", "1.0", "20", ""
"MB 320-208144/1-A", "537", "RES", "MB 320-208144/1-A", "TALSAC", "STL00993", "13C2
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1", "NM", "", "3.50", "537", "METHOD", "RES", "02/13/2018 10:20", "02/16/2018
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2", "FB", "", "3.50", "537", "METHOD", "RES", "02/13/2018 10:20", "02/16/2018
14:18", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-208144", "320-208144", "NA", "320-
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5", "NM", "", "3.50", "537", "METHOD", "RES", "02/13/2018 10:20", "02/16/2018
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6", "FB", "", "3.50", "537", "METHOD", "RES", "02/13/2018 10:20", "02/16/2018
14:46", "TALSAC", "COA", "WET", "NA", "1", "NA", "NA", "", "100", "320-208144", "320-208144", "NA", "320-
208836", "320-35900-1", "02/09/2018 09:40", "02/12/2018 11:55", ""
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7", "NM", "", "3.50", "537", "METHOD", "RES", "02/13/2018 10:20", "02/16/2018
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208812","320-35900-1","02/13/2018 10:20","02/12/2018 11:55",""
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14:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-208144","320-208144","NA","320-
208812","320-35900-1","02/13/2018 10:20","02/12/2018 11:55",""
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13:59","TALSAC","COA","WET","NA","1","NA","NA","","100","320-208144","320-208144","NA","320-
208812","320-35900-1","02/13/2018 10:20","02/12/2018 11:55",""

TO: A. FREBOWITZ
SDG: 320-35900-1

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Notes

Samples with detections and their associated FRBs are summarized below. No detected results were present in the FRBs.

<u>Sample</u>	<u>Associated FRB</u>
NAWC-020818-RW-142	NAWC-020818-FRB-142
NAWC-020818-RW-324	NAWC-020818-FRB-324
WGNA-020818-RW-0335	WGNA-020818-FRB-0335
WGNA-020818-RW-3556	WGNA-020818-FRB-3556

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

Executive Summary


Laboratory Performance: Two surrogate recoveries were above the quality control limits.

Other Factors Affecting Data Quality: Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Terri L. Solomon
Chemist/Data Validator



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

- Appendix A – Qualified Analytical Results
- Appendix B – Results as Reported by the Laboratory
- Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Appendix A

Qualified Analytical Results

Qualifier Codes:

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors $>40\%$ for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE04 SDG: 320-35900-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-020818-FRB-142			NAWC-020818-FRB-324			NAWC-020818-RW-142			NAWC-020818-RW-324		
	LAB_ID	320-35900-2			320-35900-6			320-35900-1			320-35900-5		
	SAMP_DATE	2/8/2018			2/8/2018			2/8/2018			2/8/2018		
	QC_TYPE	FB			FB			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	8	U		8.1	U		7.5	J	P	29	J	R	
PERFLUOROBUTANESULFONIC ACID	36	U		36	U		36	U		36	U		
PERFLUOROHEPTANOIC ACID	4	U		4	U		2.4	J	P	3.8	J	PR	
PERFLUOROHXANESULFONIC ACID	12	U		12	U		12	U		16	J	PR	
PERFLUORONONANOIC ACID	20	U		20	U		20	U		20	U		
PERFLUOROOCTANE SULFONIC ACID	16	U		16	U		10	J	P	42	J	R	

PROJ_NO: 08005-WE04 SDG: 320-35900-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-020818-FRB-0335			WGNA-020818-FRB-3556			WGNA-020818-RW-0335			WGNA-020818-RW-3556		
	LAB_ID	320-35900-8			320-35900-4			320-35900-7			320-35900-3		
	SAMP_DATE	2/8/2018			2/8/2018			2/8/2018			2/8/2018		
	QC_TYPE	FB			FB			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID	8	U		7.9	U		23			17	J	P	
PERFLUOROBUTANESULFONIC ACID	36	U		35	U		36	U		36	U		
PERFLUOROHEPTANOIC ACID	4	U		3.9	U		6.5	J	P	4.8	J	P	
PERFLUOROHXANESULFONIC ACID	12	U		12	U		7.6	J	P	12	U		
PERFLUORONONANOIC ACID	20	U		20	U		20	U		20	U		
PERFLUOROOCTANE SULFONIC ACID	16	U		16	U		19	J	P	28	J	P	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-RW-142 Lab Sample ID: 320-35900-1
 Matrix: Water Lab File ID: 2018.02.16_537C_033.d
 Analysis Method: 537 Date Collected: 02/08/2018 08:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.8(mL) Date Analyzed: 02/16/2018 14:13
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J-M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	J-M	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)	2.4	J-M	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	87		70-130
STL00996	13C2 PFDA	102		70-130

Wesley L. Salomon
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-FRB-142 Lab Sample ID: 320-35900-2
 Matrix: Water Lab File ID: 2018.02.16_537C_034.d
 Analysis Method: 537 Date Collected: 02/08/2018 08:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.1(mL) Date Analyzed: 02/16/2018 14:18
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 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	95		70-130
STL00996	13C2 PFDA	106		70-130

Steve J. Selman
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-RW-3556 Lab Sample ID: 320-35900-3
 Matrix: Water Lab File ID: 2018.02.16_537C_035.d
 Analysis Method: 537 Date Collected: 02/08/2018 10:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.1(mL) Date Analyzed: 02/16/2018 14:23
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	17	J M	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)	4.8	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	122		70-130

Steve L. Salomon
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-FRB-3556 Lab Sample ID: 320-35900-4
 Matrix: Water Lab File ID: 2018.02.16_537C_036.d
 Analysis Method: 537 Date Collected: 02/08/2018 10:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 254.1(mL) Date Analyzed: 02/16/2018 14:27
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	122		70-130

Steve L. Salomon
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-RW-324 Lab Sample ID: 320-35900-5
 Matrix: Water Lab File ID: 2018.02.16_537C_037.d
 Analysis Method: 537 Date Collected: 02/08/2018 11:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 246.7(mL) Date Analyzed: 02/16/2018 14:32
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42	M J	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	29	J	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	134	Q	70-130

Ali L. Salem
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-FRB-324 Lab Sample ID: 320-35900-6
 Matrix: Water Lab File ID: 2018.02.16_537C_040.d
 Analysis Method: 537 Date Collected: 02/08/2018 11:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 248.1(mL) Date Analyzed: 02/16/2018 14:46
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	121		70-130

Steve L. Selmer
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-RW-0335 Lab Sample ID: 320-35900-7
 Matrix: Water Lab File ID: 2018.02.16_537C_041.d
 Analysis Method: 537 Date Collected: 02/08/2018 12:40
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 247.6(mL) Date Analyzed: 02/16/2018 14:51
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.6	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.5	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	102		70-130

Steve L. Selman
02/22/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-FRB-0335 Lab Sample ID: 320-35900-8
 Matrix: Water Lab File ID: 2018.02.16_537C_042.d
 Analysis Method: 537 Date Collected: 02/08/2018 12:35
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 248.7(mL) Date Analyzed: 02/16/2018 14:55
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	140	Q	70-130

