NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, and the Sample Location Figure, SDG 320-28765-1

Naval Air Warfare Center Warminster
Warminster, Pennsylvania

August 2019

N62269_001153
WARMINSTER_NAWC
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-28765-1, NAS WILLOW GROVE NAWC WARMINSTER PA

06/23/2017

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-28765-1

Job Description: TetraT: PFAS, NAS JRB Willow Grove

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

Attention: Andy Frebowitz

Approved for release.
David R Alltucker
Project Manager I
6/23/2017 12:17 PM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
06/23/2017

Table of Contents

Table of Contents

Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Glossary

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

Job Narrative
320-28765-1

Receipt
The samples were received on 6/2/2017 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4º C.

LCMS
No analytical or quality issues were noted, other than those described 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 320-169392.

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: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28765-1

Client Sample ID: NAWC-060117-RW-29 — Lab Sample ID: 320-28765-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	18	J	19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.9	J	29	5.3	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.6	J	9.6	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-060117-FRB-29 — Lab Sample ID: 320-28765-2

No Detections.

Client Sample ID: NAWC-060117-RW-154 — Lab Sample ID: 320-28765-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	22		19	2.6	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.7	J	9.5	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-060117-FRB-154 — Lab Sample ID: 320-28765-4

No Detections.

Client Sample ID: NAWC-060117-RW-269 — Lab Sample ID: 320-28765-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.5	J	9.5	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-060117-FRB-269 — Lab Sample ID: 320-28765-6

No Detections.

Client Sample ID: NAWC-060117-RW-38 — Lab Sample ID: 320-28765-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J M	38	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	21		19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.4	J	28	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.0	J	9.4	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-060117-FRB-38 — Lab Sample ID: 320-28765-8

No Detections.

Client Sample ID: NAWC-060117-RW-39 — Lab Sample ID: 320-28765-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	15	J	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	12	J	19	2.7	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.3	J	9.5	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

TestAmerica Job ID: 320-28765-1

Client Sample ID: NAWC-060117-FRB-39 — Lab Sample ID: 320-28765-10

No Detections.

Client Sample ID: NAWC-060117-DUP01 — Lab Sample ID: 320-28765-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J	38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	23		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13	J	29	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.5	J	9.5	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: NAWC-060117-RW-29 — Lab Sample ID: 320-28765-1

Date Collected: 06/01/17 08:10 — **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**20**	**J**	38	6.5	ng/L		06/15/17 09:42	06/19/17 21:00	1
Perfluorooctanoic acid (PFOA)	**18**	**J**	19	2.7	ng/L		06/15/17 09:42	06/19/17 21:00	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		06/15/17 09:42	06/19/17 21:00	1
Perfluorohexanesulfonic acid (PFHxS)	**6.9**	**J**	29	5.3	ng/L		06/15/17 09:42	06/19/17 21:00	1
Perfluoroheptanoic acid (PFHpA)	**4.6**	**J**	9.6	1.8	ng/L		06/15/17 09:42	06/19/17 21:00	1
Perfluorobutanesulfonic acid (PFBS)	35	U M	86	15	ng/L		06/15/17 09:42	06/19/17 21:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:00*	*1*
13C2 PFDA	*94*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:00*	*1*

Client Sample ID: NAWC-060117-FRB-29 — Lab Sample ID: 320-28765-2

Date Collected: 06/01/17 08:05 — **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		06/15/17 09:42	06/19/17 21:04	1
Perfluorooctanoic acid (PFOA)	7.5	U	19	2.6	ng/L		06/15/17 09:42	06/19/17 21:04	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		06/15/17 09:42	06/19/17 21:04	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		06/15/17 09:42	06/19/17 21:04	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	1.8	ng/L		06/15/17 09:42	06/19/17 21:04	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		06/15/17 09:42	06/19/17 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:04*	*1*
13C2 PFDA	*91*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:04*	*1*

Client Sample ID: NAWC-060117-RW-154 — Lab Sample ID: 320-28765-3

Date Collected: 06/01/17 08:40 — **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**17**	**J**	38	6.4	ng/L		06/15/17 09:42	06/19/17 21:09	1
Perfluorooctanoic acid (PFOA)	**22**		19	2.6	ng/L		06/15/17 09:42	06/19/17 21:09	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		06/15/17 09:42	06/19/17 21:09	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		06/15/17 09:42	06/19/17 21:09	1
Perfluoroheptanoic acid (PFHpA)	**6.7**	**J**	9.5	1.8	ng/L		06/15/17 09:42	06/19/17 21:09	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	85	15	ng/L		06/15/17 09:42	06/19/17 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*83*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:09*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:09*	*1*

Client Sample ID: NAWC-060117-FRB-154 — Lab Sample ID: 320-28765-4

Date Collected: 06/01/17 08:35 **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	39	6.6	ng/L		06/15/17 09:42	06/19/17 21:14	1
Perfluorooctanoic acid (PFOA)	7.8	U	19	2.7	ng/L		06/15/17 09:42	06/19/17 21:14	1
Perfluorononanoic acid (PFNA)	19	U	23	7.8	ng/L		06/15/17 09:42	06/19/17 21:14	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.4	ng/L		06/15/17 09:42	06/19/17 21:14	1
Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	1.8	ng/L		06/15/17 09:42	06/19/17 21:14	1
Perfluorobutanesulfonic acid (PFBS)	35	U	88	16	ng/L		06/15/17 09:42	06/19/17 21:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:14*	*1*
13C2 PFDA	*90*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:14*	*1*

Client Sample ID: NAWC-060117-RW-269 — Lab Sample ID: 320-28765-5

Date Collected: 06/01/17 09:25 **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**24**	**J**	38	6.4	ng/L		06/15/17 09:42	06/19/17 21:19	1
Perfluorooctanoic acid (PFOA)	**23**		19	2.7	ng/L		06/15/17 09:42	06/19/17 21:19	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		06/15/17 09:42	06/19/17 21:19	1
Perfluorohexanesulfonic acid (PFHxS)	**13**	**J**	28	5.2	ng/L		06/15/17 09:42	06/19/17 21:19	1
Perfluoroheptanoic acid (PFHpA)	**6.5**	**J**	9.5	1.8	ng/L		06/15/17 09:42	06/19/17 21:19	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	85	15	ng/L		06/15/17 09:42	06/19/17 21:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:19*	*1*
13C2 PFDA	*90*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:19*	*1*

Client Sample ID: NAWC-060117-FRB-269 — Lab Sample ID: 320-28765-6

Date Collected: 06/01/17 09:20 **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		06/15/17 09:42	06/19/17 21:33	1
Perfluorooctanoic acid (PFOA)	7.5	U	19	2.6	ng/L		06/15/17 09:42	06/19/17 21:33	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		06/15/17 09:42	06/19/17 21:33	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		06/15/17 09:42	06/19/17 21:33	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	1.8	ng/L		06/15/17 09:42	06/19/17 21:33	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		06/15/17 09:42	06/19/17 21:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:33*	*1*
13C2 PFDA	*98*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:33*	*1*

Client Sample ID: NAWC-060117-RW-38 — Lab Sample ID: 320-28765-7

Date Collected: 06/01/17 10:00 **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**24**	**J M**	38	6.4	ng/L		06/15/17 09:42	06/19/17 21:38	1
Perfluorooctanoic acid (PFOA)	**21**		19	2.6	ng/L		06/15/17 09:42	06/19/17 21:38	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		06/15/17 09:42	06/19/17 21:38	1
Perfluorohexanesulfonic acid (PFHxS)	**7.4**	**J**	28	5.2	ng/L		06/15/17 09:42	06/19/17 21:38	1
Perfluoroheptanoic acid (PFHpA)	**5.0**	**J**	9.4	1.8	ng/L		06/15/17 09:42	06/19/17 21:38	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	84	15	ng/L		06/15/17 09:42	06/19/17 21:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*76*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:38*	*1*
13C2 PFDA	*93*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:38*	*1*

Client Sample ID: NAWC-060117-FRB-38 — Lab Sample ID: 320-28765-8

Date Collected: 06/01/17 09:55 **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.5	ng/L		06/15/17 09:42	06/19/17 21:42	1
Perfluorooctanoic acid (PFOA)	7.7	U	19	2.7	ng/L		06/15/17 09:42	06/19/17 21:42	1
Perfluorononanoic acid (PFNA)	19	U	23	7.7	ng/L		06/15/17 09:42	06/19/17 21:42	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	29	5.3	ng/L		06/15/17 09:42	06/19/17 21:42	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.6	1.8	ng/L		06/15/17 09:42	06/19/17 21:42	1
Perfluorobutanesulfonic acid (PFBS)	35	U	86	15	ng/L		06/15/17 09:42	06/19/17 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:42*	*1*
13C2 PFDA	*90*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:42*	*1*

Client Sample ID: NAWC-060117-RW-39 — Lab Sample ID: 320-28765-9

Date Collected: 06/01/17 09:50 **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**15**	**J**	38	6.5	ng/L		06/15/17 09:42	06/19/17 21:47	1
Perfluorooctanoic acid (PFOA)	**12**	**J**	19	2.7	ng/L		06/15/17 09:42	06/19/17 21:47	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		06/15/17 09:42	06/19/17 21:47	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	29	5.2	ng/L		06/15/17 09:42	06/19/17 21:47	1
Perfluoroheptanoic acid (PFHpA)	**3.3**	**J**	9.5	1.8	ng/L		06/15/17 09:42	06/19/17 21:47	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	86	15	ng/L		06/15/17 09:42	06/19/17 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:47*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:47*	*1*

Client Sample ID: NAWC-060117-FRB-39 — Lab Sample ID: 320-28765-10

Date Collected: 06/01/17 09:45 — **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		06/15/17 09:42	06/19/17 21:52	1
Perfluorooctanoic acid (PFOA)	7.6	U	19	2.6	ng/L		06/15/17 09:42	06/19/17 21:52	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		06/15/17 09:42	06/19/17 21:52	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		06/15/17 09:42	06/19/17 21:52	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	1.8	ng/L		06/15/17 09:42	06/19/17 21:52	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		06/15/17 09:42	06/19/17 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:52*	*1*
13C2 PFDA	*90*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:52*	*1*

Client Sample ID: NAWC-060117-DUP01 — Lab Sample ID: 320-28765-11

Date Collected: 06/01/17 07:00 — **Matrix: Water**
Date Received: 06/02/17 09:45

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	**24**	**J**	38	6.5	ng/L		06/15/17 09:42	06/19/17 21:57	1
Perfluorooctanoic acid (PFOA)	**23**		19	2.7	ng/L		06/15/17 09:42	06/19/17 21:57	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		06/15/17 09:42	06/19/17 21:57	1
Perfluorohexanesulfonic acid (PFHxS)	**13**	**J**	29	5.2	ng/L		06/15/17 09:42	06/19/17 21:57	1
Perfluoroheptanoic acid (PFHpA)	**6.5**	**J**	9.5	1.8	ng/L		06/15/17 09:42	06/19/17 21:57	1
Perfluorobutanesulfonic acid (PFBS)	34	U M	86	15	ng/L		06/15/17 09:42	06/19/17 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:57*	*1*
13C2 PFDA	*94*		*70 - 130*	*06/15/17 09:42*	*06/19/17 21:57*	*1*

Default Detection Limits

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

TestAmerica Job ID: 320-28765-1

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: TetraT: PFAS, NAS JRB Willow Grove

TestAmerica Job ID: 320-28765-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)									
		3C2 PFHx	3C2 PFDA								
Lab Sample ID	Client Sample ID	(70-130)	(70-130)								
320-28765-1	NAWC-060117-RW-29	85	94								
320-28765-2	NAWC-060117-FRB-29	93	91								
320-28765-3	NAWC-060117-RW-154	83	92								
320-28765-4	NAWC-060117-FRB-154	87	90								
320-28765-5	NAWC-060117-RW-269	89	90								
320-28765-6	NAWC-060117-FRB-269	98	98								
320-28765-7	NAWC-060117-RW-38	76	93								
320-28765-8	NAWC-060117-FRB-38	92	90								
320-28765-9	NAWC-060117-RW-39	86	92								
320-28765-10	NAWC-060117-FRB-39	90	90								
320-28765-11	NAWC-060117-DUP01	89	94								
LCS 320-169392/2-A	Lab Control Sample	87	84								
LCSD 320-169392/3-A	Lab Control Sample Dup	96	95								
MB 320-169392/1-A	Method Blank	93	91								

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-169392/1-A
Matrix: Water
Analysis Batch: 169966

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 169392

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		06/15/17 09:42	06/19/17 20:45	1
Perfluorooctanoic acid (PFOA)	8.0	U M	20	2.8	ng/L		06/15/17 09:42	06/19/17 20:45	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		06/15/17 09:42	06/19/17 20:45	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		06/15/17 09:42	06/19/17 20:45	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		06/15/17 09:42	06/19/17 20:45	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		06/15/17 09:42	06/19/17 20:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*06/15/17 09:42*	*06/19/17 20:45*	*1*
13C2 PFDA	*91*		*70 - 130*	*06/15/17 09:42*	*06/19/17 20:45*	*1*

Lab Sample ID: LCS 320-169392/2-A
Matrix: Water
Analysis Batch: 169966

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 169392

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	300	254		ng/L		84	70 - 130
Perfluorooctanoic acid (PFOA)	150	122		ng/L		81	70 - 130
Perfluorononanoic acid (PFNA)	144	110		ng/L		76	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	225	211		ng/L		94	70 - 130
Perfluoroheptanoic acid (PFHpA)	74.3	63.2		ng/L		85	70 - 130
Perfluorobutanesulfonic acid (PFBS)	663	574		ng/L		87	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*87*		*70 - 130*
13C2 PFDA	*84*		*70 - 130*

Lab Sample ID: LCSD 320-169392/3-A
Matrix: Water
Analysis Batch: 169966

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 169392

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	300	288		ng/L		96	70 - 130	13	30
Perfluorooctanoic acid (PFOA)	150	143		ng/L		96	70 - 130	16	30
Perfluorononanoic acid (PFNA)	144	127		ng/L		88	70 - 130	14	30
Perfluorohexanesulfonic acid (PFHxS)	225	233		ng/L		103	70 - 130	10	30
Perfluoroheptanoic acid (PFHpA)	74.3	73.3		ng/L		99	70 - 130	15	30
Perfluorobutanesulfonic acid (PFBS)	663	626		ng/L		95	70 - 130	9	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*96*		*70 - 130*
13C2 PFDA	*95*		*70 - 130*

LCMS

Prep Batch: 169392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-28765-1	NAWC-060117-RW-29	Total/NA	Water	537	
320-28765-2	NAWC-060117-FRB-29	Total/NA	Water	537	
320-28765-3	NAWC-060117-RW-154	Total/NA	Water	537	
320-28765-4	NAWC-060117-FRB-154	Total/NA	Water	537	
320-28765-5	NAWC-060117-RW-269	Total/NA	Water	537	
320-28765-6	NAWC-060117-FRB-269	Total/NA	Water	537	
320-28765-7	NAWC-060117-RW-38	Total/NA	Water	537	
320-28765-8	NAWC-060117-FRB-38	Total/NA	Water	537	
320-28765-9	NAWC-060117-RW-39	Total/NA	Water	537	
320-28765-10	NAWC-060117-FRB-39	Total/NA	Water	537	
320-28765-11	NAWC-060117-DUP01	Total/NA	Water	537	
MB 320-169392/1-A	Method Blank	Total/NA	Water	537	
LCS 320-169392/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-169392/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 169966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-28765-1	NAWC-060117-RW-29	Total/NA	Water	537	169392
320-28765-2	NAWC-060117-FRB-29	Total/NA	Water	537	169392
320-28765-3	NAWC-060117-RW-154	Total/NA	Water	537	169392
320-28765-4	NAWC-060117-FRB-154	Total/NA	Water	537	169392
320-28765-5	NAWC-060117-RW-269	Total/NA	Water	537	169392
MB 320-169392/1-A	Method Blank	Total/NA	Water	537	169392
LCS 320-169392/2-A	Lab Control Sample	Total/NA	Water	537	169392
LCSD 320-169392/3-A	Lab Control Sample Dup	Total/NA	Water	537	169392

Analysis Batch: 169968

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-28765-6	NAWC-060117-FRB-269	Total/NA	Water	537	169392
320-28765-7	NAWC-060117-RW-38	Total/NA	Water	537	169392
320-28765-8	NAWC-060117-FRB-38	Total/NA	Water	537	169392
320-28765-9	NAWC-060117-RW-39	Total/NA	Water	537	169392
320-28765-10	NAWC-060117-FRB-39	Total/NA	Water	537	169392
320-28765-11	NAWC-060117-DUP01	Total/NA	Water	537	169392

Client Sample ID: NAWC-060117-RW-29 — Lab Sample ID: 320-28765-1

Date Collected: 06/01/17 08:10 — **Matrix: Water**
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 21:00	JRB	TAL SAC

Client Sample ID: NAWC-060117-FRB-29 — Lab Sample ID: 320-28765-2

Date Collected: 06/01/17 08:05 — **Matrix: Water**
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 21:04	JRB	TAL SAC

Client Sample ID: NAWC-060117-RW-154 — Lab Sample ID: 320-28765-3

Date Collected: 06/01/17 08:40 — **Matrix: Water**
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 21:09	JRB	TAL SAC

Client Sample ID: NAWC-060117-FRB-154 — Lab Sample ID: 320-28765-4

Date Collected: 06/01/17 08:35 — **Matrix: Water**
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 21:14	JRB	TAL SAC

Client Sample ID: NAWC-060117-RW-269 — Lab Sample ID: 320-28765-5

Date Collected: 06/01/17 09:25 — **Matrix: Water**
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169966	06/19/17 21:19	JRB	TAL SAC

Client Sample ID: NAWC-060117-FRB-269 — Lab Sample ID: 320-28765-6

Date Collected: 06/01/17 09:20 — **Matrix: Water**
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169968	06/19/17 21:33	JRB	TAL SAC

Lab Chronicle

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

TestAmerica Job ID: 320-28765-1

Client Sample ID: NAWC-060117-RW-38
Lab Sample ID: 320-28765-7
Date Collected: 06/01/17 10:00
Matrix: Water
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169968	06/19/17 21:38	JRB	TAL SAC

Client Sample ID: NAWC-060117-FRB-38
Lab Sample ID: 320-28765-8
Date Collected: 06/01/17 09:55
Matrix: Water
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169968	06/19/17 21:42	JRB	TAL SAC

Client Sample ID: NAWC-060117-RW-39
Lab Sample ID: 320-28765-9
Date Collected: 06/01/17 09:50
Matrix: Water
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169968	06/19/17 21:47	JRB	TAL SAC

Client Sample ID: NAWC-060117-FRB-39
Lab Sample ID: 320-28765-10
Date Collected: 06/01/17 09:45
Matrix: Water
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169968	06/19/17 21:52	JRB	TAL SAC

Client Sample ID: NAWC-060117-DUP01
Lab Sample ID: 320-28765-11
Date Collected: 06/01/17 07:00
Matrix: Water
Date Received: 06/02/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			169392	06/15/17 09:42	NS1	TAL SAC
Total/NA	Analysis	537		1	169968	06/19/17 21:57	JRB	TAL SAC

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc. TestAmerica Job ID: 320-28765-1
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-28-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
537	537	Water	Perfluorobutanesulfonic acid (PFBS)
537	537	Water	Perfluoroheptanoic acid (PFHpA)
537	537	Water	Perfluorohexanesulfonic acid (PFHxS)
537	537	Water	Perfluorononanoic acid (PFNA)
537	537	Water	Perfluorooctanesulfonic acid (PFOS)
537	537	Water	Perfluorooctanoic acid (PFOA)

Method Summary

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

TestAmerica Job ID: 320-28765-1

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: 320-28765-1
Project/Site: TetraT: PFAS, NAS JRB Willow Grove

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-28765-1	NAWC-060117-RW-29	Water	06/01/17 08:10	06/02/17 09:45
320-28765-2	NAWC-060117-FRB-29	Water	06/01/17 08:05	06/02/17 09:45
320-28765-3	NAWC-060117-RW-154	Water	06/01/17 08:40	06/02/17 09:45
320-28765-4	NAWC-060117-FRB-154	Water	06/01/17 08:35	06/02/17 09:45
320-28765-5	NAWC-060117-RW-269	Water	06/01/17 09:25	06/02/17 09:45
320-28765-6	NAWC-060117-FRB-269	Water	06/01/17 09:20	06/02/17 09:45
320-28765-7	NAWC-060117-RW-38	Water	06/01/17 10:00	06/02/17 09:45
320-28765-8	NAWC-060117-FRB-38	Water	06/01/17 09:55	06/02/17 09:45
320-28765-9	NAWC-060117-RW-39	Water	06/01/17 09:50	06/02/17 09:45
320-28765-10	NAWC-060117-FRB-39	Water	06/01/17 09:45	06/02/17 09:45
320-28765-11	NAWC-060117-DUP01	Water	06/01/17 07:00	06/02/17 09:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 169966

Lab Sample ID: MB 320-169392/1-A Client Sample ID:

Date Analyzed: 06/19/17 20:45 Lab File ID: 2017.06.19_537B_029.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.86	Incomplete Integration	barnettj	06/20/17 14:13

Lab Sample ID: 320-28765-1 Client Sample ID: NAWC-060117-RW-29

Date Analyzed: 06/19/17 21:00 Lab File ID: 2017.06.19_537B_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:43

Lab Sample ID: 320-28765-3 Client Sample ID: NAWC-060117-RW-154

Date Analyzed: 06/19/17 21:09 Lab File ID: 2017.06.19_537B_034.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:43

Lab Sample ID: 320-28765-5 Client Sample ID: NAWC-060117-RW-269

Date Analyzed: 06/19/17 21:19 Lab File ID: 2017.06.19_537B_036.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:48

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 169968

Lab Sample ID: 320-28765-7 Client Sample ID: NAWC-060117-RW-38

Date Analyzed: 06/19/17 21:38 Lab File ID: 2017.06.19_537B_040.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.18	Baseline	barnettj	06/20/17 14:49
Perfluorooctanesulfonic acid (PFOS)	2.98	Baseline	barnettj	06/20/17 14:49

Lab Sample ID: 320-28765-9 Client Sample ID: NAWC-060117-RW-39

Date Analyzed: 06/19/17 21:47 Lab File ID: 2017.06.19_537B_042.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:50

Lab Sample ID: 320-28765-11 Client Sample ID: NAWC-060117-DUP01

Date Analyzed: 06/19/17 21:57 Lab File ID: 2017.06.19_537B_044.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	2.19	Incomplete Integration	barnettj	06/20/17 14:51

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutane Sulfonate	1656.41 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
..LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutane Sulfonate	2007.77 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
...LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g
							Perfluorobutanesulfonic acid (PFBS)	1 g/g
..LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
..LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
..LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
...LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
...LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
LC537-ICV_00020	07/25/17	02/21/17	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00031	200 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
.LC537-IS_00031	07/31/17	01/31/17	Methanol, Lot 090285	10000 uL	LCM2PFOA_00005	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00019	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-ICV_00020	07/25/17	02/21/17	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00030	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
					LC537ICIM_00015	20 uL	Perfluorobutanesulfonic acid (PFBS)	100.676 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.08 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	21.1854 ng/mL
							Perfluorononanoic acid (PFNA)	20.0076 ng/mL
							Perfluorooctanoic acid (PFOA)	20.0186 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.6936 ng/mL
.LC537-SU_00030	07/31/17	01/31/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	80 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00013	80 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM_00015	07/25/17	02/21/17	Methanol, Lot 090285	25 mL	LC537-PFBS2_00007	0.55 mL	Perfluorobutanesulfonic acid (PFBS)	50.3381 ug/mL
					LC537-PFHpA2_00010	0.05 mL	Perfluoroheptanoic acid (PFHpA)	5.04 ug/mL
					LC537-PFHxS2_00007	0.13 mL	Perfluorohexanesulfonic acid (PFHxS)	10.5927 ug/mL
					LC537-PFNA2_00008	0.093 mL	Perfluorononanoic acid (PFNA)	10.0038 ug/mL
					LC537-PFOA2_00008	0.142 mL	Perfluorooctanoic acid (PFOA)	10.0093 ug/mL
					LC537-PFOS2_00007	0.21 mL	Perfluorooctanesulfonic acid (PFOS)	10.3468 ug/mL
..LC537-PFBS2_00007	08/09/17	02/20/17	Methanol, Lot 090285	8.2 mL	LC537_PFBS2_00001	0.0188 g	Perfluorobutanesulfonic acid (PFBS)	2288.1 ug/mL
...LC537_PFBS2_00001	08/09/17	Santa Cruz Biotechnology, Lot H0112			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFHpA2_00010	07/25/17	12/20/16	Methanol, Lot 09092	25 mL	LC537_PFHpA2_00001	0.063 g	Perfluoroheptanoic acid (PFHpA)	2520 ug/mL
...LC537_PFHpA2_00001	07/25/17	Afla Aesar, Lot 10160443			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
..LC537-PFHxS2_00007	07/25/17	02/20/17	Methanol, Lot 090285	10 mL	LC537_PFHxS2_00001	0.0224 g	Perfluorohexanesulfonic acid (PFHxS)	2037.06 ug/mL
...LC537_PFHxS2_00001	07/25/17	Santa Cruz Biotechnology, Lot F2612			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
..LC537-PFNA2_00008	07/25/17	12/20/16	Methanol, Lot 090285	10 mL	LC537_PFNA2_00001	0.027 g	Perfluorononanoic acid (PFNA)	2689.2 ug/mL
...LC537_PFNA2_00001	07/25/17	Aldrich, Lot MKBJ2926V			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
..LC537-PFOA2_00008	07/25/17	12/20/16	Methanol, Lot 090285	10 mL	LC537_PFOA2_00001	0.0178 g	Perfluorooctanoic acid (PFOA)	1762.2 ug/mL
...LC537_PFOA2_00001	07/25/17	Afla Aesar, Lot D24Y026			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
..LC537-PFOS2_00007	07/26/17	02/20/17	Methanol, Lot 090285	11 mL	LC537_PFOS2_00001	0.0174 g	Perfluorooctanesulfonic acid (PFOS)	1231.76 ug/mL
...LC537_PFOS2_00001	07/26/17	Sigma, Lot BCBF5116V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00041	11/09/17	05/09/17	Methanol, Lot 090285	30000 uL	LCM2PFOA_00005	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	180 uL	13C4 PFOS	0.2868 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00018	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-MSP_00022	50 uL	Perfluorobutanesulfonic acid (PFBS)	8.83417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.00607 ng/mL
							Perfluorononanoic acid (PFNA)	1.926 ng/mL
							Perfluorooctanoic acid (PFOA)	1.998 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.00329 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00022	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	200 uL	Perfluorobutanesulfonic acid (PFBS)	883.417 ng/mL
							Perfluoroheptanoic acid (PFHpA)	99 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	300.607 ng/mL
							Perfluorononanoic acid (PFNA)	192.6 ng/mL
							Perfluorooctanoic acid (PFOA)	199.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	400.329 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00018	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	64 uL	Perfluorobutanesulfonic acid (PFBS)	21.202 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.376 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	7.21457 ng/mL
							Perfluorononanoic acid (PFNA)	4.6224 ng/mL
							Perfluorooctanoic acid (PFOA)	4.7952 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	9.6079 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00020	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	134 uL	Perfluorobutanesulfonic acid (PFBS)	44.3917 ng/mL
							Perfluoroheptanoic acid (PFHpA)	4.97475 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	15.1055 ng/mL
							Perfluorononanoic acid (PFNA)	9.67815 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0399 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1165 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L4_00018	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	270 uL	Perfluorobutanesulfonic acid (PFBS)	89.446 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10.0238 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	30.4365 ng/mL
							Perfluorononanoic acid (PFNA)	19.5008 ng/mL
							Perfluorooctanoic acid (PFOA)	20.2297 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.5333 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L5_00021	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	400 uL	Perfluorobutanesulfonic acid (PFBS)	132.513 ng/mL
							Perfluoroheptanoic acid (PFHpA)	14.85 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.0911 ng/mL
							Perfluorononanoic acid (PFNA)	28.89 ng/mL
							Perfluorooctanoic acid (PFOA)	29.97 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	60.0494 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L6_00017	08/09/17	03/23/17	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00018	530 uL	Perfluorobutanesulfonic acid (PFBS)	175.579 ng/mL
							Perfluoroheptanoic acid (PFHpA)	19.6763 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	59.7457 ng/mL
							Perfluorononanoic acid (PFNA)	38.2792 ng/mL
							Perfluorooctanoic acid (PFOA)	39.7103 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	79.5654 ng/mL
					LC537-IS_00034	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00035	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00018	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	375 uL	Perfluorobutanesulfonic acid (PFBS)	1656.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	185.625 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	563.639 ng/mL
							Perfluorononanoic acid (PFNA)	361.125 ng/mL
							Perfluorooctanoic acid (PFOA)	374.625 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	750.617 ng/mL
..LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid (PFHpA)	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid (PFHxS)	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid (PFNA)	19.26 ug/mL
					LC537-PFOA_00012	200 uL	Perfluorooctanoic acid (PFOA)	19.98 ug/mL
					LC537-PFOS_00007	400 uL	Perfluorooctanesulfonic acid (PFOS)	40.0329 ug/mL
...LC537-PFBS_00007	01/04/18	01/04/17	Methanol, Lot 090285	51.5 mL	LC537_PFBS_00002	0.1034 g	Perfluorobutanesulfonic acid (PFBS)	2007.77 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00014	03/22/18	03/22/17	Methanol, Lot 090285	50 mL	LC537_PFHpA_00002	0.05 g	Perfluoroheptanoic acid (PFHpA)	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	0.99 g/g
...LC537-PFHxS_00009	01/04/18	01/04/17	Methanol, Lot 090285	54 mL	LC537_PFHxS_00002	0.119 g	Perfluorohexanesulfonic acid (PFHxS)	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA_00012	03/22/18	03/22/17	Methanol, Lot 090285	23 mL	LC537_PFNA_00002	0.023 g	Perfluorononanoic acid (PFNA)	963 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.963 g/g
...LC537-PFOA_00012	03/22/18	03/22/17	Methanol, Lot 090285	21.5 mL	LC537_PFOA_00002	0.0215 g	Perfluorooctanoic acid (PFOA)	999 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00007	08/09/17	01/04/17	Methanol, Lot 090285	48.95 mL	LC537_PFOS_00002	0.0538 g	Perfluorooctanesulfonic acid (PFOS)	1000.82 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00034	09/22/17	03/22/17	Methanol, Lot 090285	20000 uL	LCM2PFOA_00005	40 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00019	120 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00019	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00035	09/22/17	03/22/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-SU_00038	10/26/17	04/26/17	Methanol, Lot 104453	20000 uL	LCMPFDA_00012	40 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	40 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFBS_00002

R: 4/1/15 SPV

SIGMA-ALDRICH®

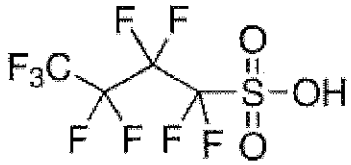
sigma-aldrich.com

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

Certificate of Analysis

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

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



PFBS

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

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

Reagent

LC537_PFBS2_00001

CERTIFICATE OF ANALYSIS

The Power to Question

Catalog Number:	sc-236187
Product Name:	Nonafluorobutane-1-sulfonic acid
CAS Number:	375-73-5
Molecular Formula:	$C_4HF_9O_3S$
Molecular Weight:	300.10
Lot Number:	H0112

Test		Result
Refractive Index	1.3200 to 1.3290	1.3219
Purity (Titration)	min. 98.0%	99.8%

Test Conditions: Refractive Index: n20/D

Reagent

LC537_PFHpA_00002

P: 4/1/15 SRV

SIGMA-ALDRICH®

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

Certificate of Analysis

PFHpA

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

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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

Reagent

LC537_PFHpA2_00001

Certificate of Analysis

Alfa Aesar
A Johnson Matthey Company

Product No.:	A12092
Product:	Perfluoroheptanoic acid, 98+%
Lot No.:	10160443

PFH_pA

Appearance:	White crystalline powder
Melting Point:	28.2 (slip point)

Assay (Aqueous acid-base titration): 100.2%

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

Reagent

LC537_PFHxS_00002

R: 4/1/15 SKV

SIGMA-ALDRICH®

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

Certificate of Analysis

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

PFH_xS-K

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

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Purity = 90.94 / w/m.w correction

SKV 4/1/15

Reagent

LC537_PFHxS2_00001

CERTIFICATE OF ANALYSIS

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

Catalog Number:	sc-237289
Product Name:	Tridecafluorohexane-1-sulfonic acid potassium salt
CAS Number:	3871-99-6
Molecular Formula:	$C_6F_{13}KO_3S$
Molecular Weight:	438.20
Lot Number:	F2612

Test	Specification	Result
Appearance	White to feint beige powder or crystals	White powder
Infrared Spectrum	Conforms to structure	Complies
Purity (Titration, Ion Exchange)	≥ 98.0%	99.6 %

PFH_xS-K

$C_6F_{13}SO_3K$ 438.201

$C_6F_{13}SO_3H$ 400.111

MW correction = $\frac{400.111}{438.201}$ = 0.91307 PFH_xS CAS 355-46-4

Purity & MW correction = 90.9%

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV

Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

Customer service:

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

PFNA

Reagent

LC537_PFNA2_00001

SIGMA-ALDRICH®

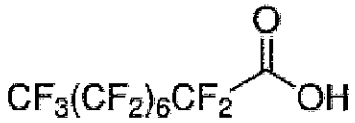
sigma-aldrich.com

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

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

Product Number:	**394459**
Lot Number:	**MKBJ2926V**
Brand:	ALDRICH
CAS Number:	375-95-1
MDL Number:	MFCD00039605
Formula:	C9HF17O2
Formula Weight:	464.08 g/mol
Quality Release Date:	20 OCT 2011



Test	Specification	Result
Appearance (Color)	White to Off-White	White
Appearance (Form) Crystalline Chunk(s) or Granule or Flakes or Solid	Powder or Crystals or	Powder
Infrared spectrum	Conforms to Structure	Conforms
Purity (Titration by NaOH)	96.5 - 103.5 %	100.3 %
GC (area %)	≥ 96.5 %	99.6 %

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

PFNA

Reagent

LC537_PFOA_00002

P: 3/26/15 RV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.11.2013/505378/13/24029

Order-No.:
Customer-No.:

Order-Code:

Quantity:

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

Article/Product: 33824 Batch : SZBD308XV

PFOA

Pentadecafluorooctanoic acid OEKANAL®

Reference Material (RM)

1. General Information

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

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

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

2. Batch Analysis

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

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

This document was produced electronically and is valid without a signature

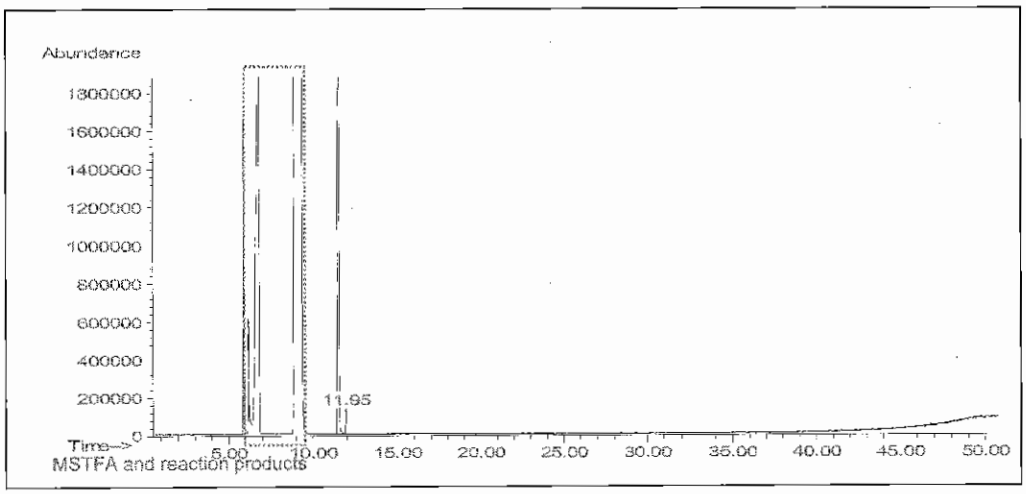
GC/MS-Method

Analytical Department

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

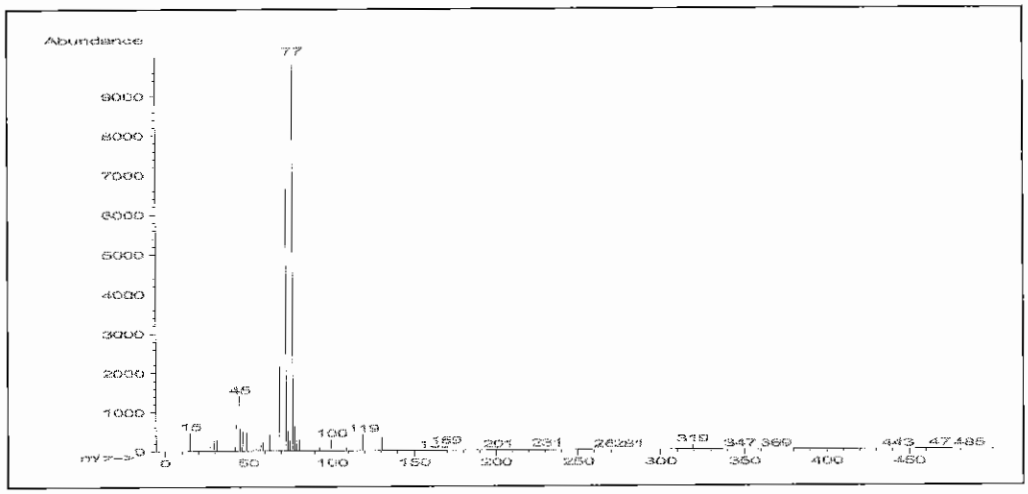
Column:	XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df
Injector:	Split mode
Injection:	approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)
Inj.-temp.:	280°C
Oven-temp.:	40°C (for 2 min) to 320°C (6°C/min) hold for 2 min
Split:	1:100
Flow:	1 ml He/min (Constant flow mode)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

Total Ion Chromatogram:



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

Mass spectrum (rt = 11.54 min):



Reagent

LC537_PFOA2_00001

Certificate of Analysis

Alfa Aesar
A Johnson Matthey Company

Product No.:	L08862
Product:	Perfluorooctanoic acid, 95%
Lot No.:	D24Y026

PFOA

Appearance	White solid
Melting point	58 - 60°C
Assay	99 %
Identity	Matches reference

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

NORTH AMERICA
Tel: +1-800-343-0660 or +1-978-521-6300
Fax: +1-800-322-4757
Email: info@alfa.com

GERMANY
Tel: 00800 4566 4566 or +49 721 84007 280
Fax: 00800 4577 4577 or +49 721 84007 300
Email: Eurosales@alfa.com

UNITED KINGDOM
Tel: 0800-801812 or +44 (0)1524-850506
Fax: +44 (0)1524-850608
Email: UKsales@alfa.com

FRANCE
Tel: 0800 03 51 47 or +33 (0)3 8862 2690
Fax: 0800 10 20 67 or +33 (0)3 8862 6864
Email: frventes@alfa.com

INDIA
Tel: +91 8008 812424 or +91 8008 812525 or +91 8008 812626
Fax: +91 8418 260060
Email: India@alfa.com

CHINA
Tel: +86 (010) 8567-8600
Fax: +86 (010) 8567-8601
Email: saleschina@alfa-asia.com

KOREA
Tel: +82-2-3140-6000
Fax: +82-2-3140-6002
Email: saleskorea@alfa-asia.com

Reagent

LC537_PFOS_00002

Γ: 4/1/15 SV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583

Order-No.:
Customer-No.:

Order-Code:

Quantity:

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

Article/Product: 33829 Batch : SZBC222XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL® PFOS-K+

Reference Material (RM)

1. General Information

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

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

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

2. Batch Analysis

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

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

Purity = 91.06 %

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

This document was produced electronically and is valid without a signature

Reagent

LC537_PFOS2_00001

SIGMA-ALDRICH

ALDRICH

Industriestrasse 25, CH-9471 Buchs (SG), Switzerland
Tel: +41 81 755 2511 Fax: +41 81 756 5449

INV 820
12LCMS 0579

Certificate of Analysis

Product Name:	HEPTADECAFLUOROOCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT 98 %
Product Number:	365289
Product Brand:	Aldrich
Molecular Formula:	$C_{16}H_{20}F_{17}NO_3S$
Molecular Mass:	629.37
CAS Number:	56773-42-3

TEST	SPECIFICATION	LOT BCBF5116V RESULTS
APPEARANCE (COLOR)	OFF-WHITE TO WHITE	WHITE
APPEARANCE (FORM)	POWDER, LUMPS OR CHUNKS	POWDER WITH LUMPS
CARBON CONTENT	29.77 % - 31.29 %	30.52
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

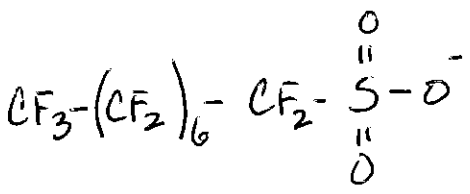
QC RELEASE DATE 13/APR/11

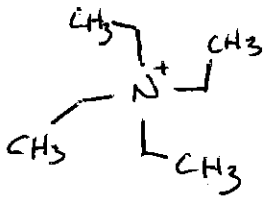
MW correction = $\frac{500.125}{629.37} = 0.7946$ ~~= 79.46%~~ DEH 7-26-12

Purity + MW Correction = 77.87%

E. Schwärzler

Edeltraud Schwärzler, Manager
Quality Control
Buchs, Switzerland





	$C_8F_{17}SO_3H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.964	-
S = 32.066	32.066	-
O = 15.999	47.997	-
H = 1.008	1.008	20.160
N = 14.007	-	14.007
	500.125	130.255 →

SIGMA-ALDRICH

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

Certificate of Origin

Product Name:	Heptadecafluorooctanesulfonic acid tetraethylammonium salt 98 %
Product Number:	365289
Product Brand:	Aldrich
Lot:	BCBF5116V
Molecular Formula:	$C_{16}H_{20}F_{17}NO_3S$
Molecular Mass:	629.37
CAS Number:	56773-42-3
Date of Issue:	30-MAR-11

Country of Origin	China

product is of synthetic origin	yes
only synthetic materials used in the manufacturing process	yes
compounds of animal origin used	no
genetically modified organisms used	no
allergenic materials used	no
procedures in place to avoid cross contamination with residue of animal, human, GMO or allergenes in manufacturing process	yes

Sigma-Aldrich has quality systems and procedures in place for monitoring the production process, traceablility and batch consistency.

Document issued by Sigma-Aldrich Corporation "Sigma-Aldrich". This document is valid without signature and has been produced digitally.

For further questions please contact your local Sigma-Aldrich representative.

We are committed to the success of our Customers, Employees and Shareholders through leadership in Life Science, High Technology and Service.