Wesley L. Selmer
02/22/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-RW-142 Lab Sample ID: 320-35900-1
 Matrix: Water Lab File ID: 2018.02.16_537C_033.d
 Analysis Method: 537 Date Collected: 02/08/2018 08:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.8(mL) Date Analyzed: 02/16/2018 14:13
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	J M	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)	2.4	J M	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	87		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-FRB-142 Lab Sample ID: 320-35900-2
 Matrix: Water Lab File ID: 2018.02.16_537C_034.d
 Analysis Method: 537 Date Collected: 02/08/2018 08:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.1(mL) Date Analyzed: 02/16/2018 14:18
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 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	95		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-RW-3556 Lab Sample ID: 320-35900-3
 Matrix: Water Lab File ID: 2018.02.16_537C_035.d
 Analysis Method: 537 Date Collected: 02/08/2018 10:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.1(mL) Date Analyzed: 02/16/2018 14:23
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J M	40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	17	J M	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)	4.8	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		70-130
STL00996	13C2 PFDA	122		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-FRB-3556 Lab Sample ID: 320-35900-4
 Matrix: Water Lab File ID: 2018.02.16_537C_036.d
 Analysis Method: 537 Date Collected: 02/08/2018 10:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 254.1(mL) Date Analyzed: 02/16/2018 14:27
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	122		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-RW-324 Lab Sample ID: 320-35900-5
 Matrix: Water Lab File ID: 2018.02.16_537C_037.d
 Analysis Method: 537 Date Collected: 02/08/2018 11:10
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 246.7(mL) Date Analyzed: 02/16/2018 14:32
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42	M	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	29		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	16	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	J	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	134	Q	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: NAWC-020818-FRB-324 Lab Sample ID: 320-35900-6
 Matrix: Water Lab File ID: 2018.02.16_537C_040.d
 Analysis Method: 537 Date Collected: 02/08/2018 11:05
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 248.1(mL) Date Analyzed: 02/16/2018 14:46
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.1	U	20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	U	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	121		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-RW-0335 Lab Sample ID: 320-35900-7
 Matrix: Water Lab File ID: 2018.02.16_537C_041.d
 Analysis Method: 537 Date Collected: 02/08/2018 12:40
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 247.6(mL) Date Analyzed: 02/16/2018 14:51
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J M	40	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	23		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.6	J	30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.5	J	10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	36	U	91	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: WGNA-020818-FRB-0335 Lab Sample ID: 320-35900-8
 Matrix: Water Lab File ID: 2018.02.16_537C_042.d
 Analysis Method: 537 Date Collected: 02/08/2018 12:35
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 248.7(mL) Date Analyzed: 02/16/2018 14:55
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208836 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	140	Q	70-130

Appendix C

Support Documentation

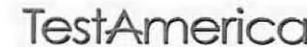


320-35900 Chain of Custody

TestAmerica Sacramento

880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record



THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Andy Frebowitz				Site Contact: Mary Kay Bond		Date: 2/8/2018		COC No:			
TetraTech		Tel/Fax: 610.382.1170				Lab Contact: Dave Alltucker		Carrier: FedEx		1 of 1 COCs			
234 Mall Boulevard Suite 260		Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below 21 <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day				Filtered Sample (Y/N)		Perform MS / MSD (Y / N)		EPA 537 UCMR3		Sampler: Mary Kay Bond	
King of Prussia, PA 19406												For Lab Use Only: Walk-in Client:	
610-382-1174													
610-491-9688													
Project Name: WE04													
Site: WE04													
P O # 1132358 (through EarthToxics)													
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y / N)	EPA 537 UCMR3	Sample Specific Notes:			
NAWC-020818-RW-142		2/8/2018	08:10	G	DW	2	N	N	Y				
NAWC-020818-FRB-142		2/8/2018	08:05	G	DW	2	N	N	Y	Field Reagent Blank			
WGNA-020818-RW-3556		2/8/2018	10:10	G	DW	2	N	N	Y				
WGNA-020818-FRB-3556		2/8/2018	10:05	G	DW	2	N	N	Y	Field Reagent Blank			
NAWC-020818-RW-324		2/8/2018	11:10	G	DW	2	N	N	Y				
NAWC-020818-FRB-324		2/8/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank			
WGNA-020818-RW-0335		2/8/2018	12:40	G	DW	2	N	N	Y				
WGNA-020818-FRB-0335		2/8/2018	12:35	G	DW	2	N	N	Y	Field Reagent Blank			
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6=Other: Trizma							6						
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the							Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown							<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months						
Fed Ex Tracking: 7714 2340 0152													
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 3.5		Corr'd:		Therm ID No.: AK2					
Relinquished by: Mary Kay Bond		Company: Tetra Tech		Date/Time: 2/8/2018 16:00		Received by: [Signature]		Company: TFA-Sac		Date/Time: 2/9/18 940			
Relinquished by:		Company:		Date/Time:		Received by:		Company:		Date/Time:			
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		Date/Time:			

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Job Narrative
320-35900-1

Receipt

The samples were received on 2/9/2018 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

LCMS

Method(s) 537: Surrogate recovery for the following samples was outside control limits: NAWC-020818-RW-324 (320-35900-5), WGNA-020818-FRB-0335 (320-35900-8), (LCS 320-208144/2-A) and (MB 320-208144/1-A). Re-analysis was performed with concurring results. The original analysis has been reported.

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.

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

Organic Prep

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-208144.

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

Definitions/Glossary

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

TestAmerica Job ID: 320-35900-1

Qualifiers

LCMS

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

Glossary

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

Sample Summary

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

TestAmerica Job ID: 320-35900-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-35900-1	NAWC-020818-RW-142	Water	02/08/18 08:10	02/09/18 09:40
320-35900-2	NAWC-020818-FRB-142	Water	02/08/18 08:05	02/09/18 09:40
320-35900-3	WGNA-020818-RW-3556	Water	02/08/18 10:10	02/09/18 09:40
320-35900-4	WGNA-020818-FRB-3556	Water	02/08/18 10:05	02/09/18 09:40
320-35900-5	NAWC-020818-RW-324	Water	02/08/18 11:10	02/09/18 09:40
320-35900-6	NAWC-020818-FRB-324	Water	02/08/18 11:05	02/09/18 09:40
320-35900-7	WGNA-020818-RW-0335	Water	02/08/18 12:40	02/09/18 09:40
320-35900-8	WGNA-020818-FRB-0335	Water	02/08/18 12:35	02/09/18 09:40

Method Summary

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

TestAmerica Job ID: 320-35900-1

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-35900-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-020818-RW-142	320-35900-1	87	102
NAWC-020818-FRB-142	320-35900-2	95	106
WGNA-020818-RW-3556	320-35900-3	81	122
WGNA-020818-FRB-3556	320-35900-4	83	122
NAWC-020818-RW-324	320-35900-5	93	134 Q
NAWC-020818-FRB-324	320-35900-6	92	121
WGNA-020818-RW-0335	320-35900-7	86	102
WGNA-020818-FRB-0335	320-35900-8	86	140 Q
	MB 320-208144/1-A	96	145 Q
	LCS 320-208144/2-A	90	142 Q
	LCSD 320-208144/3-A	92	103

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.02.16_537C_031.d
 Lab ID: LCS 320-208144/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	223	219	98	70-130	M
Perfluorooctanoic acid (PFOA)	112	103	92	70-130	
Perfluorononanoic acid (PFNA)	111	115	104	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	159	96	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	55.1	99	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	415	83	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.02.16_537C_032.d