Reagent

LCM2PFOA_00005

Rec'd. 2/10/15 SV

WELLINGTON LABORATORIES

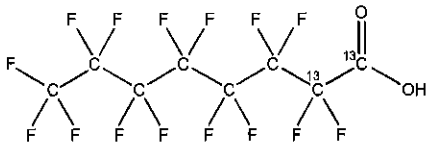
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid

LOT NUMBER: M2PFOA0613

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99%^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	06/19/2013		
EXPIRY DATE: (mm/dd/yyyy)	06/19/2018		
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:** 07/16/2013 (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. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

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. Material Safety Data Sheets (MSDSs) 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, 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 and/or LC/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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

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

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

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

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all 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 17025:2005 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 for the period of time specified by the 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:

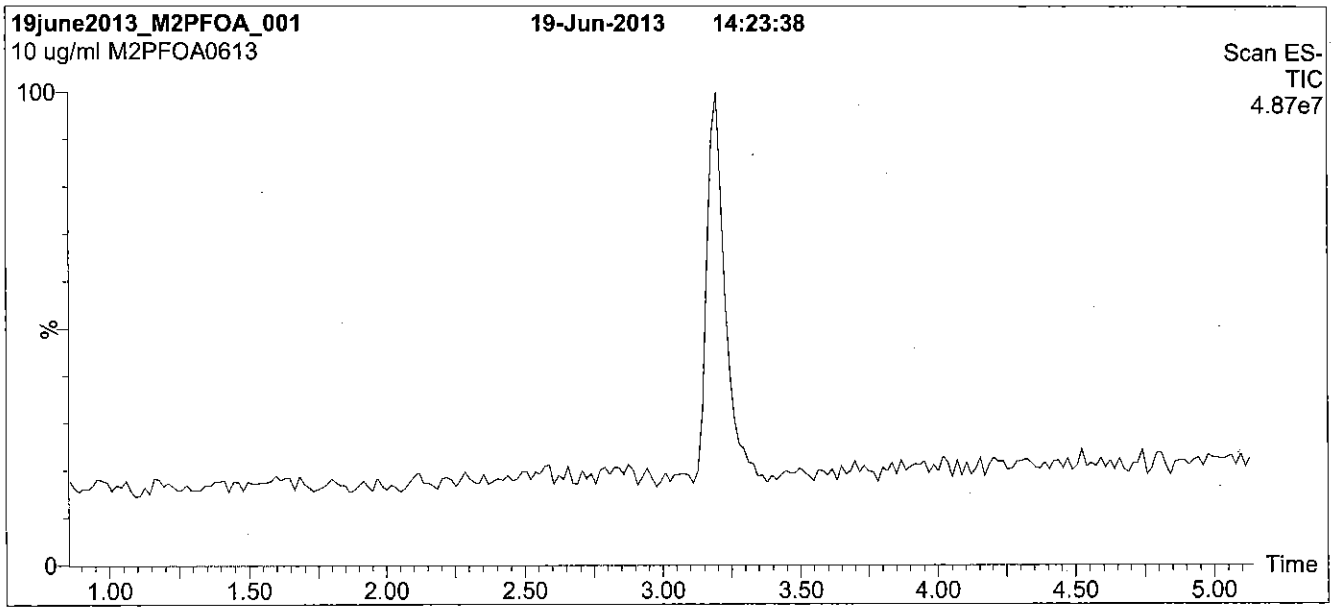
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

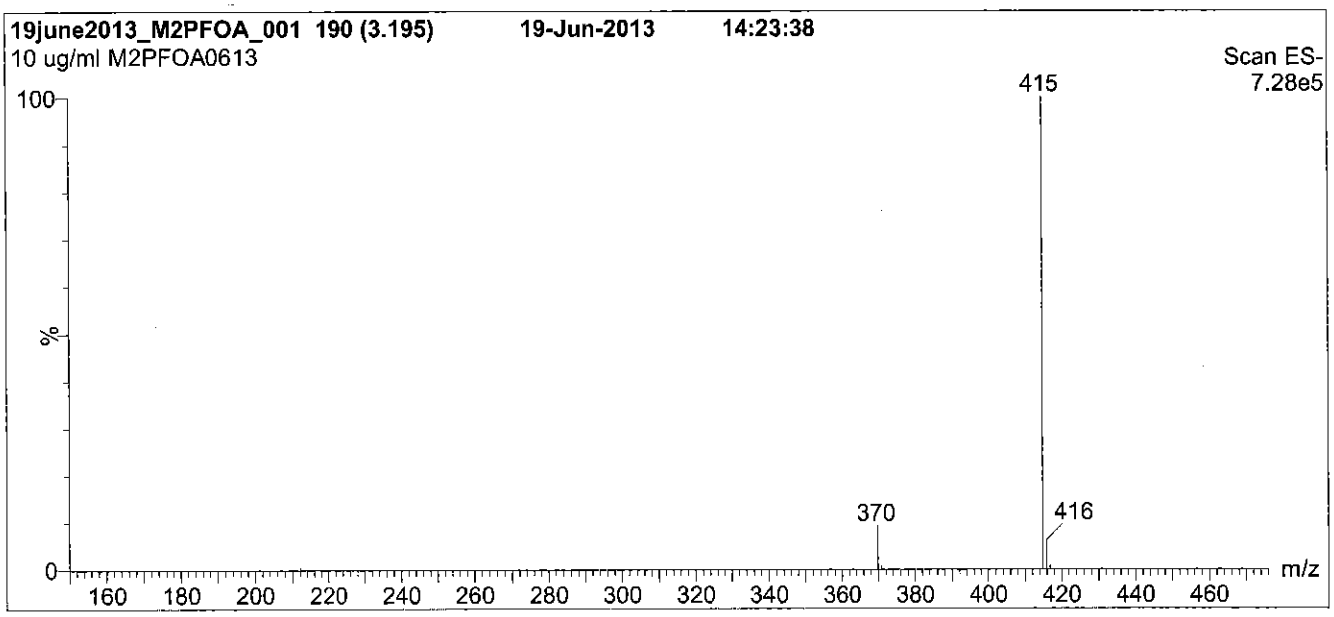
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

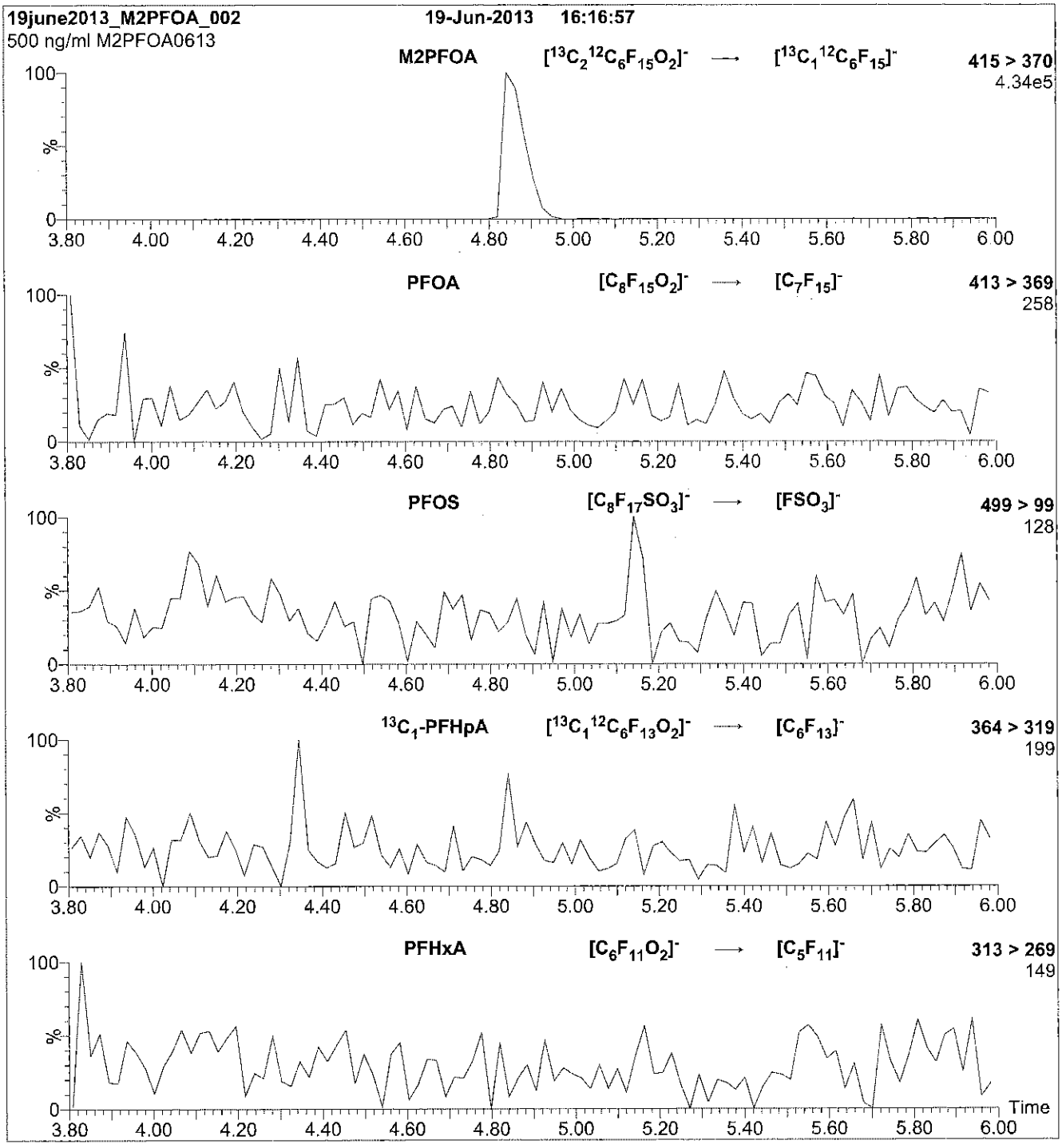
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 11

Reagent

LCMPFDA_00012

R: SBC 12/21/16

814255
ID: LCMPFDA_00012
Exp: 09/30/21 Prpd: SBC
13C2-Perfluornodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0916
COMPOUND:	Perfluoro-*n*-[1,2-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available

MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/07/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

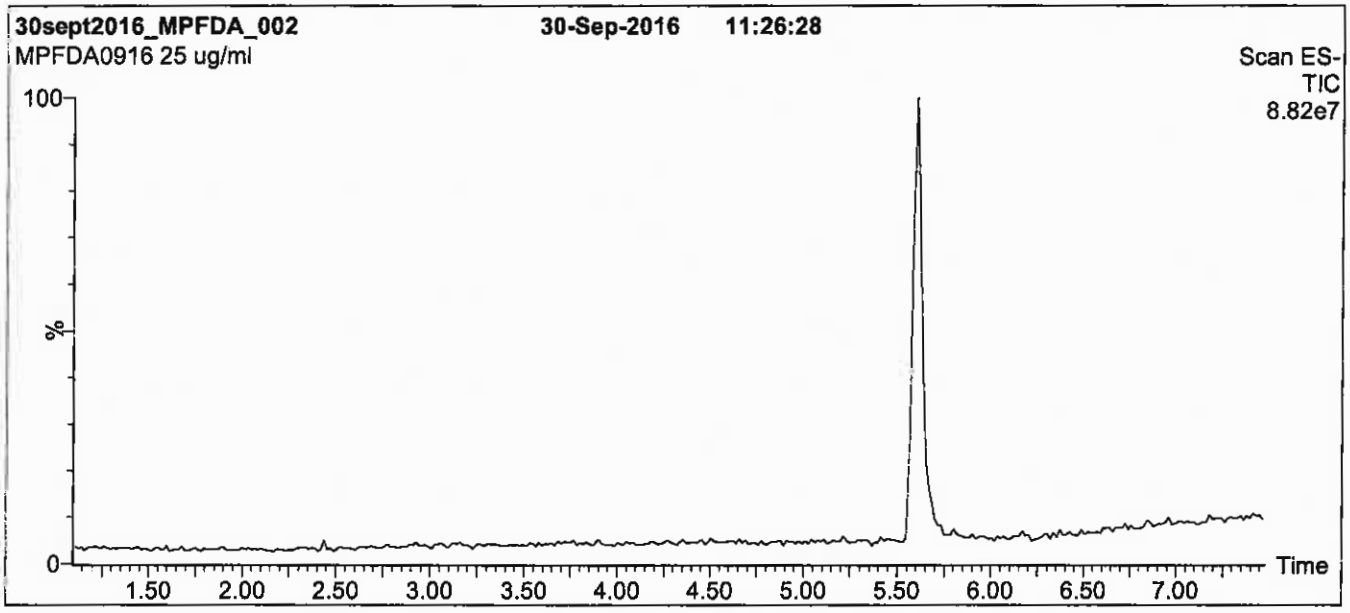
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

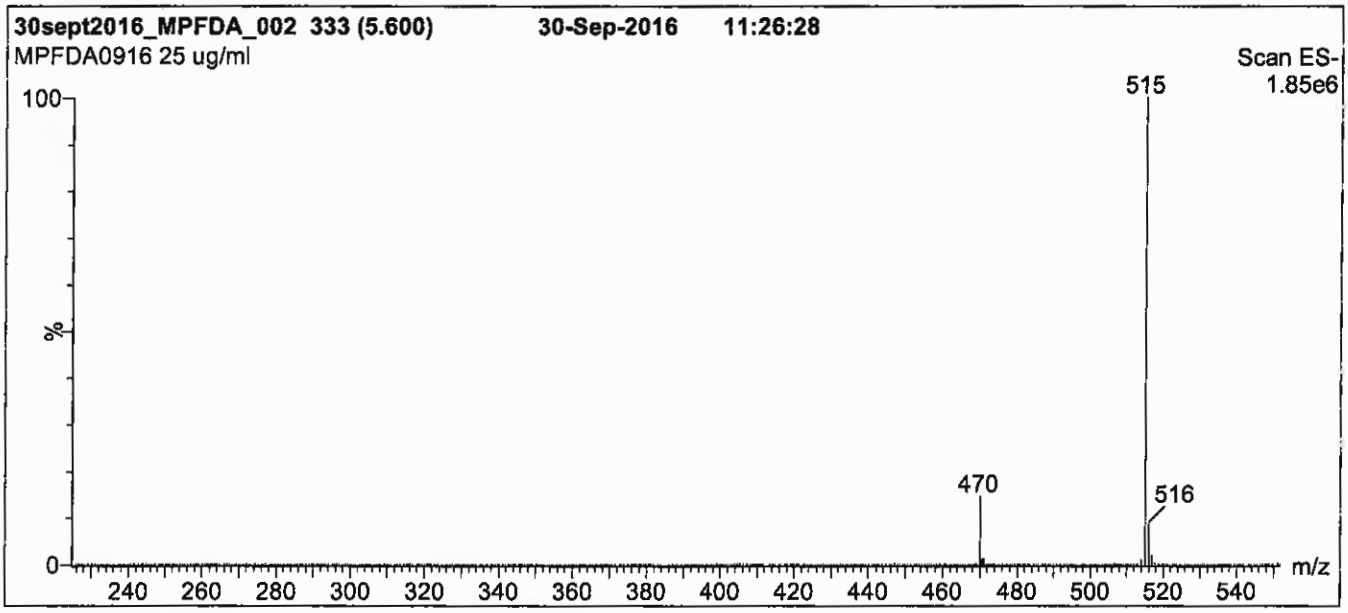
QUALITY MANAGEMENT:

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

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

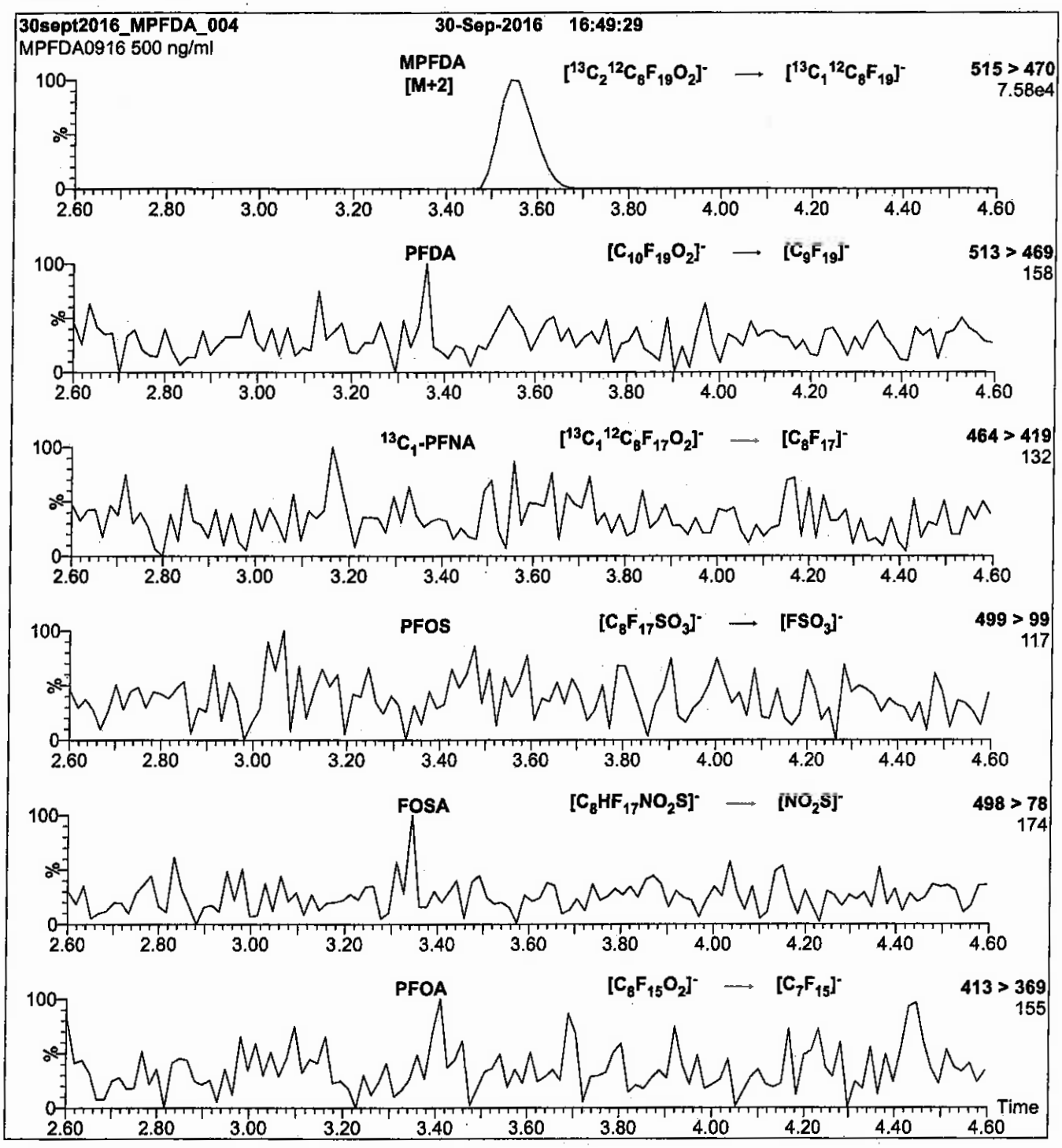
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCMPFHxA_00013

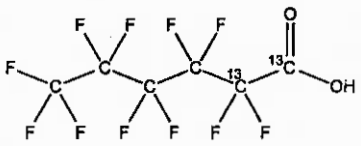
R: SBC 12/21/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/29/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

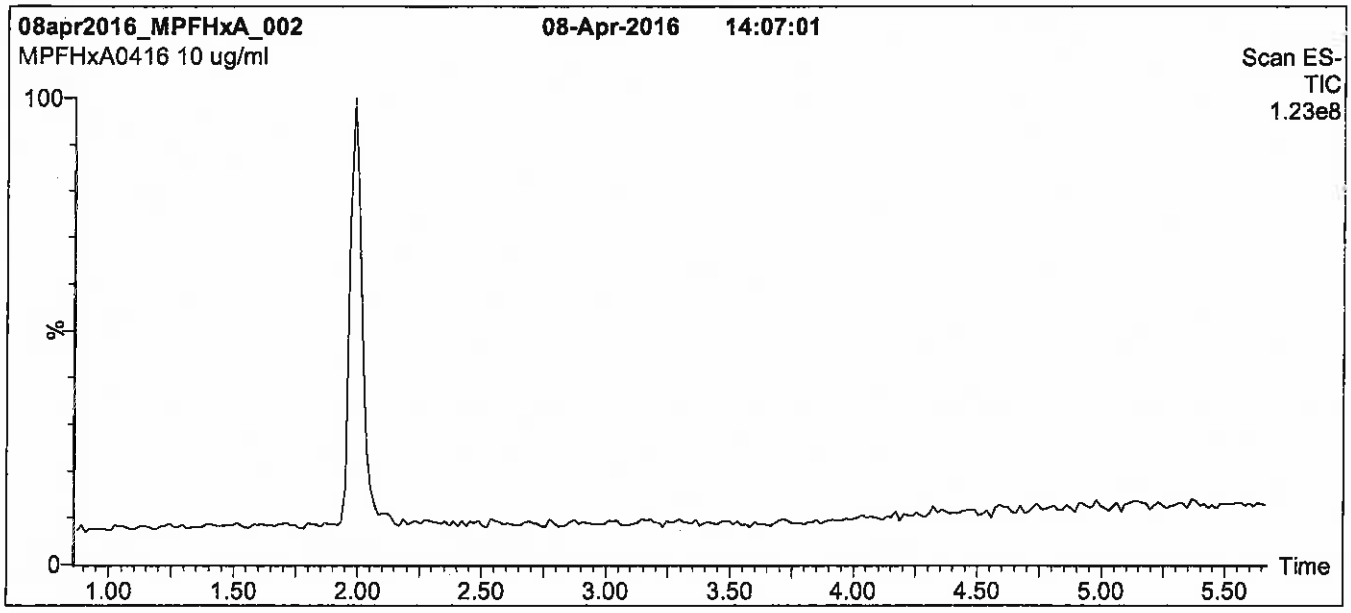
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

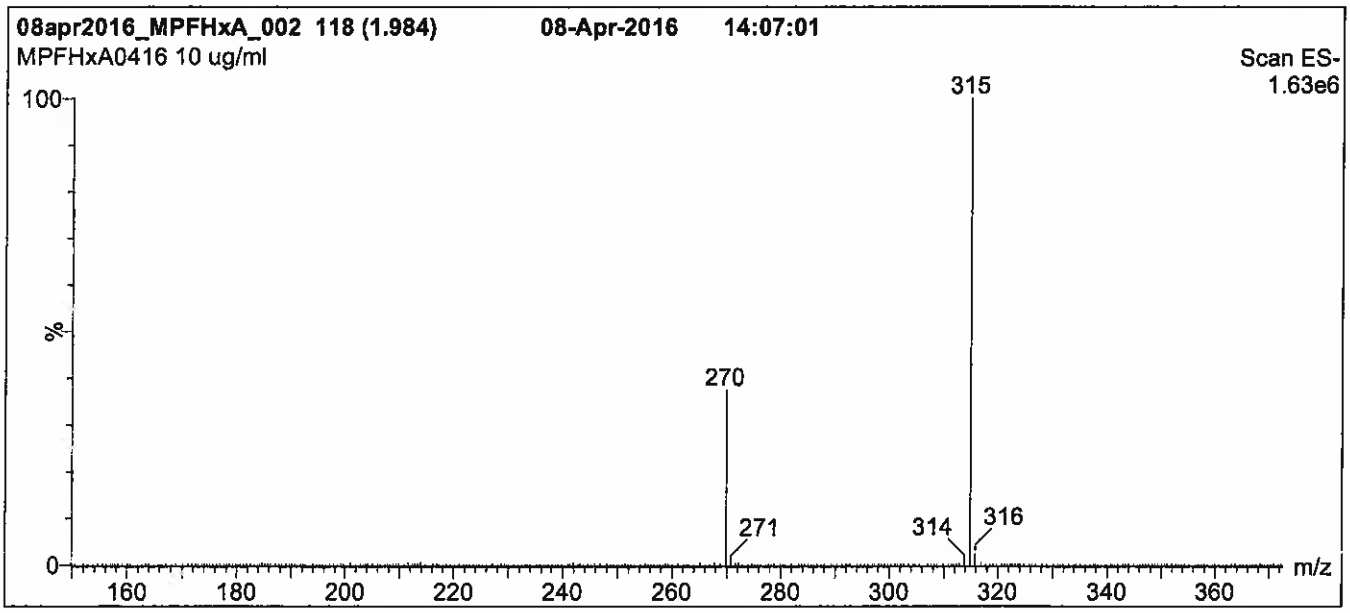
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