Lab ID: LCSD 320-208144/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	223	212	95	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	112	101	90	3	30	70-130	
Perfluorononanoic acid (PFNA)	111	111	100	3	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	167	158	95	1	30	70-130	
Perfluoroheptanoic acid (PFHpA)	55.6	53.0	95	4	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	500	400	80	4	30	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab File ID: 2018.02.16_537C_030.d Lab Sample ID: MB 320-208144/1-A
 Matrix: Water Date Extracted: 02/13/2018 10:20
 Instrument ID: A8_N Date Analyzed: 02/16/2018 13:59
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-208144/2-A	2018.02.16_537C 031.d	02/16/2018 14:04
	LCSD 320-208144/3-A	2018.02.16_537C 032.d	02/16/2018 14:09
NAWC-020818-RW-142	320-35900-1	2018.02.16_537C 033.d	02/16/2018 14:13
NAWC-020818-FRB-142	320-35900-2	2018.02.16_537C 034.d	02/16/2018 14:18
WGNA-020818-RW-3556	320-35900-3	2018.02.16_537C 035.d	02/16/2018 14:23
WGNA-020818-FRB-3556	320-35900-4	2018.02.16_537C 036.d	02/16/2018 14:27
NAWC-020818-RW-324	320-35900-5	2018.02.16_537C 037.d	02/16/2018 14:32
NAWC-020818-FRB-324	320-35900-6	2018.02.16_537C 040.d	02/16/2018 14:46
WGNA-020818-RW-0335	320-35900-7	2018.02.16_537C 041.d	02/16/2018 14:51
WGNA-020818-FRB-0335	320-35900-8	2018.02.16_537C 042.d	02/16/2018 14:55

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-208144/1-A
 Matrix: Water Lab File ID: 2018.02.16_537C_030.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 02/13/2018 10:20
 Sample wt/vol: 250.0 (mL) Date Analyzed: 02/16/2018 13:59
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 208812 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	96		70-130
STL00996	13C2 PFDA	145	Q	70-130

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 02/16/2018 09:19
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	937117	1.86	2726868	2.11		
UPPER LIMIT	1405676	2.36	4090302	2.61		
LOWER LIMIT	468559	1.36	1363434	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-208773/11	955394	1.87	2663428	2.12		
ICV 320-208773/13	890238	1.85	2703377	2.11		
CCV 320-208812/1 CCVIS	1002709	1.80	3182424	2.05		
MB 320-208144/1-A	1100471	1.80	3359503	2.05		
LCS 320-208144/2-A	974838	1.80	2870865	2.05		
LCSD 320-208144/3-A	1111442	1.80	3236345	2.05		
320-35900-1	NAWC-020818-RW-142	1098352	1.80	3206942	2.05	
320-35900-2	NAWC-020818-FRB-142	1079037	1.79	3224727	2.04	
320-35900-3	WGNA-020818-RW-3556	974206	1.80	2847084	2.05	
320-35900-4	WGNA-020818-FRB-3556	1062738	1.80	3099249	2.05	
320-35900-5	NAWC-020818-RW-324	1137115	1.80	3188817	2.05	
CCV 320-208812/11 CCVIS	950489	1.80	2838162	2.05		
CCV 320-208836/11 CCVIS	950489	1.80	2838162	2.05		
320-35900-6	NAWC-020818-FRB-324	1058453	1.80	3025986	2.05	
320-35900-7	WGNA-020818-RW-0335	1025764	1.79	3120515	2.04	
320-35900-8	WGNA-020818-FRB-0335	1078902	1.80	3190396	2.05	
CCV 320-208836/16 CCVIS	928919	1.80	2875305	2.05		

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208812/1 Date Analyzed: 02/16/2018 13:50
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_028 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1002709	1.80	3182424	2.05		
UPPER LIMIT	1403793	2.30	4455394	2.55		
LOWER LIMIT	701896	1.30	2227697	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-208144/1-A		1100471	1.80	3359503	2.05	
LCS 320-208144/2-A		974838	1.80	2870865	2.05	
LCSD 320-208144/3-A		1111442	1.80	3236345	2.05	
320-35900-1	NAWC-020818-RW-142	1098352	1.80	3206942	2.05	
320-35900-2	NAWC-020818-FRB-142	1079037	1.79	3224727	2.04	
320-35900-3	WGNA-020818-RW-3556	974206	1.80	2847084	2.05	
320-35900-4	WGNA-020818-FRB-3556	1062738	1.80	3099249	2.05	
320-35900-5	NAWC-020818-RW-324	1137115	1.80	3188817	2.05	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208812/11 Date Analyzed: 02/16/2018 14:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_038 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	950489	1.80	2838162	2.05		
UPPER LIMIT	1330685	2.30	3973427	2.55		
LOWER LIMIT	665342	1.30	1986713	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-208144/1-A		1100471	1.80	3359503	2.05	
LCS 320-208144/2-A		974838	1.80	2870865	2.05	
LCSD 320-208144/3-A		1111442	1.80	3236345	2.05	
320-35900-1	NAWC-020818-RW-142	1098352	1.80	3206942	2.05	
320-35900-2	NAWC-020818-FRB-142	1079037	1.79	3224727	2.04	
320-35900-3	WGNA-020818-RW-3556	974206	1.80	2847084	2.05	
320-35900-4	WGNA-020818-FRB-3556	1062738	1.80	3099249	2.05	
320-35900-5	NAWC-020818-RW-324	1137115	1.80	3188817	2.05	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208836/11 Date Analyzed: 02/16/2018 14:37
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_038 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	950489	1.80	2838162	2.05		
UPPER LIMIT	1330685	2.30	3973427	2.55		
LOWER LIMIT	665342	1.30	1986713	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35900-6	NAWC-020818-FRB-324	1058453	1.80	3025986	2.05	
320-35900-7	WGNA-020818-RW-0335	1025764	1.79	3120515	2.04	
320-35900-8	WGNA-020818-FRB-0335	1078902	1.80	3190396	2.05	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Sample No.: CCV 320-208836/16 Date Analyzed: 02/16/2018 15:00
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.02.16_537C_043 Heated Purge: (Y/N) N
 Calibration ID: 37889

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	928919	1.80	2875305	2.05		
UPPER LIMIT	1300487	2.30	4025427	2.55		
LOWER LIMIT	650243	1.30	2012714	1.55		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-35900-6	NAWC-020818-FRB-324	1058453	1.80	3025986	2.05	
320-35900-7	WGNA-020818-RW-0335	1025764	1.79	3120515	2.04	
320-35900-8	WGNA-020818-FRB-0335	1078902	1.80	3190396	2.05	

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

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

Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.1922 0.9350	1.2685	1.2630	1.1053	1.0403	QuaF		1.3180	-0.002120					1.0000			0.9600
Perfluorohexanesulfonic acid (PFHxS)	1.5376 1.6019	1.6461	1.6181	1.5963	1.6585	Ave		1.6098			2.7		30.0				
Perfluoroheptanoic acid (PFHpA)	0.9596 0.9834	0.9488	0.9462	1.0388	0.9501	Ave		0.9711			3.7		30.0				
Perfluorooctanoic acid (PFOA)	0.9118 0.9514	1.0053	0.9624	0.9616	0.9798	Ave		0.9620			3.2		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.9021 0.9430	0.9481	0.9569	0.9539	0.9692	Ave		0.9455			2.4		30.0				
Perfluorononanoic acid (PFNA)	0.6417 0.6193	0.5823	0.5991	0.6537	0.5962	Ave		0.6154			4.5		30.0				
13C2 PFHxA	1.1327 1.1621	1.0418	1.0430	1.1541	1.0657	Ave		1.0999			5.1		30.0				
13C2 PFDA	0.5790 0.5388	0.4974	0.4674	0.5464	0.5166	Ave		0.5243			7.5		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.: 320-35900-1 Analy Batch No.: 208773