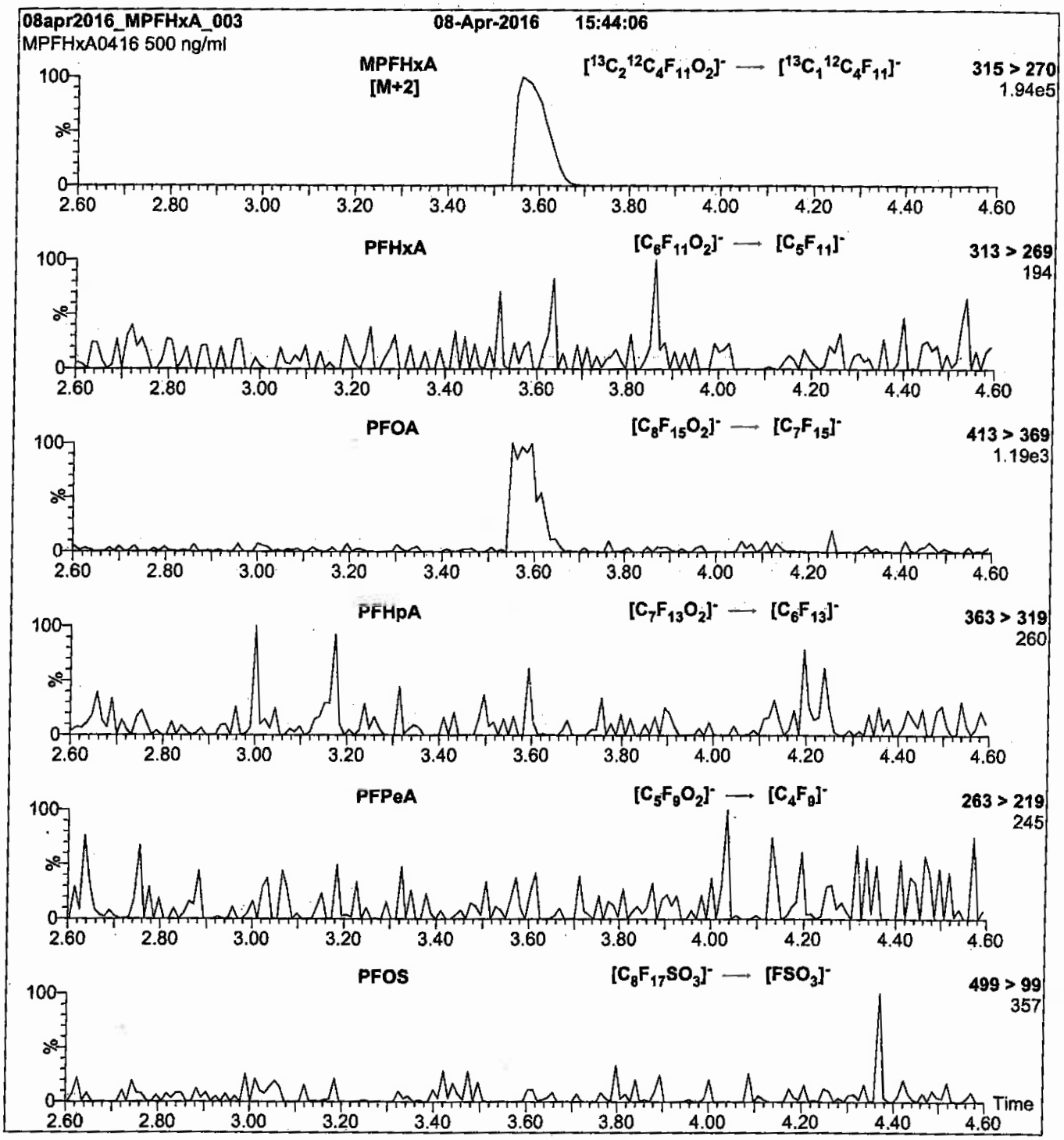
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00019

R: SBC 12/21/16

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

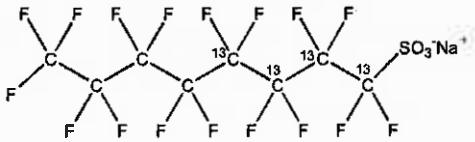
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0816

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/03/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

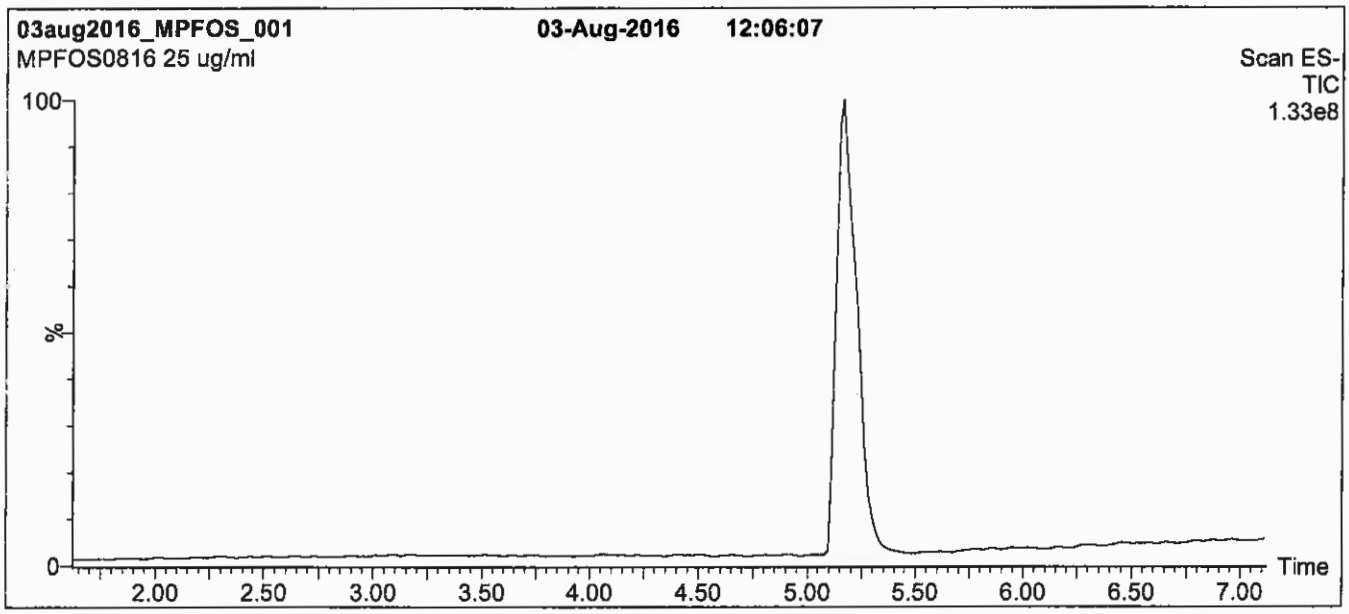
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

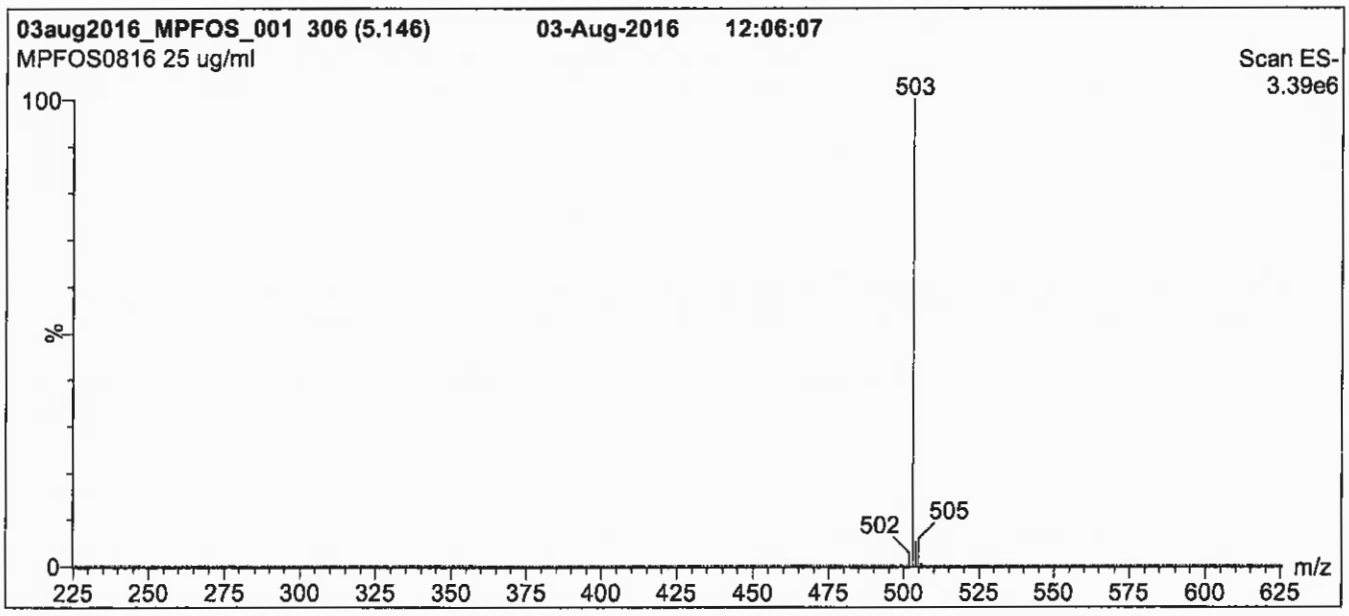
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

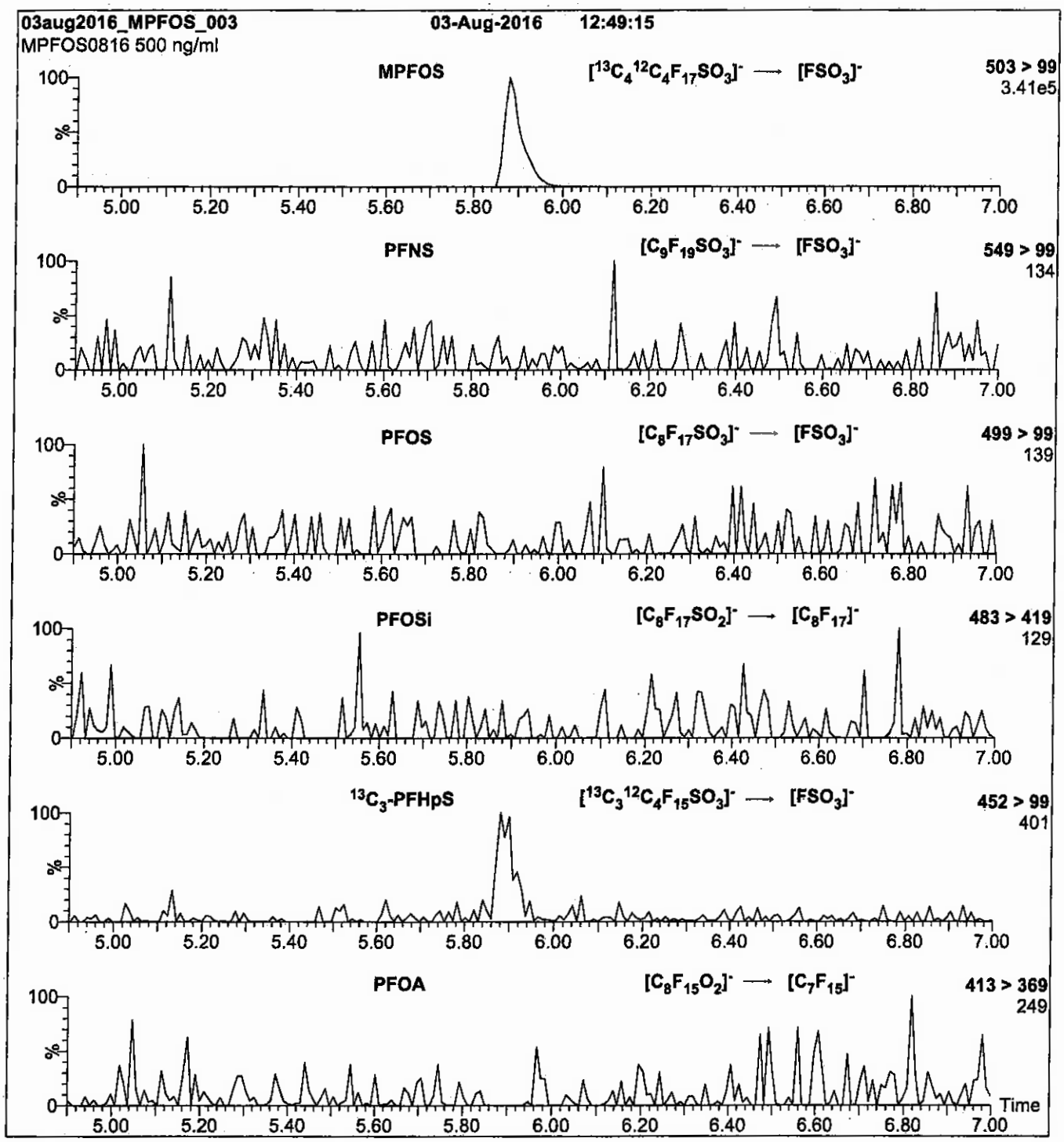
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
NAWC-060117-RW-29	320-28765-1	85	94
NAWC-060117-FRB-29	320-28765-2	93	91
NAWC-060117-RW-154	320-28765-3	83	92
NAWC-060117-FRB-154	320-28765-4	87	90
NAWC-060117-RW-269	320-28765-5	89	90
NAWC-060117-FRB-269	320-28765-6	98	98
NAWC-060117-RW-38	320-28765-7	76	93
NAWC-060117-FRB-38	320-28765-8	92	90
NAWC-060117-RW-39	320-28765-9	86	92
NAWC-060117-FRB-39	320-28765-10	90	90
NAWC-060117-DUP01	320-28765-11	89	94
	MB 320-169392/1-A	93	91
	LCS 320-169392/2-A	87	84
	LCSD 320-169392/3-A	96	95

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

Column to be used to flag recovery values

FORM II 537

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.06.19_537B_030.d

Lab ID: LCS 320-169392/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	300	254	84	70-130	
Perfluorooctanoic acid (PFOA)	150	122	81	70-130	
Perfluorononanoic acid (PFNA)	144	110	76	70-130	
Perfluorohexanesulfonic acid (PFHxS)	225	211	94	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	63.2	85	70-130	
Perfluorobutanesulfonic acid (PFBS)	663	574	87	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.06.19_537B_031.d

Lab ID: LCSD 320-169392/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	300	288	96	13	30	70-130	
Perfluorooctanoic acid (PFOA)	150	143	96	16	30	70-130	
Perfluorononanoic acid (PFNA)	144	127	88	14	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	225	233	103	10	30	70-130	
Perfluoroheptanoic acid (PFHpA)	74.3	73.3	99	15	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	663	626	95	9	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab File ID: 2017.06.19_537B_029.d Lab Sample ID: MB 320-169392/1-A

Matrix: Water Date Extracted: 06/15/2017 09:42

Instrument ID: A8_N Date Analyzed: 06/19/2017 20:45

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-169392/2-A	2017.06.19_537B_030.d	06/19/2017 20:50
	LCSD 320-169392/3-A	2017.06.19_537B_031.d	06/19/2017 20:55
NAWC-060117-RW-29	320-28765-1	2017.06.19_537B_032.d	06/19/2017 21:00
NAWC-060117-FRB-29	320-28765-2	2017.06.19_537B_033.d	06/19/2017 21:04
NAWC-060117-RW-154	320-28765-3	2017.06.19_537B_034.d	06/19/2017 21:09
NAWC-060117-FRB-154	320-28765-4	2017.06.19_537B_035.d	06/19/2017 21:14
NAWC-060117-RW-269	320-28765-5	2017.06.19_537B_036.d	06/19/2017 21:19
NAWC-060117-FRB-269	320-28765-6	2017.06.19_537B_039.d	06/19/2017 21:33
NAWC-060117-RW-38	320-28765-7	2017.06.19_537B_040.d	06/19/2017 21:38
NAWC-060117-FRB-38	320-28765-8	2017.06.19_537B_041.d	06/19/2017 21:42
NAWC-060117-RW-39	320-28765-9	2017.06.19_537B_042.d	06/19/2017 21:47
NAWC-060117-FRB-39	320-28765-10	2017.06.19_537B_043.d	06/19/2017 21:52
NAWC-060117-DUP01	320-28765-11	2017.06.19_537B_044.d	06/19/2017 21:57

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 06/19/2017 18:04

Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		3870975	2.86	9204122	2.99		
UPPER LIMIT		5806463	3.36	13806183	3.49		
LOWER LIMIT		1935488	2.36	4602061	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-169955/11		3724287	2.86	8759638	2.99		
ICV 320-169955/13		3818724	2.85	9420237	2.99		
CCV 320-169966/25 CCVIS		4094794	2.86	8881256	2.99		
MB 320-169392/1-A		4212781	2.86	8942602	2.99		
LCS 320-169392/2-A		4161933	2.85	9079660	2.99		
LCSD 320-169392/3-A		3917765	2.85	8688818	2.98		
320-28765-1	NAWC-060117-RW-29	3864617	2.86	8427750	2.99		
320-28765-2	NAWC-060117-FRB-29	4064573	2.86	8805120	2.99		
320-28765-3	NAWC-060117-RW-154	4118746	2.86	8697778	3.00		
320-28765-4	NAWC-060117-FRB-154	4462180	2.86	9254434	3.00		
320-28765-5	NAWC-060117-RW-269	4086557	2.85	8947926	2.99		
CCV 320-169966/37 CCVIS		4256821	2.86	10132995	3.00		
CCV 320-169968/37 CCVIS		4256821	2.86	10132995	3.00		
320-28765-6	NAWC-060117-FRB-269	3858909	2.85	8758602	2.99		
320-28765-7	NAWC-060117-RW-38	3698384	2.86	8733112	2.98		
320-28765-8	NAWC-060117-FRB-38	4215473	2.88	9185856	3.00		
320-28765-9	NAWC-060117-RW-39	4234557	2.86	9355860	2.99		
320-28765-10	NAWC-060117-FRB-39	4369322	2.87	9230022	3.00		
320-28765-11	NAWC-060117-DUP01	4006732	2.85	8895567	2.99		
CCV 320-169968/45 CCVIS		3761744	2.86	9075793	3.00		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Sample No.: CCV 320-169966/25 Date Analyzed: 06/19/2017 20:26

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

Lab File ID (Standard): 2017.06.19_537B_025 Heated Purge: (Y/N) N

Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4094794	2.86	8881256	2.99		
UPPER LIMIT		5732712	3.36	12433758	3.49		
LOWER LIMIT		2866356	2.36	6216879	2.49		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-169392/1-A		4212781	2.86	8942602	2.99		
LCS 320-169392/2-A		4161933	2.85	9079660	2.99		
LCSD 320-169392/3-A		3917765	2.85	8688818	2.98		
320-28765-1	NAWC-060117-RW-29	3864617	2.86	8427750	2.99		
320-28765-2	NAWC-060117-FRB-29	4064573	2.86	8805120	2.99		
320-28765-3	NAWC-060117-RW-154	4118746	2.86	8697778	3.00		
320-28765-4	NAWC-060117-FRB-154	4462180	2.86	9254434	3.00		
320-28765-5	NAWC-060117-RW-269	4086557	2.85	8947926	2.99		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Sample No.: CCV 320-169966/37 Date Analyzed: 06/19/2017 21:23

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

Lab File ID (Standard): 2017.06.19_537B_037 Heated Purge: (Y/N) N

Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4256821	2.86	10132995	3.00		
UPPER LIMIT		5959549	3.36	14186193	3.50		
LOWER LIMIT		2979775	2.36	7093097	2.50		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-169392/1-A		4212781	2.86	8942602	2.99		
LCS 320-169392/2-A		4161933	2.85	9079660	2.99		
LCSD 320-169392/3-A		3917765	2.85	8688818	2.98		
320-28765-1	NAWC-060117-RW-29	3864617	2.86	8427750	2.99		
320-28765-2	NAWC-060117-FRB-29	4064573	2.86	8805120	2.99		
320-28765-3	NAWC-060117-RW-154	4118746	2.86	8697778	3.00		
320-28765-4	NAWC-060117-FRB-154	4462180	2.86	9254434	3.00		
320-28765-5	NAWC-060117-RW-269	4086557	2.85	8947926	2.99		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Sample No.: CCV 320-169968/37 Date Analyzed: 06/19/2017 21:23

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

Lab File ID (Standard): 2017.06.19_537B_037 Heated Purge: (Y/N) N

Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4256821	2.86	10132995	3.00		
UPPER LIMIT		5959549	3.36	14186193	3.50		
LOWER LIMIT		2979775	2.36	7093097	2.50		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-28765-6	NAWC-060117-FRB-269	3858909	2.85	8758602	2.99		
320-28765-7	NAWC-060117-RW-38	3698384	2.86	8733112	2.98		
320-28765-8	NAWC-060117-FRB-38	4215473	2.88	9185856	3.00		
320-28765-9	NAWC-060117-RW-39	4234557	2.86	9355860	2.99		
320-28765-10	NAWC-060117-FRB-39	4369322	2.87	9230022	3.00		
320-28765-11	NAWC-060117-DUP01	4006732	2.85	8895567	2.99		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Sample No.: CCV 320-169968/45 Date Analyzed: 06/19/2017 22:01

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

Lab File ID (Standard): 2017.06.19_537B_045 Heated Purge: (Y/N) N

Calibration ID: 31800

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3761744	2.86	9075793	3.00		
UPPER LIMIT		5266442	3.36	12706110	3.50		
LOWER LIMIT		2633221	2.36	6353055	2.50		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-28765-6	NAWC-060117-FRB-269	3858909	2.85	8758602	2.99		
320-28765-7	NAWC-060117-RW-38	3698384	2.86	8733112	2.98		
320-28765-8	NAWC-060117-FRB-38	4215473	2.88	9185856	3.00		
320-28765-9	NAWC-060117-RW-39	4234557	2.86	9355860	2.99		
320-28765-10	NAWC-060117-FRB-39	4369322	2.87	9230022	3.00		
320-28765-11	NAWC-060117-DUP01	4006732	2.85	8895567	2.99		

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

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

Column used to flag values outside QC limits

FORM VIII 537

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-RW-29 | Lab Sample ID: 320-28765-1

Matrix: Water | Lab File ID: 2017.06.19_537B_032.d

Analysis Method: 537 | Date Collected: 06/01/2017 08:10

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 260.7(mL) | Date Analyzed: 06/19/2017 21:00

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.: 169966 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.7	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.7
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.9	J	29	12	5.3
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.6	J	9.6	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U M	86	35	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_032.d
Lims ID: 320-28765-A-1-A
Client ID: NAWC-060117-RW-29
Sample Type: Client
Inject. Date: 19-Jun-2017 21:00:10 ALS Bottle#: 26 Worklist Smp#: 32
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:43:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.193	2.183	0.010	1.000	415546	1.64		32.5	M
298.90 > 99.00	2.185	2.183	0.002	0.997	333106		1.25(0.00-0.00)	67.7	M
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3400302	8.48		2281	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	614970	1.79		52.3	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	388134	1.19		17.0	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3864617	10.0		6582	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1563670	4.62		115	
413.00 > 169.00	2.853	2.859	-0.006	0.997	932478		1.68(0.00-0.00)	599	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.989	-0.007	1.000	1578125	5.29		368	
499.00 > 99.00	2.982	2.989	-0.007	1.000	253394		6.23(0.00-0.00)	199	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8427750	28.7		4199	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	210629	0.6389		30.9	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3498840	9.41		13475	

QC Flag Legend

Review Flags

M - Manually Integrated

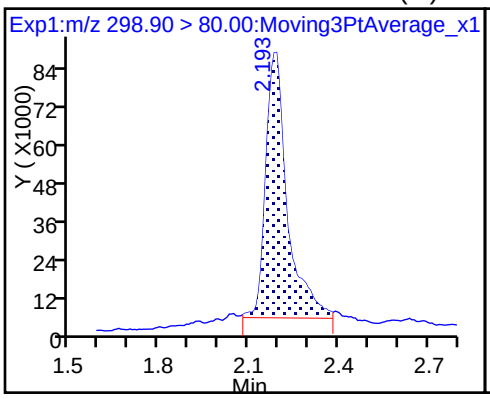
Report Date: 20-Jun-2017 14:56:17 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