SDG No.: _____

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

Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1004877 16112512	2401851	5386060	9625497	13334361	9.00 180	20.0	45.0	90.0	135
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	432087 9203547	1039145	2300670	4635169	7088297	3.00 60.0	6.67	15.0	30.0	45.0
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	89434 1755879	208408	467875	919334	1334846	1.00 20.0	2.22	5.00	10.0	15.0
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	170858 3415564	443975	956930	1711070	2767901	2.01 40.2	4.47	10.1	20.1	30.2
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	339345 7252490	801200	1821248	3707450	5544581	4.02 80.3	8.93	20.1	40.2	60.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	119635 2211715	255853	592583	1157180	1675602	2.00 40.0	4.45	10.0	20.0	30.0
13C2 PFHxA	13PF OA	Ave	1055358 1037300	1029524	1031304	1021204	998008	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	539488 480980	491558	462142	483499	483740	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.: 320-35900-1 Analy Batch No.: 208773

SDG No.: _____

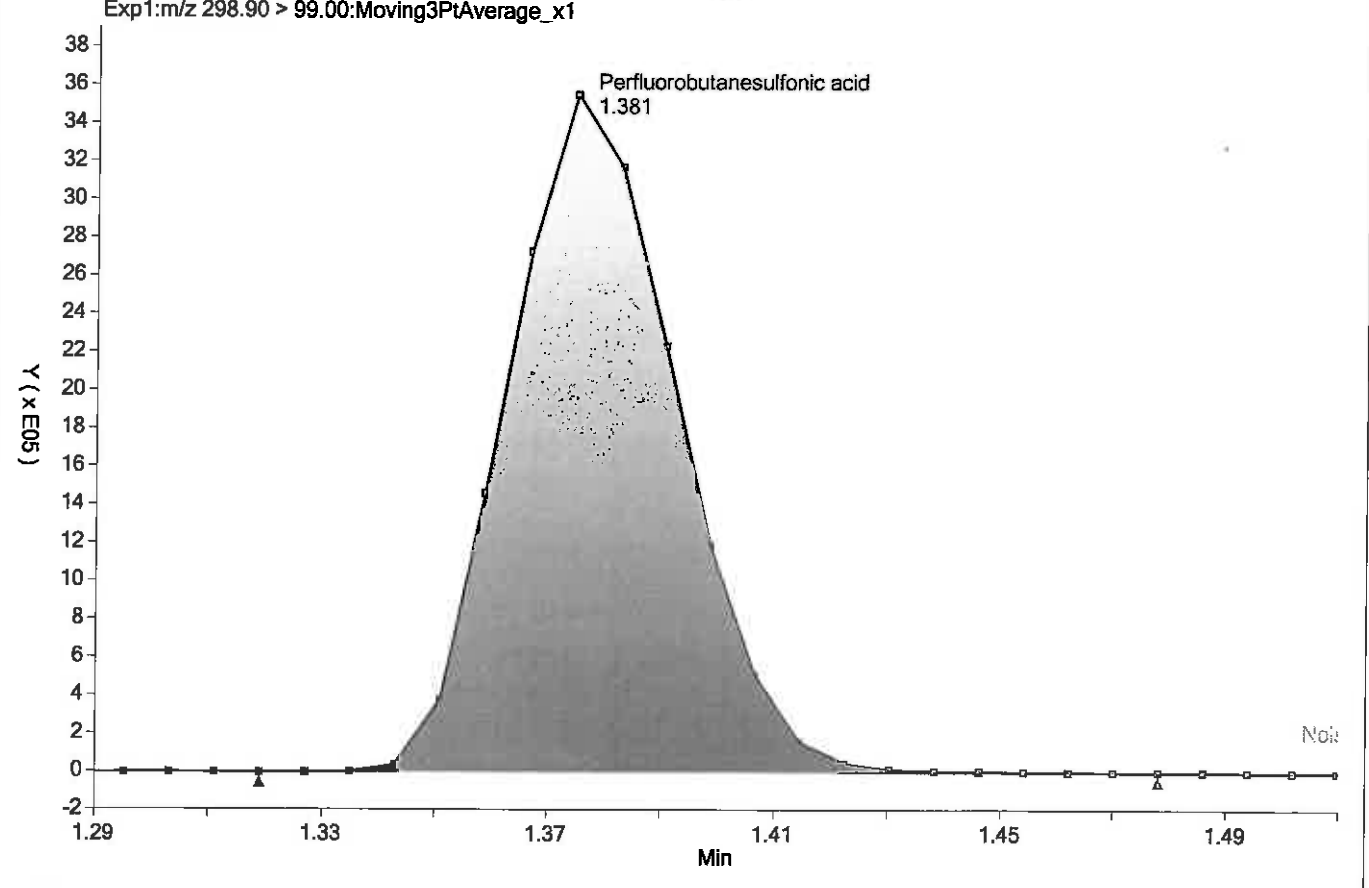
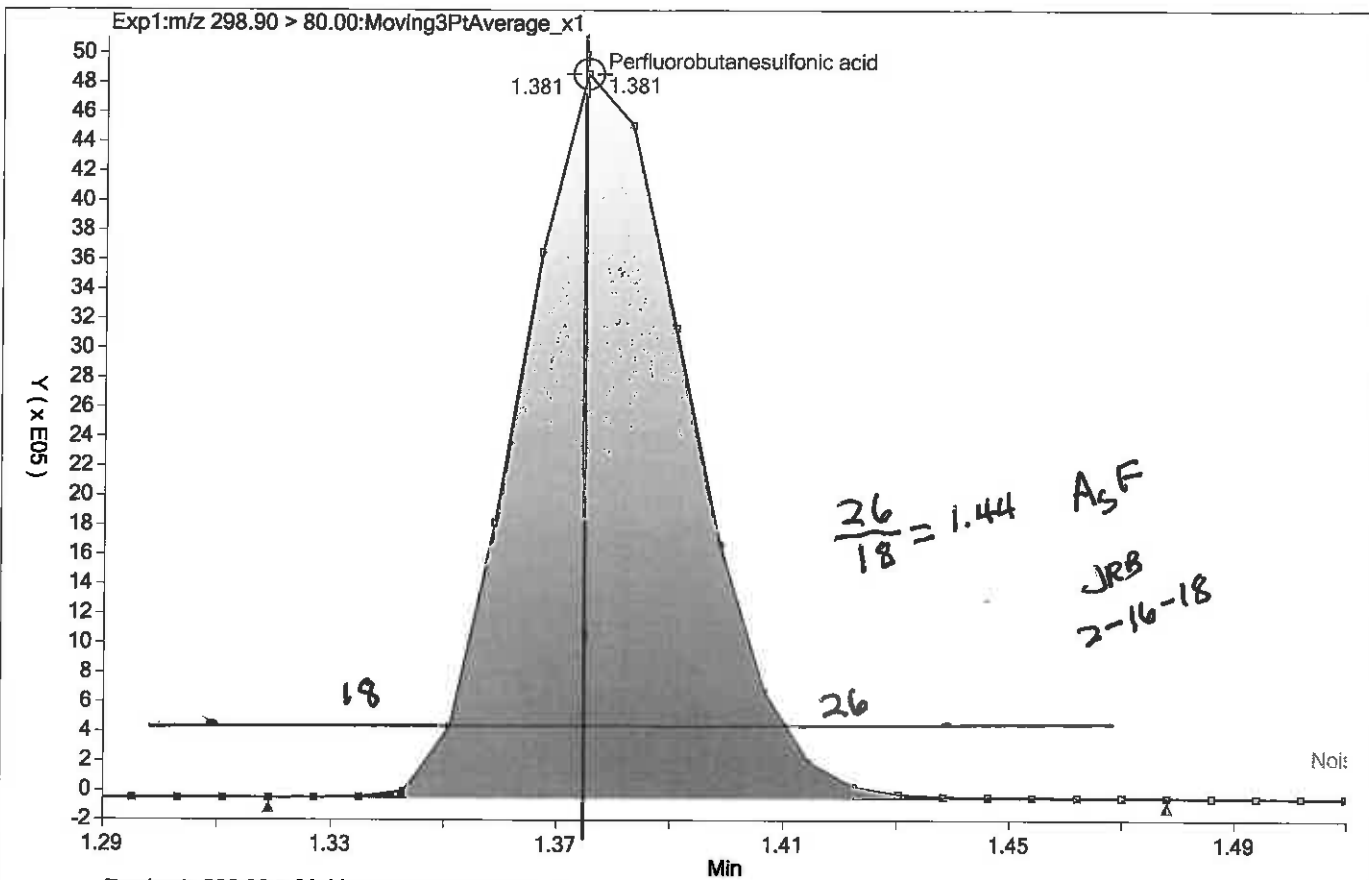
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

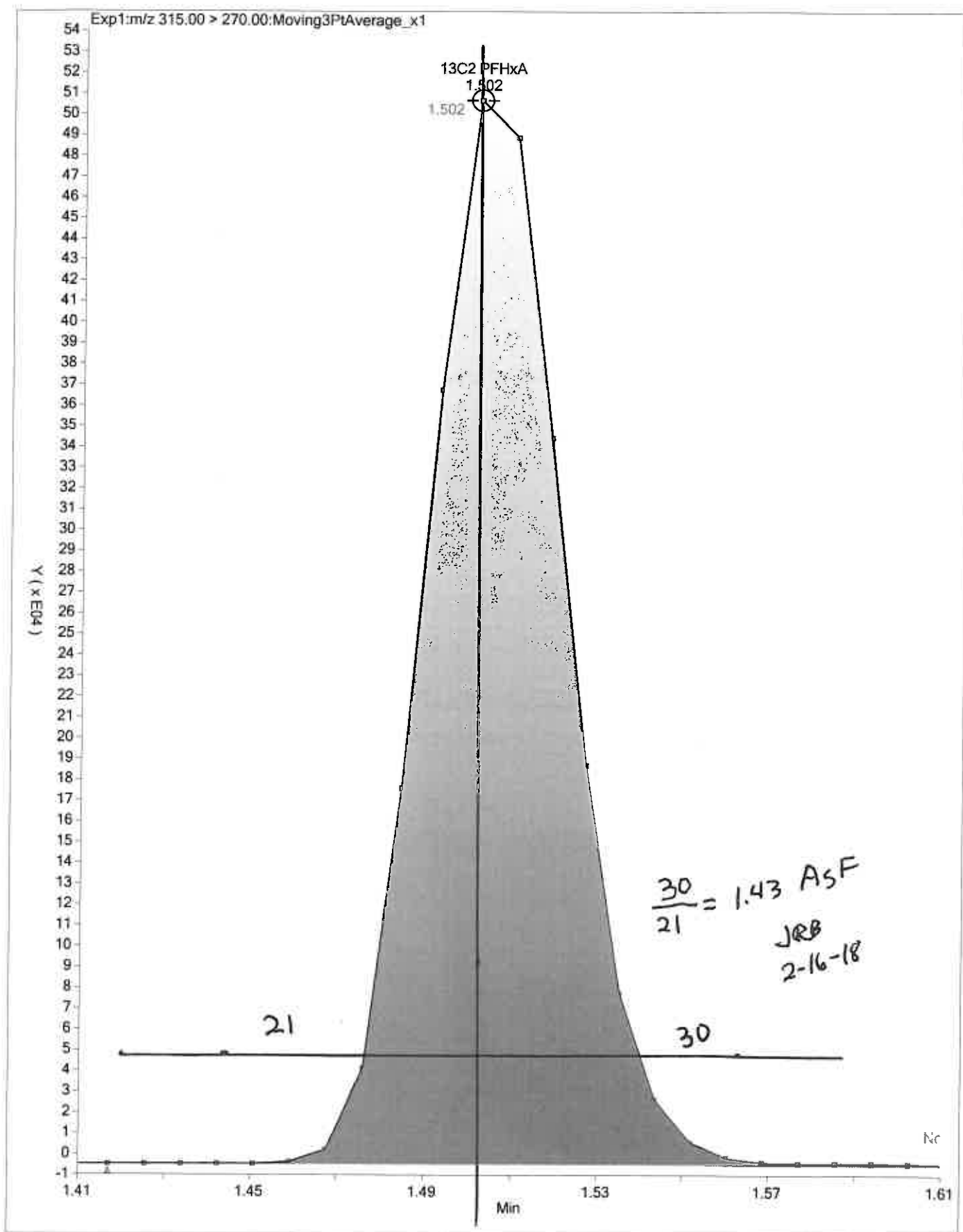
Calibration Start Date: 02/16/2018 08:55 Calibration End Date: 02/16/2018 09:19 Calibration ID: 37889