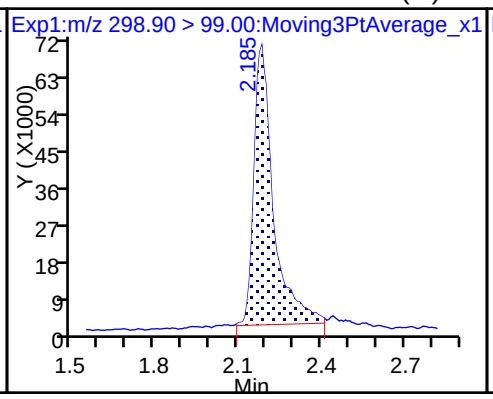
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_032.d

Injection Date:	19-Jun-2017 21:00:10	Instrument ID:	A8_N		
Lims ID:	320-28765-A-1-A	Lab Sample ID:	320-28765-1		
Client ID:	NAWC-060117-RW-29				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

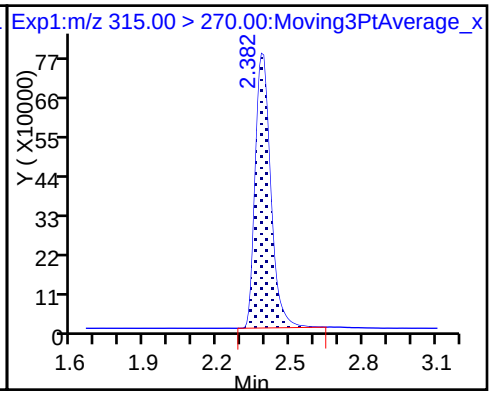
1 Perfluorobutanesulfonic acid (M)



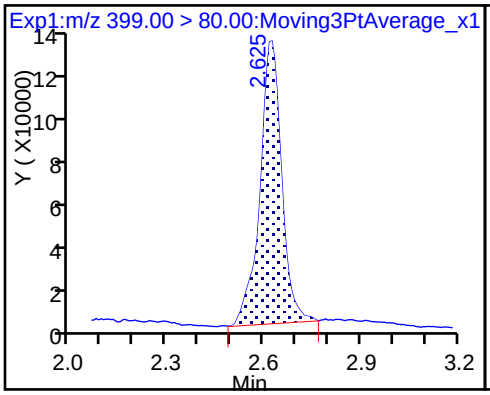
1 Perfluorobutanesulfonic acid (M)



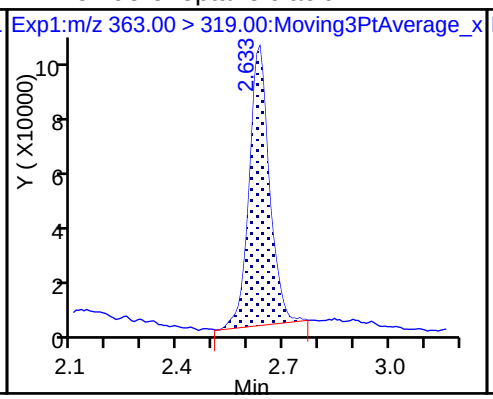
$ 2 13C2 PFHxA



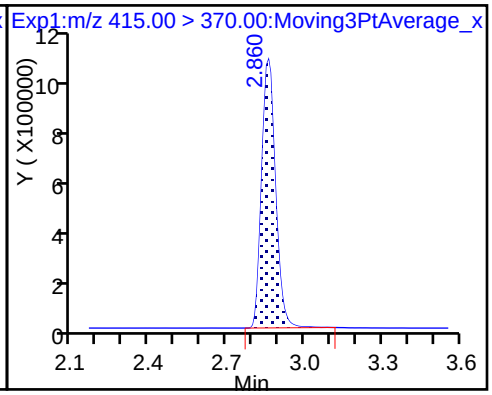
3 Perfluorohexanesulfonic acid



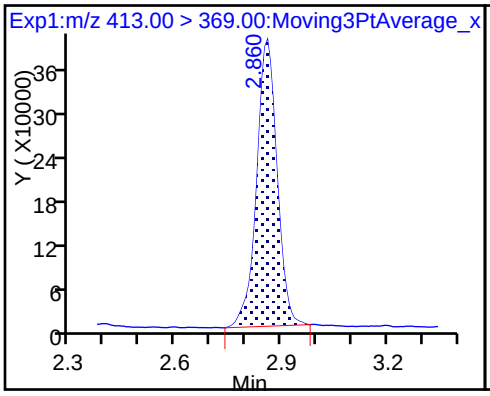
4 Perfluoroheptanoic acid



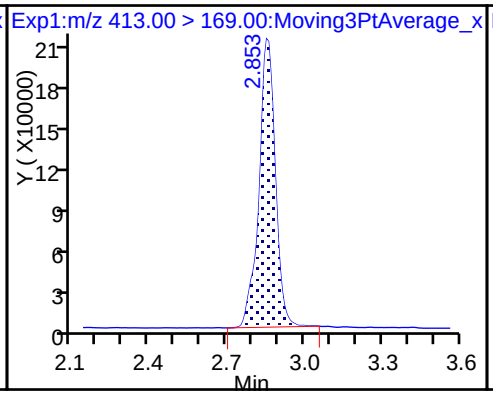
* 6 13C2-PFOA



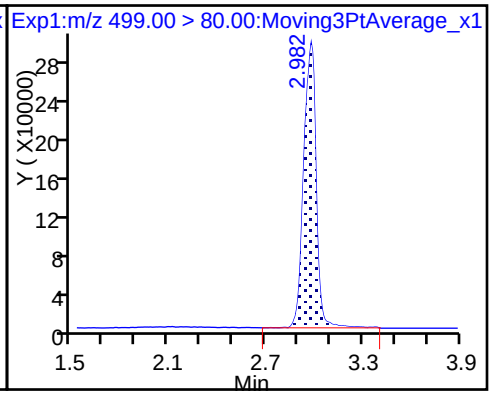
5 Perfluorooctanoic acid



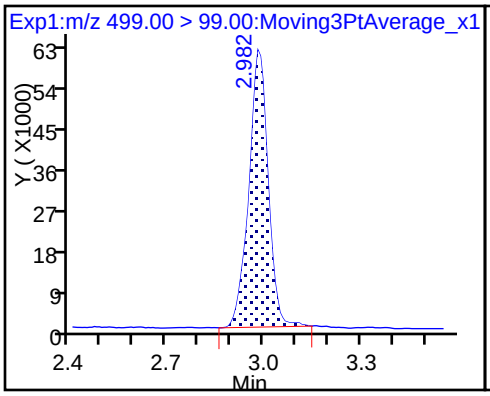
5 Perfluorooctanoic acid



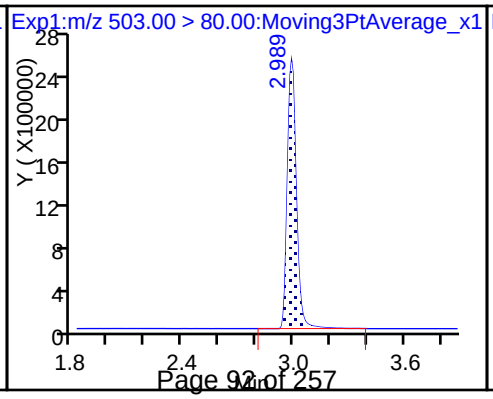
8 Perfluorooctane sulfonic acid



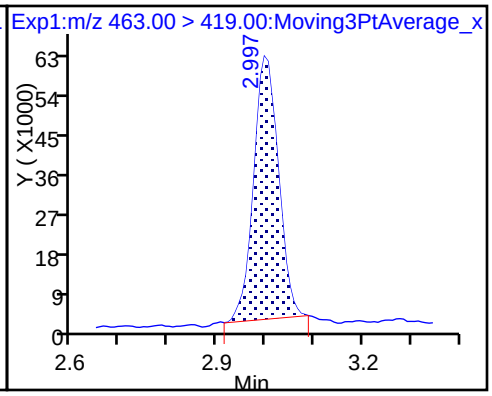
8 Perfluorooctane sulfonic acid



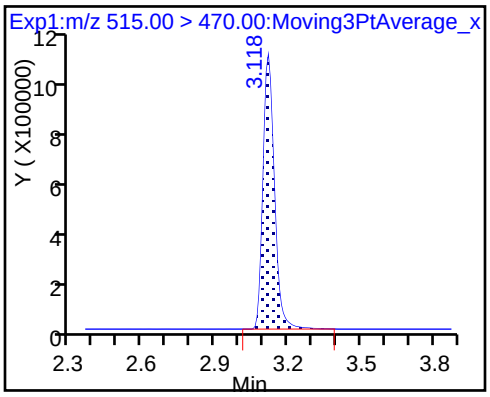
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_032.d				
Lims ID:	320-28765-A-1-A				
Client ID:	NAWC-060117-RW-29				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:00:10	ALS Bottle#:	26	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-1-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:43:15		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.48	84.79
$ 10 13C2 PFDA	10.0	9.41	94.09

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

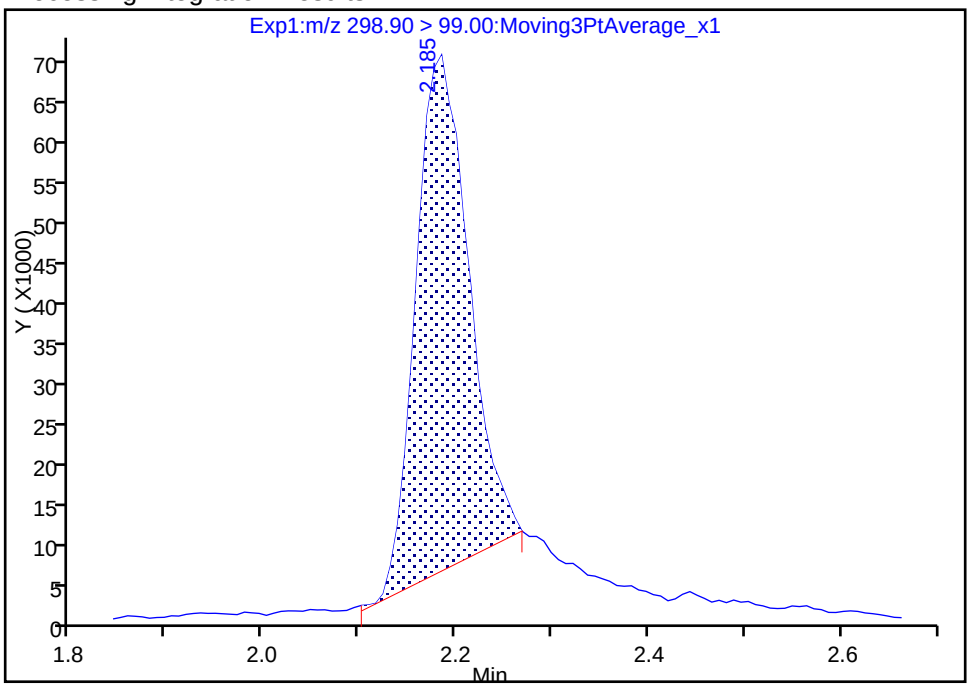
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_032.d				
Injection Date:	19-Jun-2017 21:00:10	Instrument ID:	A8_N		
Lims ID:	320-28765-A-1-A	Lab Sample ID:	320-28765-1		
Client ID:	NAWC-060117-RW-29				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

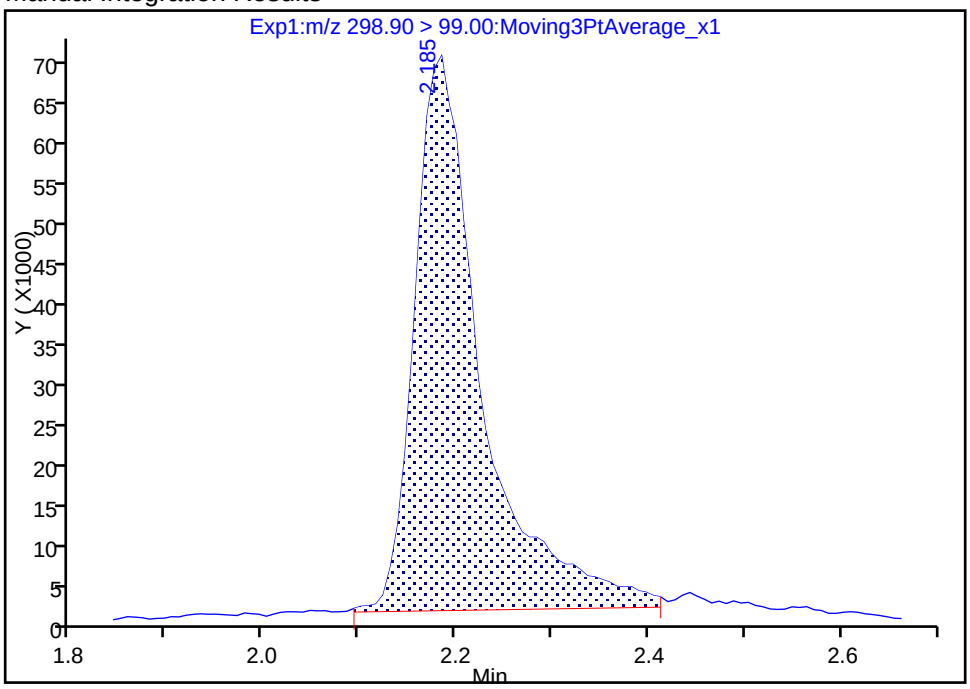
Processing Integration Results

RT: 2.19
Area: 244601
Amount: 1.189519
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 333106
Amount: 1.635801
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:42:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

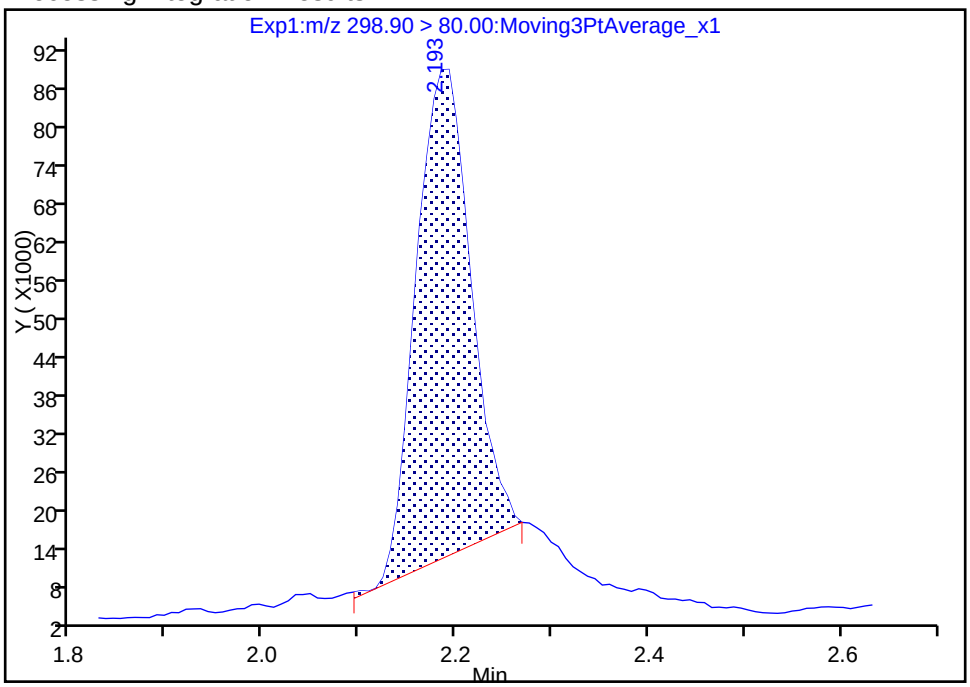
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_032.d				
Injection Date:	19-Jun-2017 21:00:10	Instrument ID:	A8_N		
Lims ID:	320-28765-A-1-A	Lab Sample ID:	320-28765-1		
Client ID:	NAWC-060117-RW-29				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	32
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

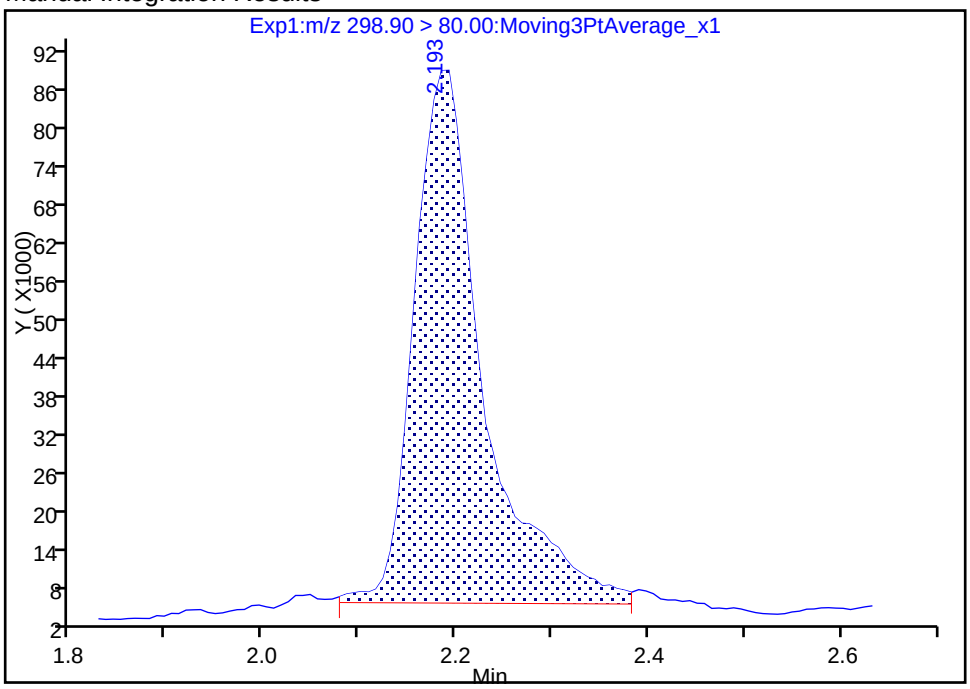
Processing Integration Results

RT: 2.19
Area: 302176
Amount: 1.189519
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 415546
Amount: 1.635801
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:43:00

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-FRB-29 | Lab Sample ID: 320-28765-2

Matrix: Water | Lab File ID: 2017.06.19_537B_033.d

Analysis Method: 537 | Date Collected: 06/01/2017 08:05

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 265.5(mL) | Date Analyzed: 06/19/2017 21:04

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.: 169966 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_033.d
Lims ID: 320-28765-A-2-A
Client ID: NAWC-060117-FRB-29
Sample Type: Client
Inject. Date: 19-Jun-2017 21:04:55 ALS Bottle#: 27 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3938723	9.34		2796	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4064573	10.0		5114	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8805120	28.7		16835	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3553196	9.08		14015	

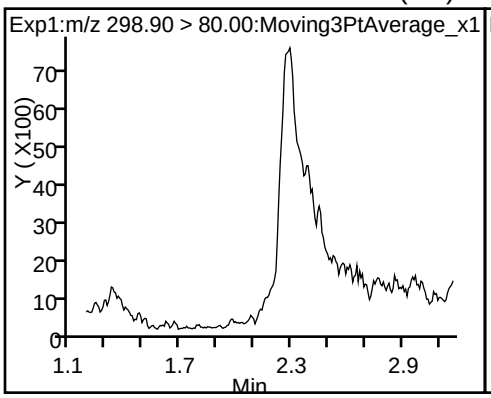
Report Date: 20-Jun-2017 14:56:18 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

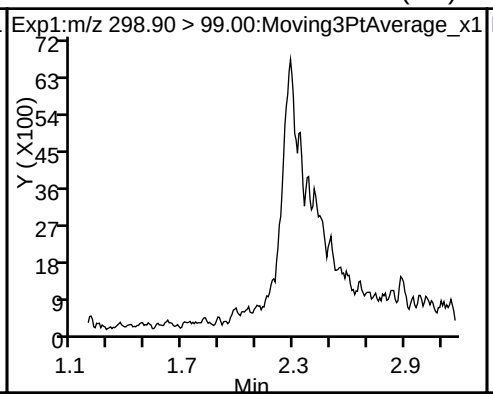
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_033.d

Injection Date:	19-Jun-2017 21:04:55	Instrument ID:	A8_N		
Lims ID:	320-28765-A-2-A	Lab Sample ID:	320-28765-2		
Client ID:	NAWC-060117-FRB-29				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	33
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

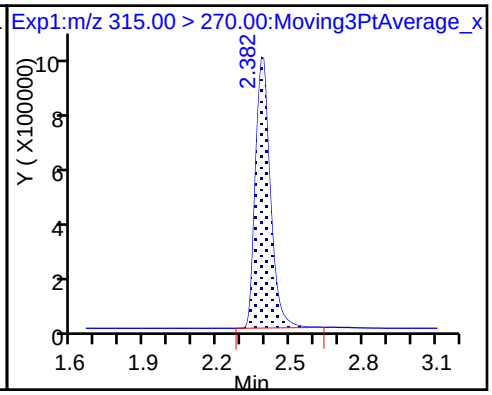
1 Perfluorobutanesulfonic acid (ND)



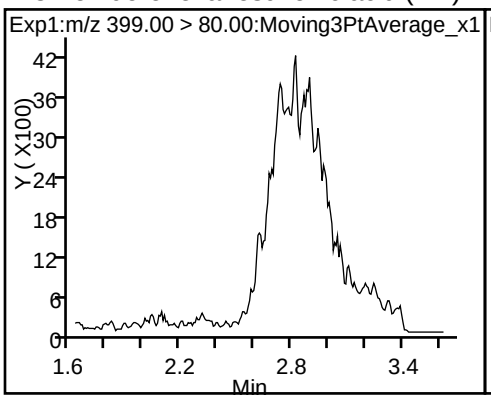
1 Perfluorobutanesulfonic acid (ND)



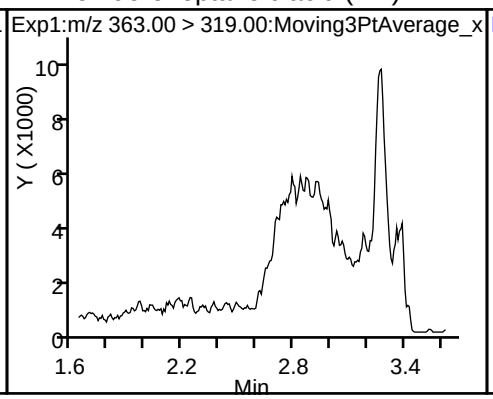
$ 2 13C2 PFHxA



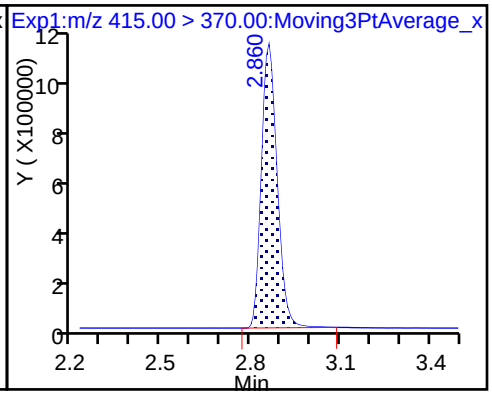
3 Perfluorohexanesulfonic acid (ND)