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-208773/4	2018.02.016_537ICAL_004.d
Level 2	IC 320-208773/5	2018.02.016_537ICAL_005.d
Level 3	IC 320-208773/6	2018.02.016_537ICAL_006.d
Level 4	IC 320-208773/7	2018.02.016_537ICAL_007.d
Level 5	IC 320-208773/8	2018.02.016_537ICAL_008.d
Level 6	IC 320-208773/9	2018.02.016_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-8.3	-0.6	3.6	-2.3	1.1	-0.3	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-4.5	2.3	0.5	-0.8	3.0	-0.5	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-1.2	-2.3	-2.6	7.0	-2.2	1.3	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	-5.2	4.5	0.0	0.0	1.8	-1.1	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-4.6	0.3	1.2	0.9	2.5	-0.3	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.3	-5.4	-2.6	6.2	-3.1	0.6	50	30	30	30	30	30
13C2 PFHxA	3.0	-5.3	-5.2	4.9	-3.1	5.7	30	30	30	30	30	30
13C2 PFDA	10.4	-5.1	-10.9	4.2	-1.5	2.8	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-208773/11 Calibration Date: 02/16/2018 09:28
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.238		19.4	20.0	-3.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.9284		2.12	2.22	-4.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.706		7.07	6.67	6.0	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9302		4.32	4.47	-3.3	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9736		9.19	8.93	3.0	50.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.5986		4.32	4.45	-2.7	50.0
13C2 PFHxA	Ave	1.100	1.037		9.43	10.0	-5.7	30.0
13C2 PFDA	Ave	0.5243	0.5013		9.56	10.0	-4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: ICV 320-208773/13 Calibration Date: 02/16/2018 09:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.016_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.108		100	100	0.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	0.997		10.3	10.0	2.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.686		21.1	20.2	4.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.8998		18.9	20.2	-6.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9852		21.0	20.2	4.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6774		22.2	20.2	10.1	30.0
13C2 PFHxA	Ave	1.100	1.125		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.5243	0.5347		10.2	10.0	2.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208812/1 Calibration Date: 02/16/2018 13:50
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_537C_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.169		42.9	45.0	-4.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.053		5.42	5.00	8.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.613		15.0	15.0	0.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9755		10.2	10.1	1.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9542		20.3	20.1	0.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7222		11.7	10.0	17.4	30.0
13C2 PFHxA	Ave	1.100	1.164		10.6	10.0	5.8	30.0
13C2 PFDA	Ave	0.5243	0.5611		10.7	10.0	7.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208812/11 Calibration Date: 02/16/2018 14:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_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		1.001		130	135	-4.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.000		15.4	15.0	2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.643		45.9	45.0	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9818		30.8	30.2	2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.996		63.5	60.3	5.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6772		33.0	30.0	10.0	30.0
13C2 PFHxA	Ave	1.100	1.111		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.5243	0.5358		10.2	10.0	2.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208836/11 Calibration Date: 02/16/2018 14:37
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_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		1.001		130	135	-4.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.000		15.4	15.0	2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.643		45.9	45.0	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9818		30.8	30.2	2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.996		63.5	60.3	5.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.6772		33.0	30.0	10.0	30.0
13C2 PFHxA	Ave	1.100	1.111		10.1	10.0	1.0	30.0
13C2 PFDA	Ave	0.5243	0.5358		10.2	10.0	2.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1
 SDG No.: _____
 Lab Sample ID: CCV 320-208836/16 Calibration Date: 02/16/2018 15:00
 Instrument ID: A8_N Calib Start Date: 02/16/2018 08:55
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 02/16/2018 09:19
 Lab File ID: 2018.02.16_537C_043.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.172		43.0	45.0	-4.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.610	1.645		15.3	15.0	2.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.9711	1.051		5.41	5.00	8.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.9620	0.9767		10.2	10.1	1.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	0.9455	0.9602		20.4	20.1	1.5	30.0
Perfluorononanoic acid (PFNA)	Ave	0.6154	0.7174		11.7	10.0	16.6	30.0
13C2 PFHxA	Ave	1.100	1.150		10.5	10.0	4.5	30.0
13C2 PFDA	Ave	0.5243	0.5305		10.1	10.0	1.2	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/16/2018 08:55

Analysis Batch Number: 208773 End Date: 02/16/2018 09:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-208773/4		02/16/2018 08:55	1	2018.02.016_537 ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-208773/5		02/16/2018 09:00	1	2018.02.016_537 ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-208773/6		02/16/2018 09:05	1	2018.02.016_537 ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-208773/7 ICISAV		02/16/2018 09:09	1	2018.02.016_537 ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-208773/8		02/16/2018 09:14	1	2018.02.016_537 ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-208773/9		02/16/2018 09:19	1	2018.02.016_537 ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:23	1		GeminiC18 3x100 3(mm)
CCVL 320-208773/11		02/16/2018 09:28	1	2018.02.016_537 ICAL 011.d	GeminiC18 3x100 3(mm)
ZZZZZ		02/16/2018 09:33	1		GeminiC18 3x100 3(mm)
ICV 320-208773/13		02/16/2018 09:37	1	2018.02.016_537 ICAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/16/2018 13:50

Analysis Batch Number: 208812 End Date: 02/16/2018 14:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-208812/1 CCVIS		02/16/2018 13:50	1	2018.02.16_537C 028.d	GeminiC18 3x100 3(mm)
MB 320-208144/1-A		02/16/2018 13:59	1	2018.02.16_537C 030.d	GeminiC18 3x100 3(mm)
LCS 320-208144/2-A		02/16/2018 14:04	1	2018.02.16_537C 031.d	GeminiC18 3x100 3(mm)
LCSD 320-208144/3-A		02/16/2018 14:09	1	2018.02.16_537C 032.d	GeminiC18 3x100 3(mm)
320-35900-1		02/16/2018 14:13	1	2018.02.16_537C 033.d	GeminiC18 3x100 3(mm)
320-35900-2		02/16/2018 14:18	1	2018.02.16_537C 034.d	GeminiC18 3x100 3(mm)
320-35900-3		02/16/2018 14:23	1	2018.02.16_537C 035.d	GeminiC18 3x100 3(mm)
320-35900-4		02/16/2018 14:27	1	2018.02.16_537C 036.d	GeminiC18 3x100 3(mm)
320-35900-5		02/16/2018 14:32	1	2018.02.16_537C 037.d	GeminiC18 3x100 3(mm)
CCV 320-208812/11 CCVIS		02/16/2018 14:37	1	2018.02.16_537C 038.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Instrument ID: A8_N Start Date: 02/16/2018 14:37

Analysis Batch Number: 208836 End Date: 02/16/2018 15:00

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-208836/11 CCVIS		02/16/2018 14:37	1	2018.02.16_537C 038.d	GeminiC18 3x100 3(mm)
320-35900-6		02/16/2018 14:46	1	2018.02.16_537C 040.d	GeminiC18 3x100 3(mm)
320-35900-7		02/16/2018 14:51	1	2018.02.16_537C 041.d	GeminiC18 3x100 3(mm)
320-35900-8		02/16/2018 14:55	1	2018.02.16_537C 042.d	GeminiC18 3x100 3(mm)
CCV 320-208836/16 CCVIS		02/16/2018 15:00	1	2018.02.16_537C 043.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-35900-1

SDG No.: _____

Batch Number: 208144 Batch Start Date: 02/13/18 10:20 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 02/14/18 16:17

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00026
MB 320-208144/1		537, 537				250.0 mL	1.0 mL	7 SU	
LCS 320-208144/2		537, 537				250.0 mL	1.0 mL	7 SU	100 uL
LCSD 320-208144/3		537, 537				250.0 mL	1.0 mL	7 SU	100 uL
320-35900-A-1	NAWC-020818-RW-142	537, 537	T	277.73 g	26.93 g	250.8 mL	1.0 mL	7 SU	
320-35900-A-2	NAWC-020818-FRB-142	537, 537	T	278.30 g	28.20 g	250.1 mL	1.0 mL	7 SU	
320-35900-A-3	WGNA-020818-RW-3556	537, 537	T	277.47 g	27.38 g	250.1 mL	1.0 mL	7 SU	
320-35900-A-4	WGNA-020818-FRB-3556	537, 537	T	282.00 g	27.92 g	254.1 mL	1.0 mL	7 SU	
320-35900-A-5	NAWC-020818-RW-324	537, 537	T	273.96 g	27.25 g	246.7 mL	1.0 mL	7 SU	
320-35900-A-6	NAWC-020818-FRB-324	537, 537	T	277.68 g	29.60 g	248.1 mL	1.0 mL	7 SU	
320-35900-A-7	WGNA-020818-RW-0335	537, 537	T	274.68 g	27.05 g	247.6 mL	1.0 mL	7 SU	
320-35900-A-8	WGNA-020818-FRB-0335	537, 537	T	276.80 g	28.07 g	248.7 mL	1.0 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00055	LC537-SU 00057	AnalysisComment			
MB 320-208144/1		537, 537		100 uL	100 uL	C1 ND			
LCS 320-208144/2		537, 537		100 uL	100 uL	C1 ND			
LCSD 320-208144/3		537, 537		100 uL	100 uL	C1 ND			
320-35900-A-1	NAWC-020818-RW-142	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-2	NAWC-020818-FRB-142	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-3	WGNA-020818-RW-3556	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-4	WGNA-020818-FRB-3556	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-5	NAWC-020818-RW-324	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-6	NAWC-020818-FRB-324	537, 537	T	100 uL	100 uL	C1 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.: 320-35900-1

SDG No.: _____

Batch Number: 208144 Batch Start Date: 02/13/18 10:20 Batch Analyst: Kolstad, Kate M

Batch Method: 537 Batch End Date: 02/14/18 16:17

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00055	LC537-SU 00057	AnalysisComment			
320-35900-A-7	WGNA-020818-RW-0335	537, 537	T	100 uL	100 uL	C1 ND			
320-35900-A-8	WGNA-020818-FRB-0335	537, 537	T	100 uL	100 uL	C1 ND			

Batch Notes	
Analyst ID - Aliquot Step	KMK
Batch Comment	Sample labels match Client ID's: KMK 2-13-18
Analyst ID - Concentration	SKD/KMK
Analyst ID - Final Volume Step	KMK
Internal Standard ID#	1099355
Manifold ID	7
Methanol ID	1152898
pH Indicator ID	2517
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	TWL
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	JNS
Analyst ID - TA Reagent Drop	KMK
Analyst ID - TA Reagent Drop Witness	JNS
SPE Cartridge Lot ID	6369499-05
Trizma ID	SLBR4303V
Reagent Water ID	2-9-18

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.

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AK 2/15/18

AY 2/17/18

Batch Number: 320-208144











Analyst: Kolstad, Kate M

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End: 2/14/2018 4:17:00PM

Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-208144/1 N/A	N/A		250.0 mL	7			N/A	N/A	N/A	CI ND R1	
			1.0 mL								
2 LCS-320-208144/2 N/A	N/A		250.0 mL	7			N/A	N/A	N/A	CI ND R1	
			1.0 mL								
3 LCSD-320-208144/3 N/A	N/A		250.0 mL	7			N/A	N/A	N/A	CI ND	
			1.0 mL								
320-35900-A-1 (537_DOD5)	N/A (320-35900-1)	277.73 g	250.8 mL	7			2/13/18	16_Days	4	CI ND	
		26.93 g	1.0 mL								
320-35900-A-2 (537_DOD5)	N/A (320-35900-1)	278.30 g	250.1 mL	7			2/13/18	16_Days	4	CI ND	
		28.20 g	1.0 mL								
320-35900-A-3 (537_DOD5)	N/A (320-35900-1)	277.47 g	250.1 mL	7			2/13/18	16_Days	4	CI ND	
		27.38 g	1.0 mL								
320-35900-A-4 (537_DOD5)	N/A (320-35900-1)	282.00 g	254.1 mL	7			2/13/18	16_Days	4	CI ND	
		27.92 g	1.0 mL								
320-35900-A-5 (537_DOD5)	N/A (320-35900-1)	273.96 g	246.7 mL	7			2/13/18	16_Days	4	CI ND R1	
		27.25 g	1.0 mL								
320-35900-A-6 (537_DOD5)	N/A (320-35900-1)	277.68 g	248.1 mL	7			2/13/18	16_Days	4	CI ND	
		29.60 g	1.0 mL								
320-35900-A-7 (537_DOD5)	N/A (320-35900-1)	274.68 g	247.6 mL	7			2/13/18	16_Days	4	CI ND	
		27.05 g	1.0 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-208144


Analyst: Kolstad, Kate M

Batch Open: 2/13/2018 10:20:00AM

Method Code: 320-537_Prep-320

Batch End: 2/14/2018 4:17:00PM

11

320-35900-A-8 (537_DOD5)	N/A (320-35900-1)	276.80 g	248.7 mL	7			2/13/18	16_Days	4	CI ND	TZI	 <small>320-35900-A-8-A</small>
		28.07 g	1.0 mL									

Batch Notes

Manifold ID 7

pH Indicator ID 2517

Trizma ID SLBR4303V

SPE Cartridge Lot ID 6369499-05

Methanol ID 1152898

Reagent Water ID 2-9-18

Internal Standard ID# 1099355

Pipette ID M16387D

Analyst ID - TA Reagent Drop KMK

Analyst ID - TA Reagent Drop JNS
Witness

Analyst ID - SU Reagent Drop KMK

Analyst ID - SU Reagent Drop JNS
Witness

Analyst ID - IS Reagent Drop KMK

Analyst ID - IS Reagent Drop TWL
Witness

Analyst ID - Concentration SKD/KMK

Analyst ID - Aliquot Step KMK

Analyst ID - Final Volume Step KMK

Batch Comment Sample labels match Client ID's: KMK 2-13-18

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PFAS Calibration Calculations:

Initial Calibration 2/16/2018
 Instrument A8_N

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
4.02	339345	2685321	28.7	0.90220	0.9021
8.93	801200	2714895	28.7	0.94846	0.9481
20.1	1821248	2717621	28.7	0.95690	0.9569
40.2	3707450	2774986	28.7	0.95383	0.9539
60.3	5544581	2722967	28.7	0.96915	0.9692
80.3	7252490	2745419	28.7	0.94416	0.943
Average				0.94578	0.9455
Standard Deviation				0.0230	
RSD				0.0243	
%RSD				2.43134	2.4

Continuing Calibration 02/16/2018 @ 14:37

PFOS

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
60.3	5940005	2838162	28.7	0.9961	5.3544007	0.996	5.4

Willow Grove
SDG 320-35900-1

Sample Identification NAWC-020818-RW-324

Compound PFOS

Compound Area 1080356

Internal Standard Amount (ng) 28.7

Dilution Factor 1

Internal Standard Area 3188817

Average RRF 0.9455

Sample Volume(L) 0.2467

Volume Extract (ml) 1

Injection Volume (μ l) 1

Concentration 41.6858 ng/L

TestAmerica Sacramento

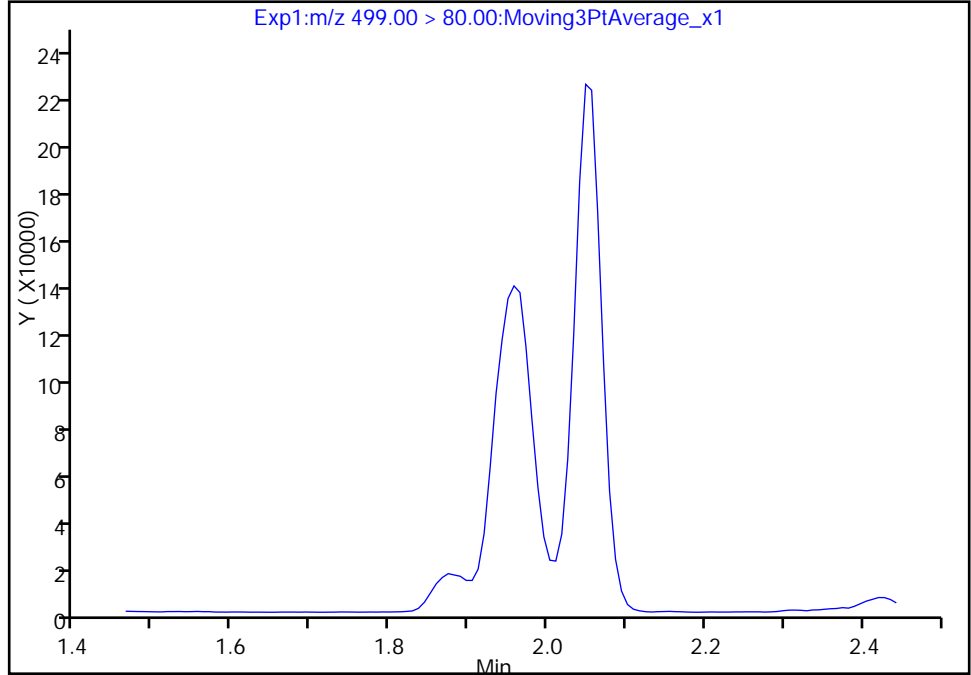
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180216-54176.b\2018.02.16_537C_037.d
Injection Date: 16-Feb-2018 14:32:28 Instrument ID: A8_N
Lims ID: 320-35900-A-5-A Lab Sample ID: 320-35900-5
Client ID: NAWC-020818-RW-324
Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