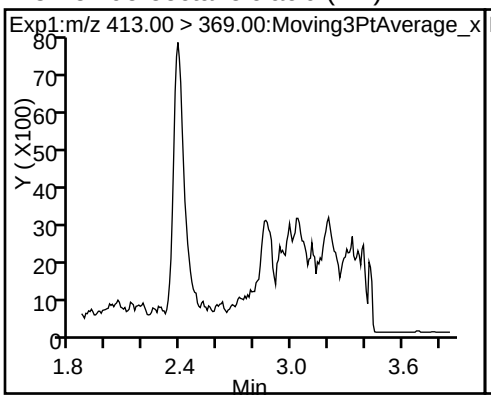
4 Perfluoroheptanoic acid (ND)



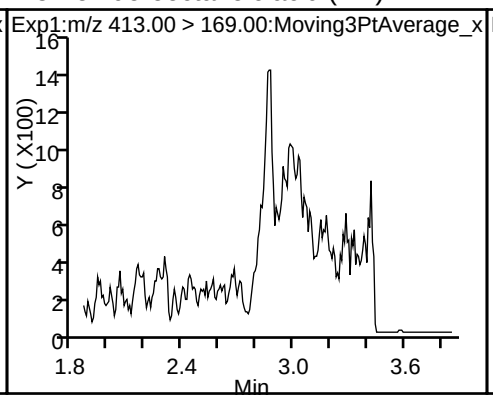
* 6 13C2-PFOA



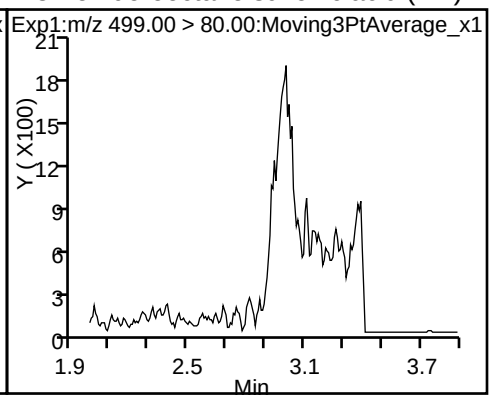
5 Perfluorooctanoic acid (ND)



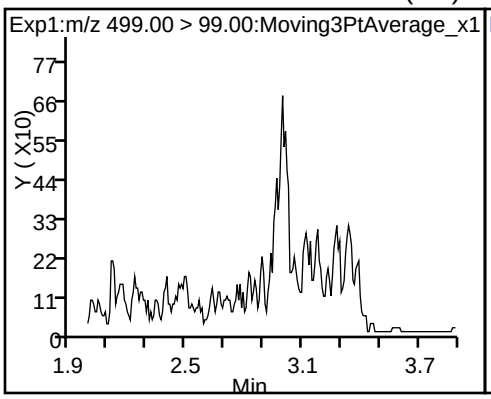
5 Perfluorooctanoic acid (ND)



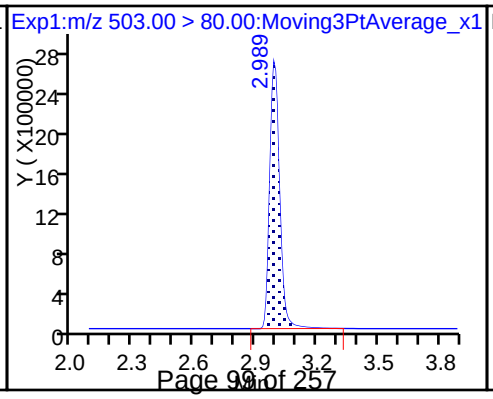
8 Perfluorooctane sulfonic acid (ND)



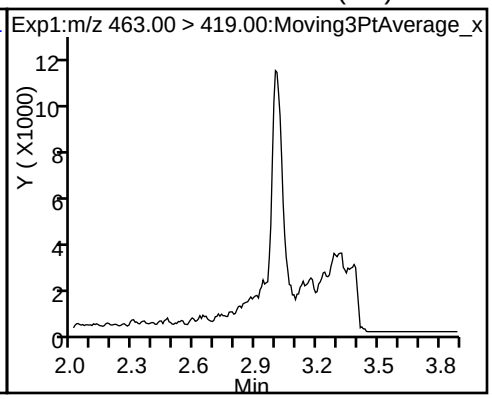
8 Perfluorooctane sulfonic acid (ND)



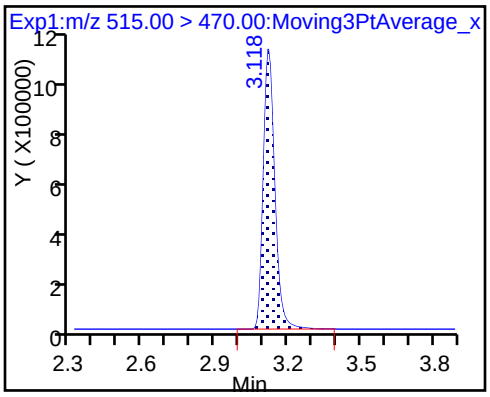
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_033.d				
Lims ID:	320-28765-A-2-A				
Client ID:	NAWC-060117-FRB-29				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:04:55	ALS Bottle#:	27	Worklist Smp#:	33
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-2-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.34	93.39
$ 10 13C2 PFDA	10.0	9.08	90.85

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-RW-154 | Lab Sample ID: 320-28765-3

Matrix: Water | Lab File ID: 2017.06.19_537B_034.d

Analysis Method: 537 | Date Collected: 06/01/2017 08:40

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 264.4(mL) | Date Analyzed: 06/19/2017 21:09

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.: 169966 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	22		19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_034.d
Lims ID: 320-28765-A-3-A
Client ID: NAWC-060117-RW-154
Sample Type: Client
Inject. Date: 19-Jun-2017 21:09:40 ALS Bottle#: 28 Worklist Smp#: 34
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:44:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.193	2.183	0.010	1.000	622393	2.37		39.3	M
298.90 > 99.00	2.185	2.183	0.002	0.997	515231		1.21(0.00-0.00)	96.3	M
$ 2 13C2 PFHxA									
315.00 > 270.00	2.390	2.381	0.009	1.000	3558294	8.33		3373	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	398684	1.13		30.3	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.640	2.630	0.010	1.000	612740	1.76		21.1	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4118746	10.0		6041	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	2116549	5.87		142	
413.00 > 169.00	2.860	2.859	0.001	1.000	1297511		1.63(0.00-0.00)	709	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	1379681	4.48		318	
499.00 > 99.00	2.989	2.989	0.0	1.000	224310		6.15(0.00-0.00)	141	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		8697778	28.7		3709	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	237918	0.6772		31.8	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3632637	9.17		13603	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 20-Jun-2017 14:56:18 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_034.d

Injection Date: 19-Jun-2017 21:09:40 Instrument ID: A8_N

Lims ID: 320-28765-A-3-A Lab Sample ID: 320-28765-3

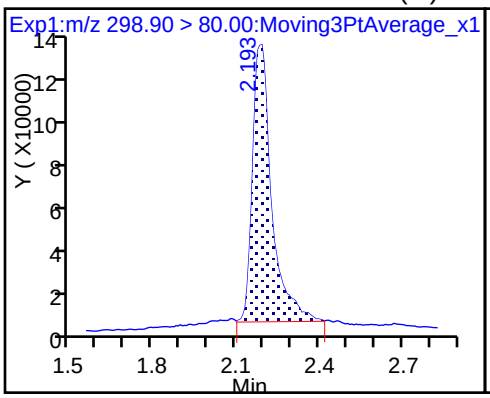
Client ID: NAWC-060117-RW-154

Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 34

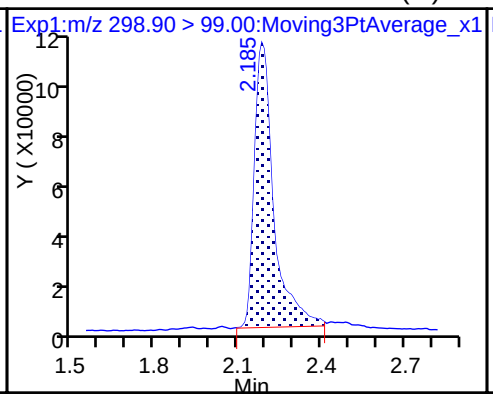
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

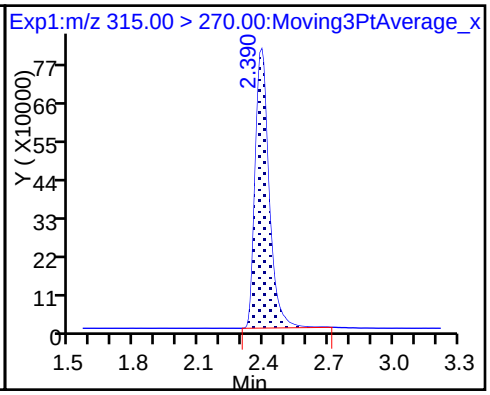
1 Perfluorobutanesulfonic acid (M)



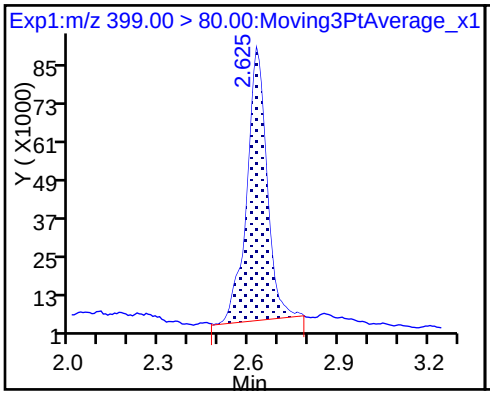
1 Perfluorobutanesulfonic acid (M)



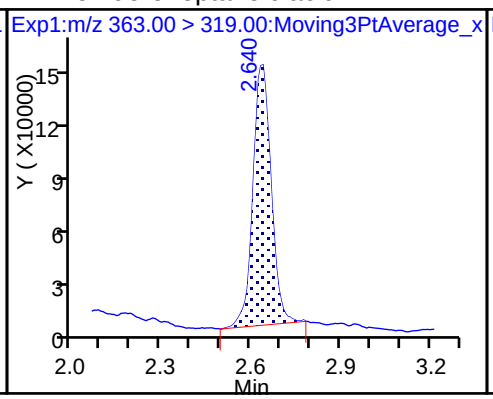
$ 2 13C2 PFHxA



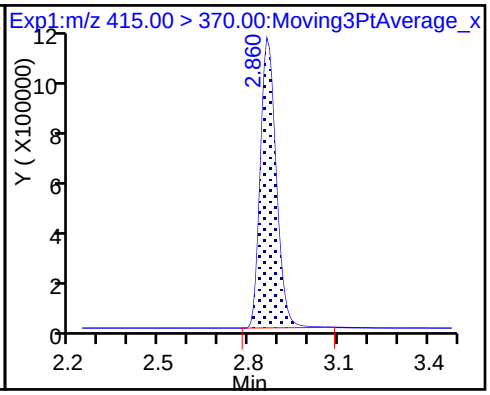
3 Perfluorohexanesulfonic acid



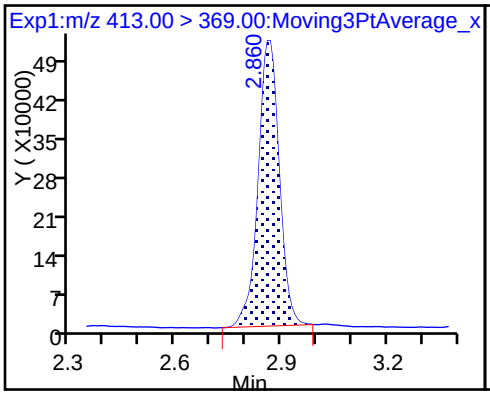
4 Perfluoroheptanoic acid



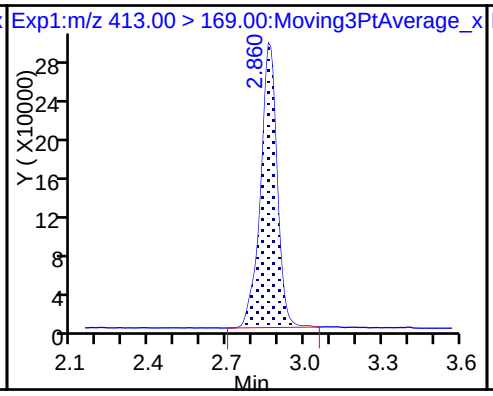
* 6 13C2-PFOA



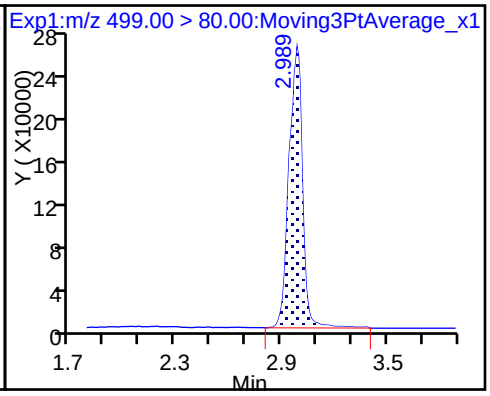
5 Perfluorooctanoic acid



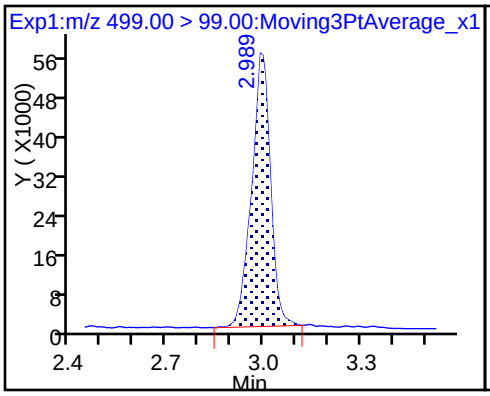
5 Perfluorooctanoic acid



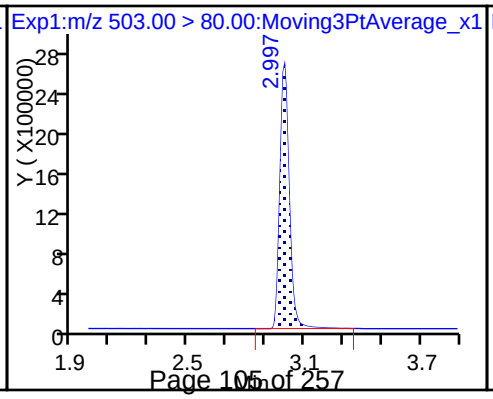
8 Perfluorooctane sulfonic acid



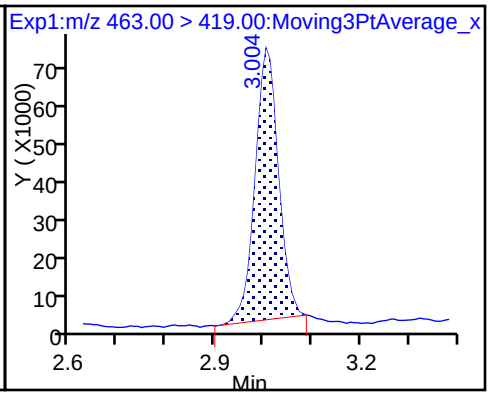
8 Perfluorooctane sulfonic acid



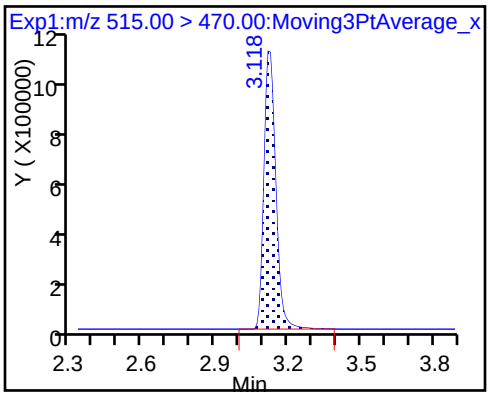
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

Report Date: 20-Jun-2017 14:56:18 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_034.d				
Lims ID:	320-28765-A-3-A				
Client ID:	NAWC-060117-RW-154				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:09:40	ALS Bottle#:	28	Worklist Smp#:	34
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-3-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:44:00		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.33	83.26
$ 10 13C2 PFDA	10.0	9.17	91.66

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

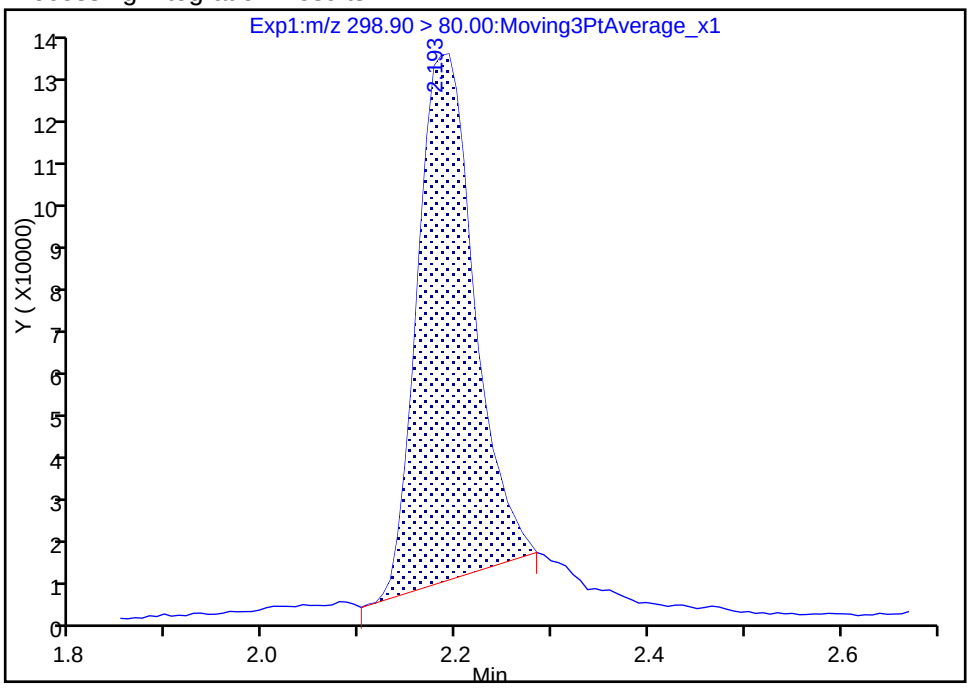
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_034.d				
Injection Date:	19-Jun-2017 21:09:40	Instrument ID:	A8_N		
Lims ID:	320-28765-A-3-A	Lab Sample ID:	320-28765-3		
Client ID:	NAWC-060117-RW-154				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	34
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

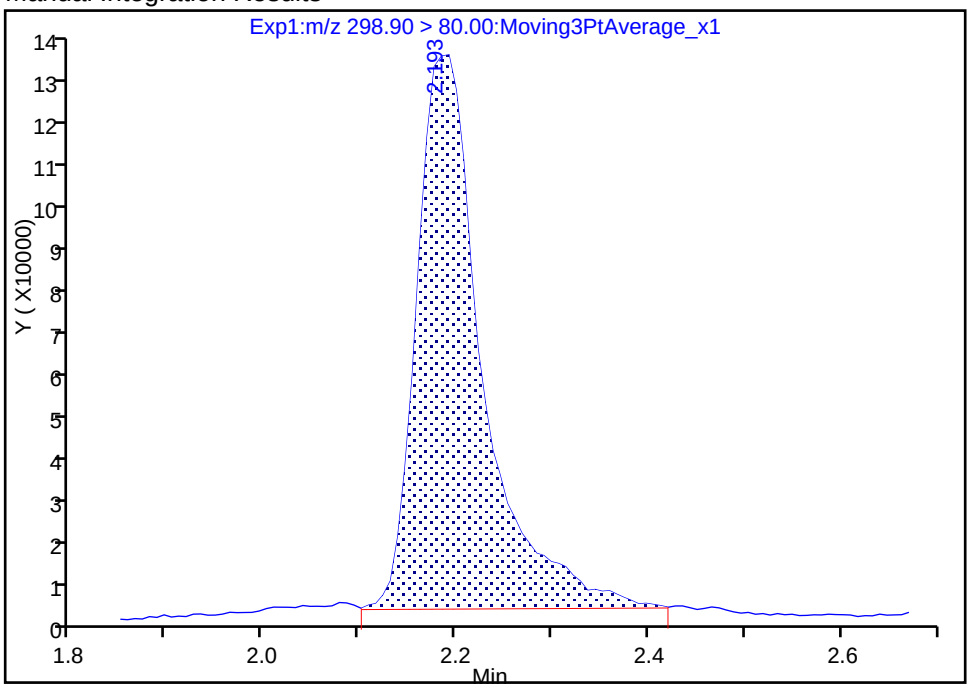
Processing Integration Results

RT: 2.19
Area: 507668
Amount: 1.936397
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 622393
Amount: 2.373993
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:43:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

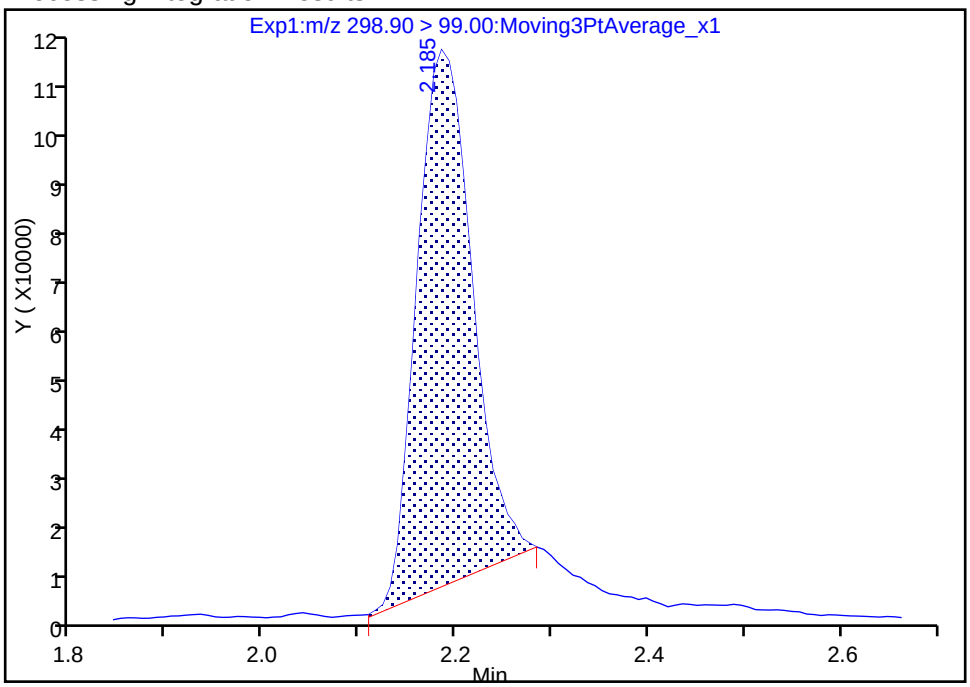
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_034.d				
Injection Date:	19-Jun-2017 21:09:40	Instrument ID:	A8_N		
Lims ID:	320-28765-A-3-A	Lab Sample ID:	320-28765-3		
Client ID:	NAWC-060117-RW-154				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	34
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

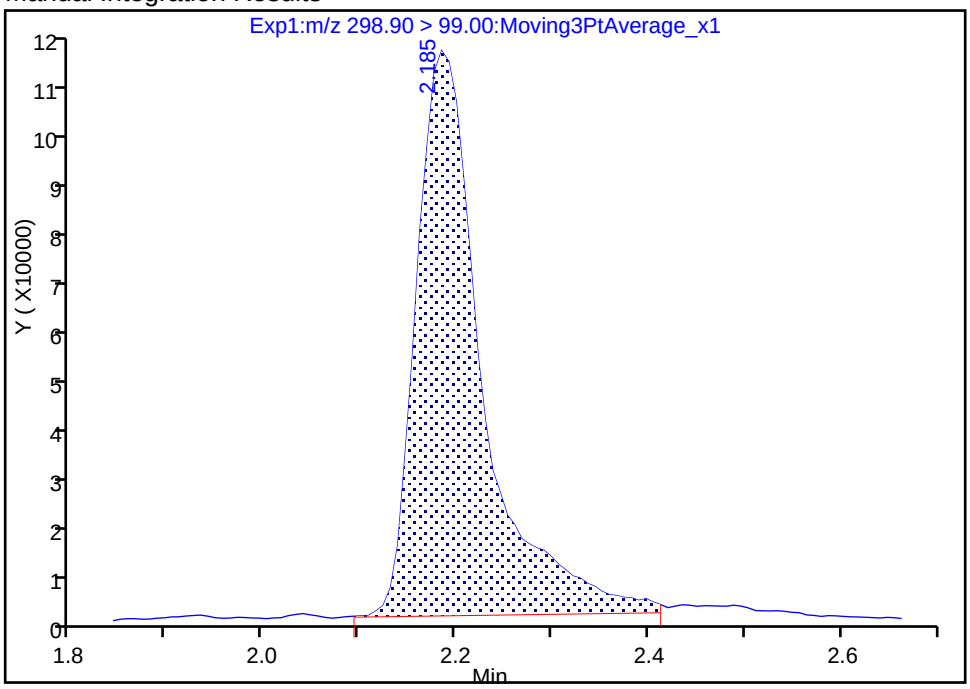
Processing Integration Results

RT: 2.19
Area: 405768
Amount: 1.936397
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 515231
Amount: 2.373993
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:43:50
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-FRB-154 | Lab Sample ID: 320-28765-4

Matrix: Water | Lab File ID: 2017.06.19_537B_035.d

Analysis Method: 537 | Date Collected: 06/01/2017 08:35

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 256.8(mL) | Date Analyzed: 06/19/2017 21:14

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.: 169966 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	39	16	6.6
335-67-1	Perfluorooctanoic acid (PFOA)	7.8	U	19	7.8	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	29	12	5.4
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.9	U	9.7	3.9	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	35	U	88	35	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_035.d
Lims ID: 320-28765-A-4-A
Client ID: NAWC-060117-FRB-154
Sample Type: Client
Inject. Date: 19-Jun-2017 21:14:25 ALS Bottle#: 29 Worklist Smp#: 35
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.390	2.381	0.009	1.000	4038263	8.72		2794	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4462180	10.0		5922	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		9254434	28.7		16126	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3874718	9.02		13264	

Report Date: 20-Jun-2017 14:56:19 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_035.d

Injection Date: 19-Jun-2017 21:14:25 Instrument ID: A8_N

Lims ID: 320-28765-A-4-A Lab Sample ID: 320-28765-4

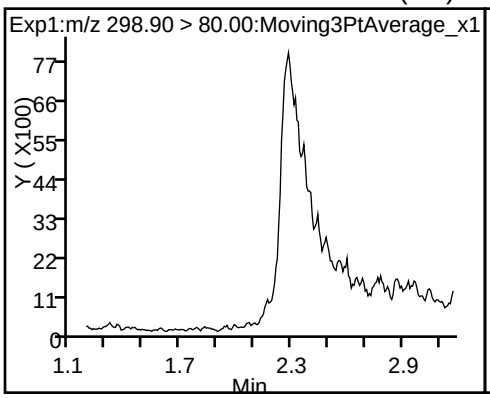
Client ID: NAWC-060117-FRB-154

Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 35

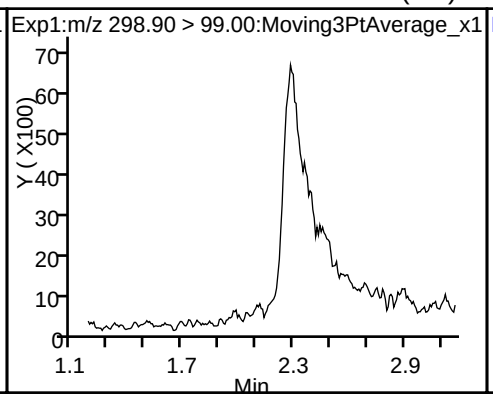
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

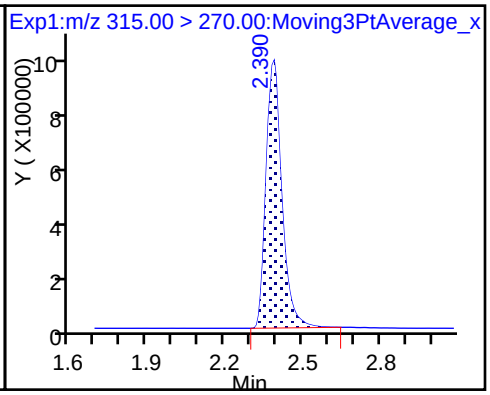
1 Perfluorobutanesulfonic acid (ND)



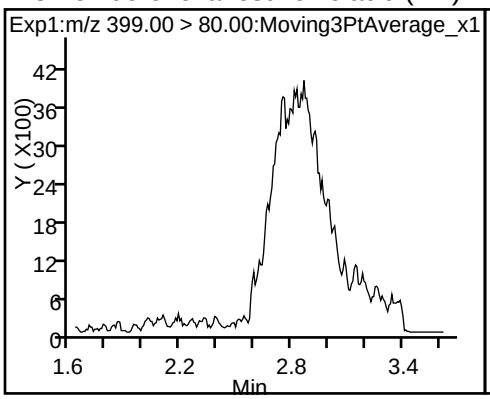
1 Perfluorobutanesulfonic acid (ND)



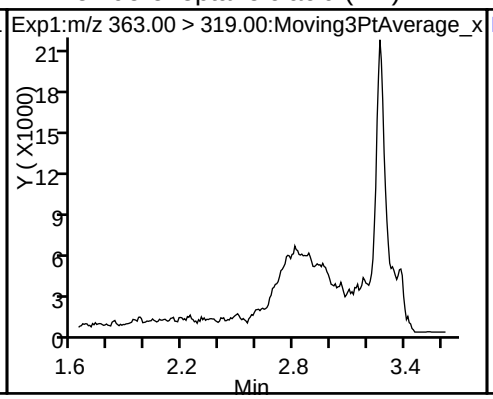
$ 2 13C2 PFHxA



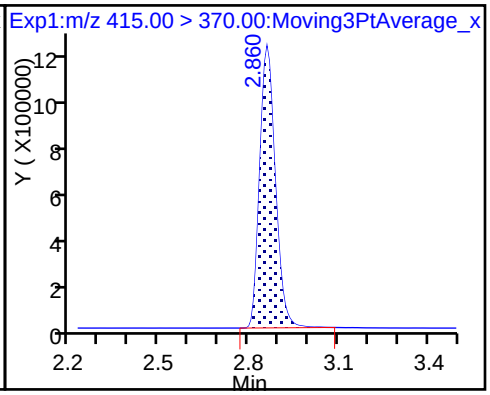
3 Perfluorohexanesulfonic acid (ND)



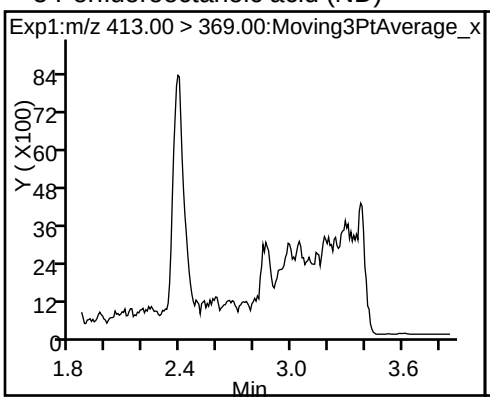
4 Perfluoroheptanoic acid (ND)



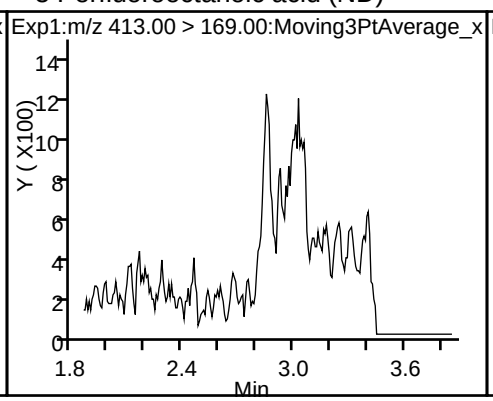
* 6 13C2-PFOA



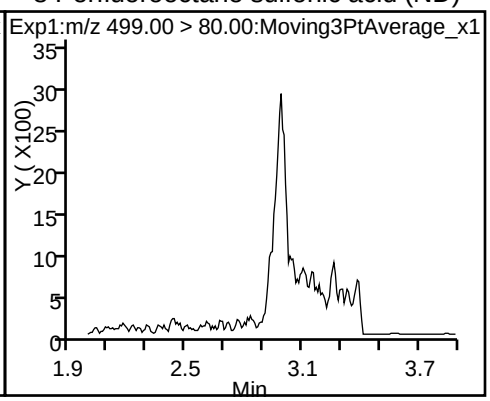
5 Perfluorooctanoic acid (ND)



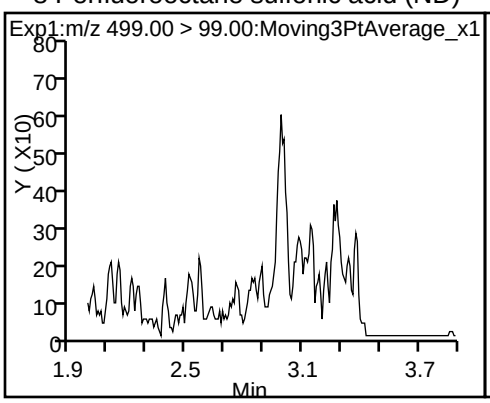
5 Perfluorooctanoic acid (ND)



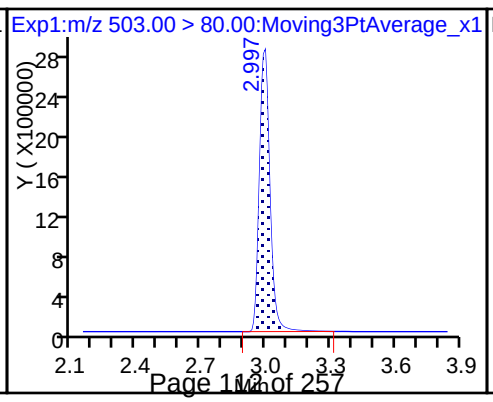
8 Perfluorooctane sulfonic acid (ND)



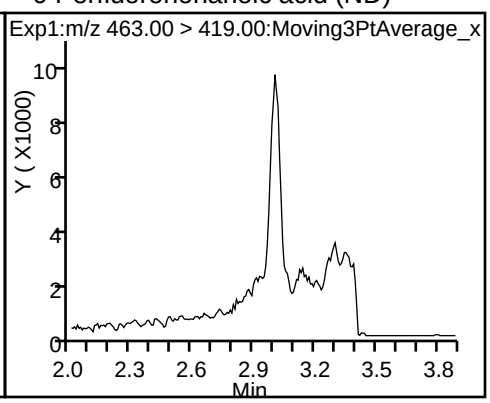
8 Perfluorooctane sulfonic acid (ND)



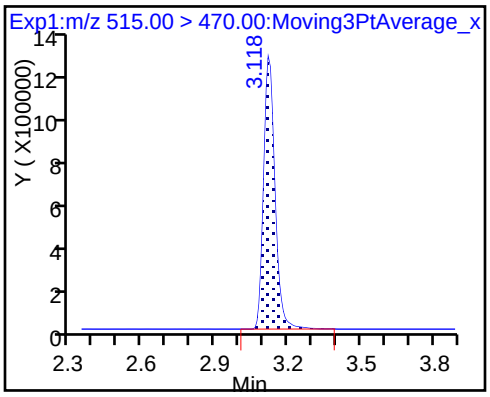
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
14
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_035.d				
Lims ID:	320-28765-A-4-A				
Client ID:	NAWC-060117-FRB-154				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:14:25	ALS Bottle#:	29	Worklist Smp#:	35
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-4-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.72	87.22
$ 10 13C2 PFDA	10.0	9.02	90.24

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-RW-269 | Lab Sample ID: 320-28765-5

Matrix: Water | Lab File ID: 2017.06.19_537B_036.d

Analysis Method: 537 | Date Collected: 06/01/2017 09:25

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 264(mL) | Date Analyzed: 06/19/2017 21:19

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.: 169966 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	23		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.5	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	85	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_036.d
Lims ID: 320-28765-A-5-A
Client ID: NAWC-060117-RW-269
Sample Type: Client
Inject. Date: 19-Jun-2017 21:19:11 ALS Bottle#: 30 Worklist Smp#: 36
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:48:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.185	2.183	0.002	1.000	752889	2.79		42.3	M
298.90 > 99.00	2.185	2.183	0.002	1.000	637629		1.18(0.00-0.00)	130	M
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3759129	8.86		2995	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	1239139	3.40		61.7	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	594356	1.72		18.4	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4086557	10.0		6241	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	2217412	6.20		114	
413.00 > 169.00	2.853	2.859	-0.006	0.997	1293143		1.71(0.00-0.00)	756	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.989	-0.007	1.000	1985446	6.26		310	
499.00 > 99.00	2.989	2.989	0.0	1.003	363197		5.47(0.00-0.00)	246	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8947926	28.7		2268	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	234775	0.6735		23.6	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3543717	9.01		12378	

QC Flag Legend

Review Flags

M - Manually Integrated

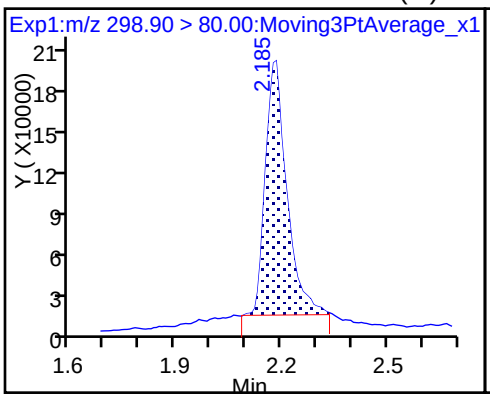
Report Date: 20-Jun-2017 14:56:20 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

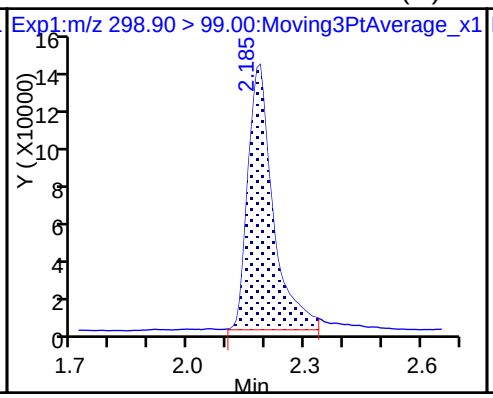
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_036.d

Injection Date:	19-Jun-2017 21:19:11	Instrument ID:	A8_N		
Lims ID:	320-28765-A-5-A	Lab Sample ID:	320-28765-5		
Client ID:	NAWC-060117-RW-269				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

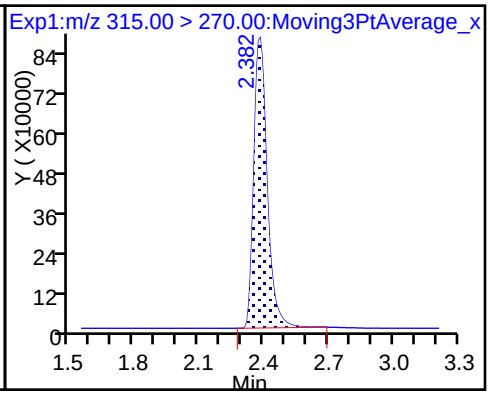
1 Perfluorobutanesulfonic acid (M)



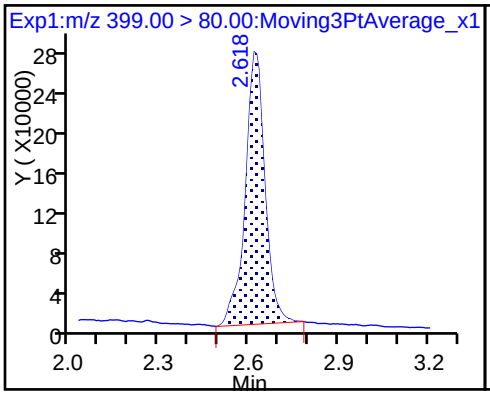
1 Perfluorobutanesulfonic acid (M)



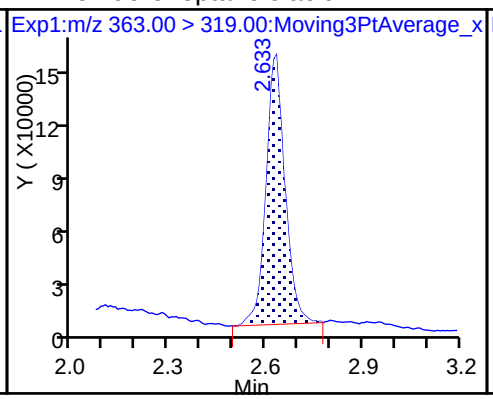
$ 2 13C2 PFHxA



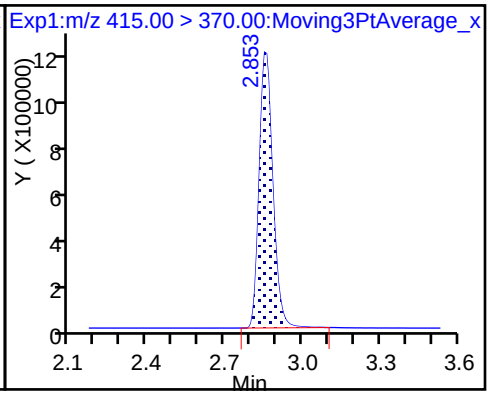
3 Perfluorohexanesulfonic acid



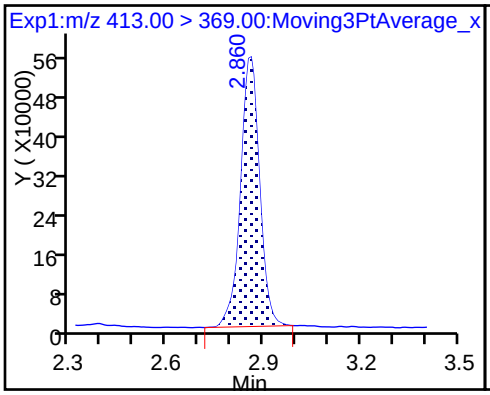
4 Perfluoroheptanoic acid



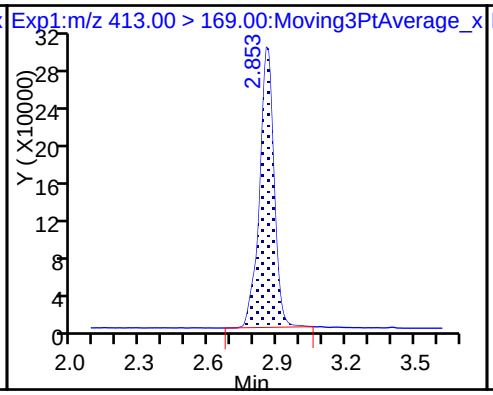
* 6 13C2-PFOA



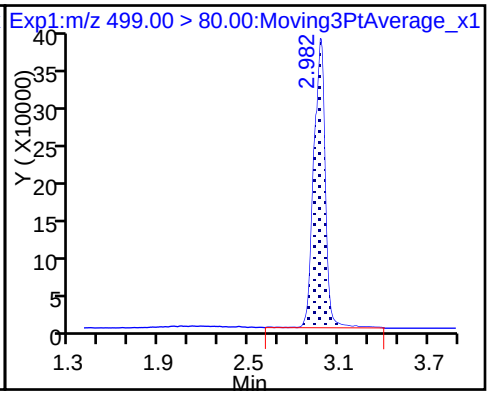
5 Perfluorooctanoic acid



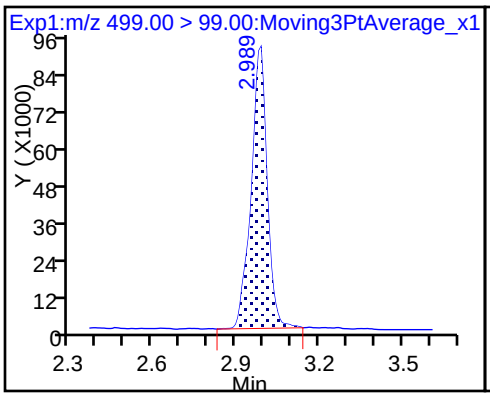
5 Perfluorooctanoic acid



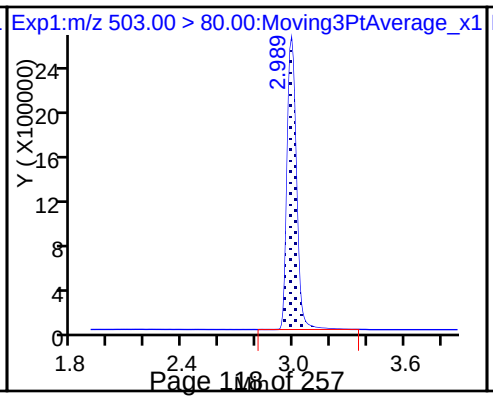
8 Perfluorooctane sulfonic acid



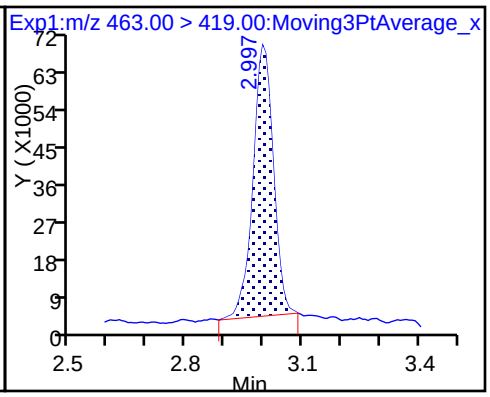
8 Perfluorooctane sulfonic acid



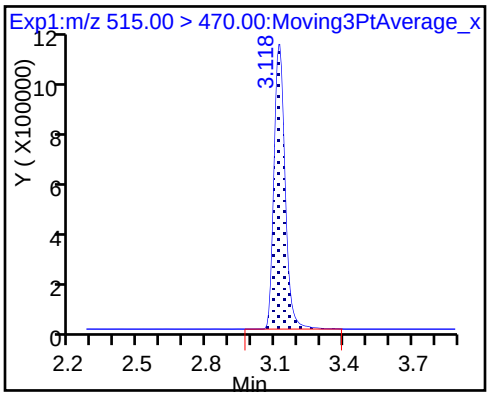
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.2
2.5
2.8
3.1
3.4
3.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_036.d				
Lims ID:	320-28765-A-5-A				
Client ID:	NAWC-060117-RW-269				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:19:11	ALS Bottle#:	30	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-5-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:48:31		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.86	88.65
$ 10 13C2 PFDA	10.0	9.01	90.12