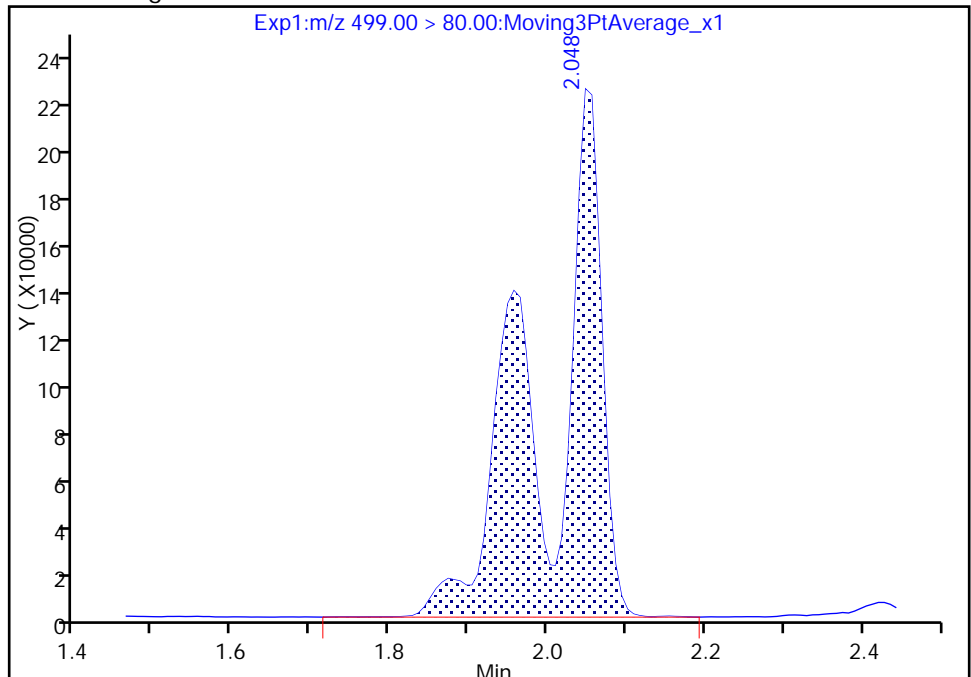
Not Detected
Expected RT: 2.05

Processing Integration Results



Manual Integration Results

RT: 2.05
Area: 1080356
Amount: 10.276325
Amount Units: ng/ml

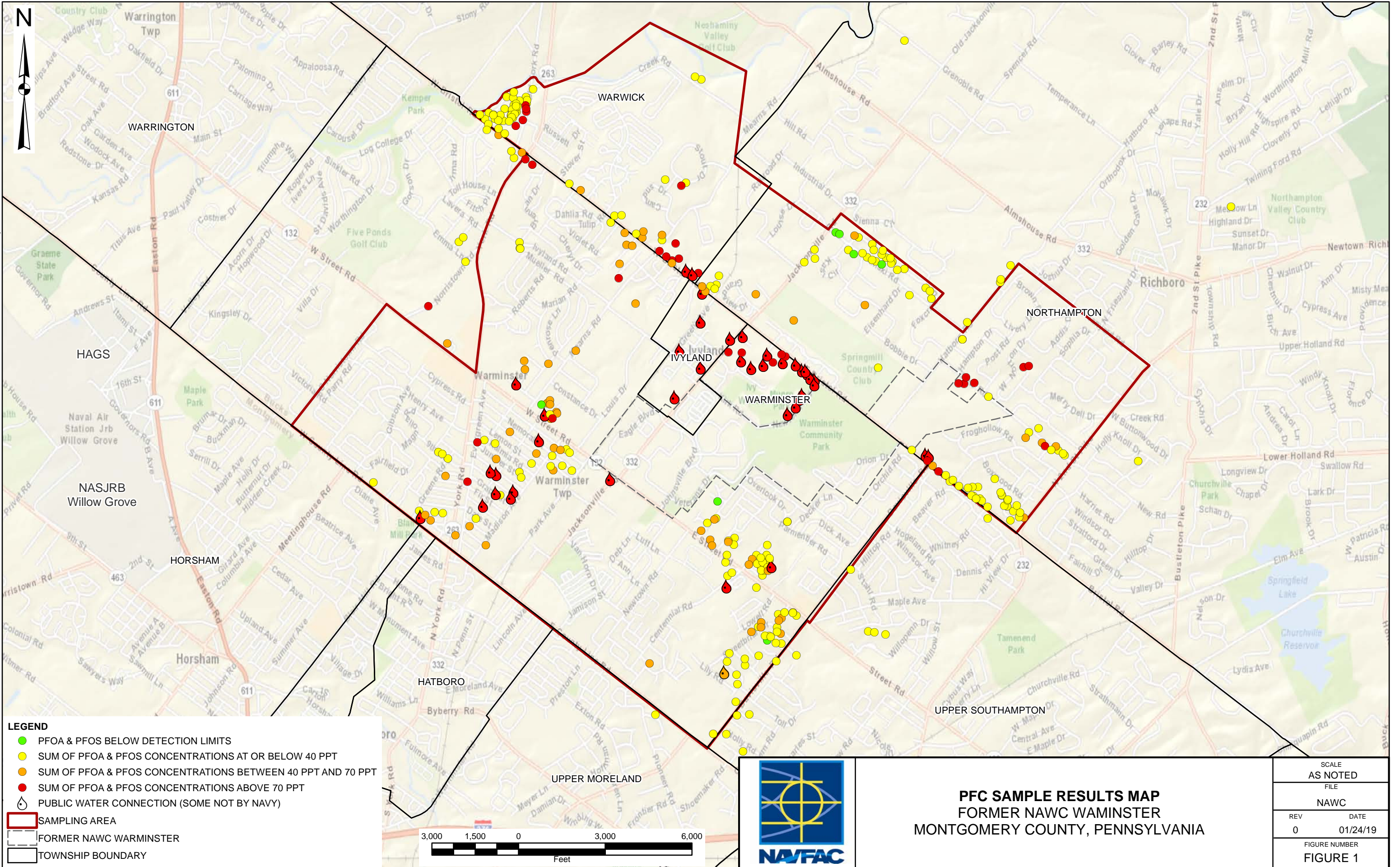


Reviewer: roycea, 17-Feb-2018 09:46:47

Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

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LEGEND

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- 👉 PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARRINSTER
- TOWNSHIP BOUNDARY



PFC SAMPLE RESULTS MAP
 FORMER NAWC WARRINSTER
 MONTGOMERY COUNTY, PENNSYLVANIA

SCALE AS NOTED	
FILE	
NAWC	
REV 0	DATE 01/24/19
FIGURE NUMBER	
FIGURE 1	