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

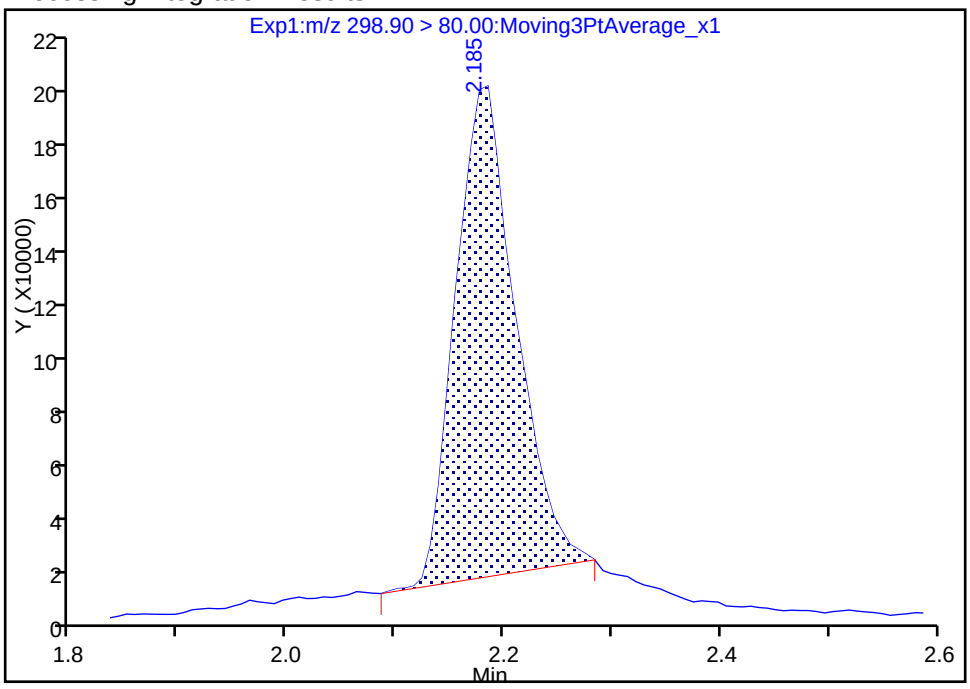
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_036.d				
Injection Date:	19-Jun-2017 21:19:11	Instrument ID:	A8_N		
Lims ID:	320-28765-A-5-A	Lab Sample ID:	320-28765-5		
Client ID:	NAWC-060117-RW-269				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

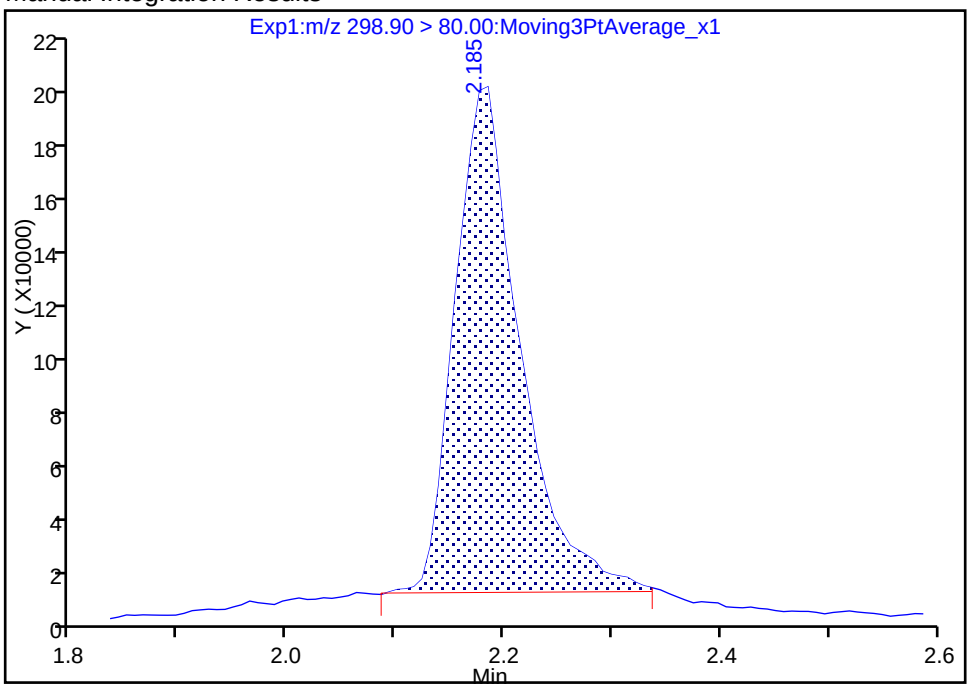
Processing Integration Results

RT: 2.19
Area: 674082
Amount: 2.499271
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 752889
Amount: 2.791461
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:48:03

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

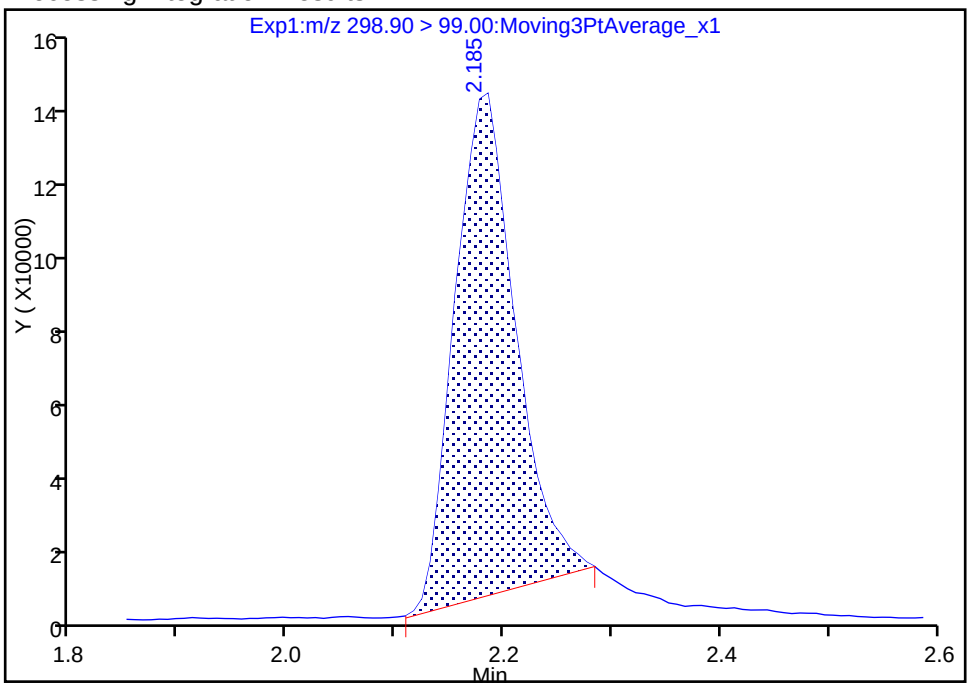
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_036.d				
Injection Date:	19-Jun-2017 21:19:11	Instrument ID:	A8_N		
Lims ID:	320-28765-A-5-A	Lab Sample ID:	320-28765-5		
Client ID:	NAWC-060117-RW-269				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	36
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

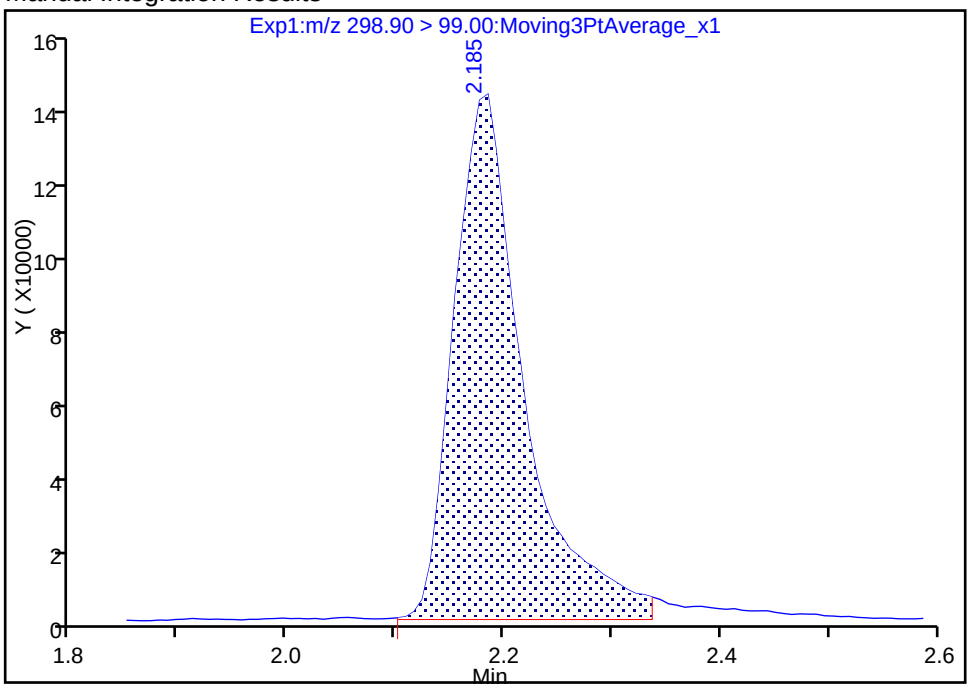
Processing Integration Results

RT: 2.19
Area: 532967
Amount: 2.499271
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 637629
Amount: 2.791461
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:48:08

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-FRB-269 | Lab Sample ID: 320-28765-6

Matrix: Water | Lab File ID: 2017.06.19_537B_039.d

Analysis Method: 537 | Date Collected: 06/01/2017 09:20

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 265.5(mL) | Date Analyzed: 06/19/2017 21:33

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.: 169968 | Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_039.d
Lims ID: 320-28765-A-6-A
Client ID: NAWC-060117-FRB-269
Sample Type: Client
Inject. Date: 19-Jun-2017 21:33:23 ALS Bottle#: 31 Worklist Smp#: 39
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:49:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3905748	9.75		3107	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		3858909	10.0		8179	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8758602	28.7		15067	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3634361	9.79		16000	

Report Date: 21-Jun-2017 10:57:07 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_039.d

Injection Date: 19-Jun-2017 21:33:23 Instrument ID: A8_N

Lims ID: 320-28765-A-6-A Lab Sample ID: 320-28765-6

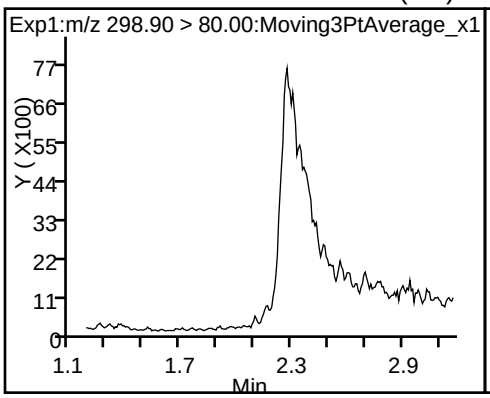
Client ID: NAWC-060117-FRB-269

Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 39

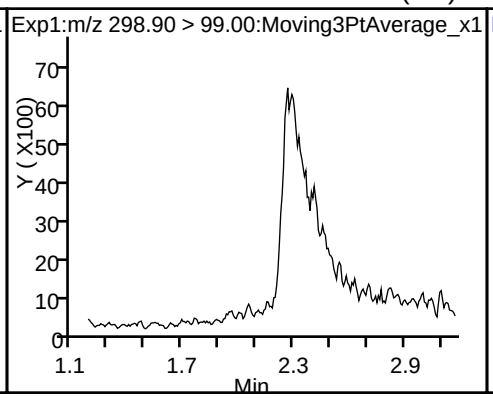
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

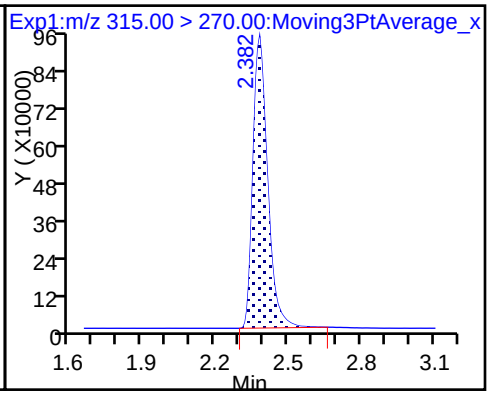
1 Perfluorobutanesulfonic acid (ND)



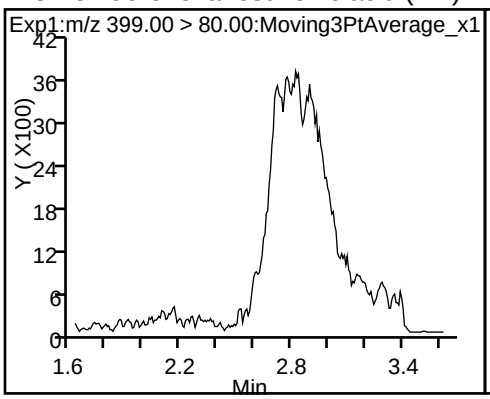
1 Perfluorobutanesulfonic acid (ND)



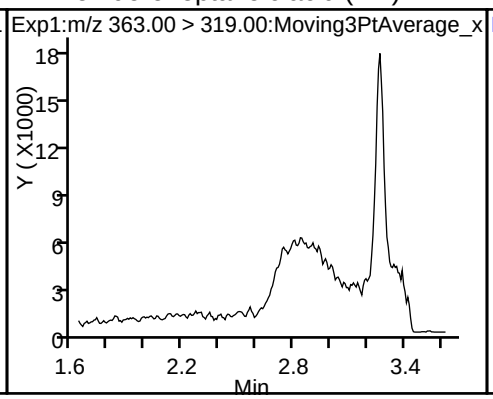
$ 2 13C2 PFHxA



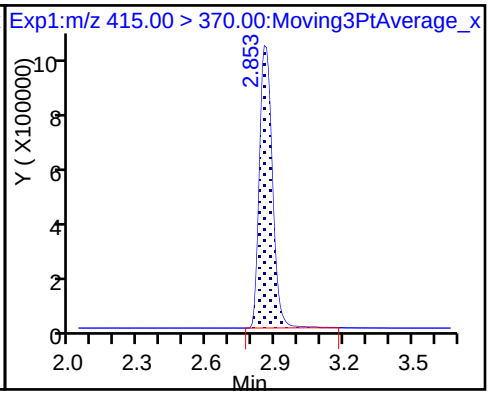
3 Perfluorohexanesulfonic acid (ND)



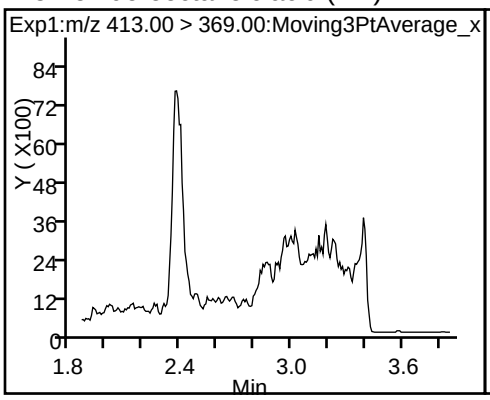
4 Perfluoroheptanoic acid (ND)



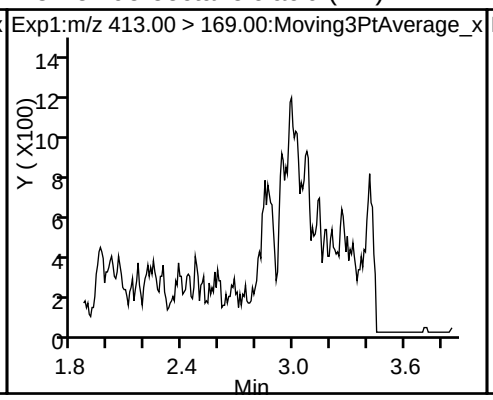
* 6 13C2-PFOA



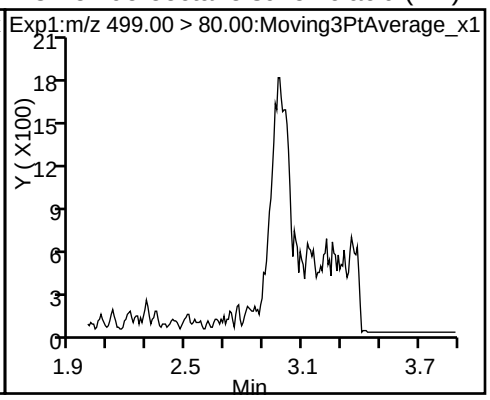
5 Perfluorooctanoic acid (ND)



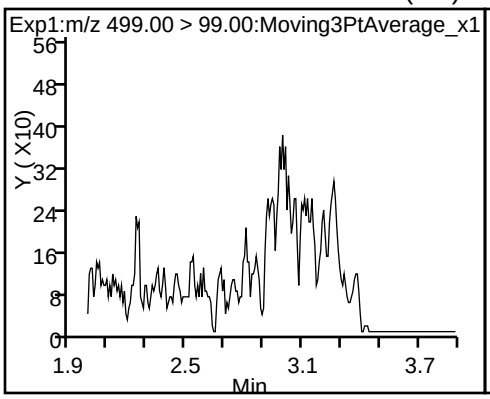
5 Perfluorooctanoic acid (ND)



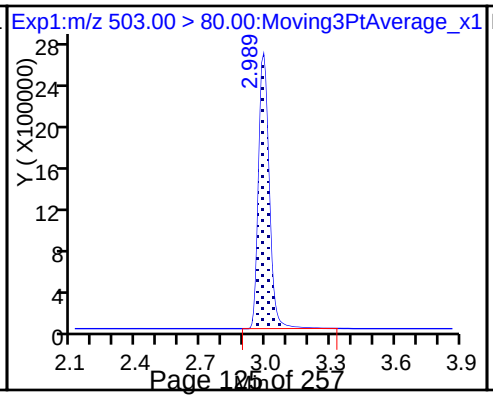
8 Perfluorooctane sulfonic acid (ND)



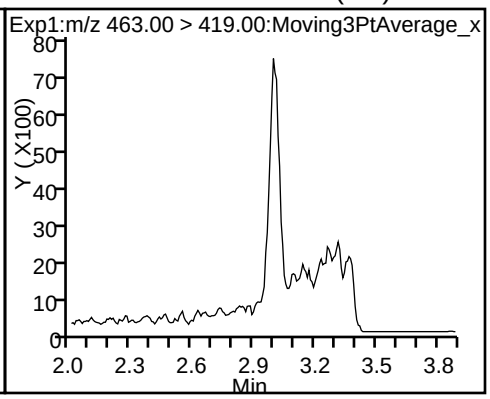
8 Perfluorooctane sulfonic acid (ND)



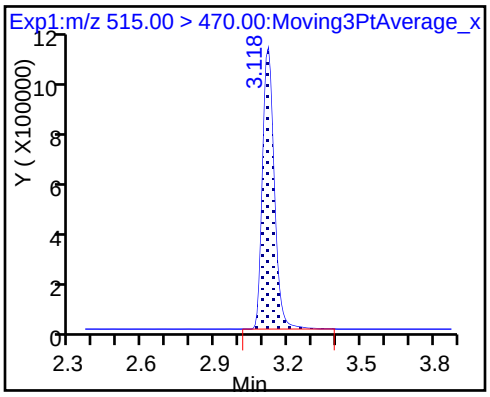
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_039.d				
Lims ID:	320-28765-A-6-A				
Client ID:	NAWC-060117-FRB-269				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:33:23	ALS Bottle#:	31	Worklist Smp#:	39
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-6-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	21-Jun-2017 10:57:04	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK005				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:49:00		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.75	97.54
$ 10 13C2 PFDA	10.0	9.79	97.88

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-RW-38 | Lab Sample ID: 320-28765-7

Matrix: Water | Lab File ID: 2017.06.19_537B_040.d

Analysis Method: 537 | Date Collected: 06/01/2017 10:00

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 266.3(mL) | Date Analyzed: 06/19/2017 21:38

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.: 169968 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J M	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	21		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	7.4	J	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.0	J	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d
Lims ID: 320-28765-A-7-A
Client ID: NAWC-060117-RW-38
Sample Type: Client
Inject. Date: 19-Jun-2017 21:38:08 ALS Bottle#: 32 Worklist Smp#: 40
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:50:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.177	2.183	-0.006	1.000	867137	3.29		12.4	M
298.90 > 99.00	2.185	2.183	0.002	1.003	673180		1.29(0.00-0.00)	69.6	M
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	2924388	7.62		1798	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	703840	1.98		9.5	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	415045	1.33		4.5	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3698384	10.0		4681	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	1838910	5.68		29.1	
413.00 > 169.00	2.853	2.859	-0.006	1.000	1092682		1.68(0.00-0.00)	489	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.982	2.989	-0.007	1.000	1975673	6.39		77.5	M
499.00 > 99.00	2.982	2.989	-0.007	1.000	318417		6.20(0.00-0.00)	106	
* 7 13C4 PFOS									
503.00 > 80.00	2.982	2.991	-0.009		8733112	28.7		571	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	361928	1.15		11.7	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3299525	9.27		6135	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 21-Jun-2017 10:57:08 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d

Injection Date: 19-Jun-2017 21:38:08 Instrument ID: A8_N

Lims ID: 320-28765-A-7-A Lab Sample ID: 320-28765-7

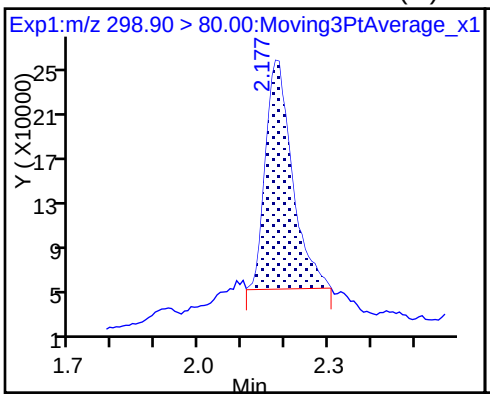
Client ID: NAWC-060117-RW-38

Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 40

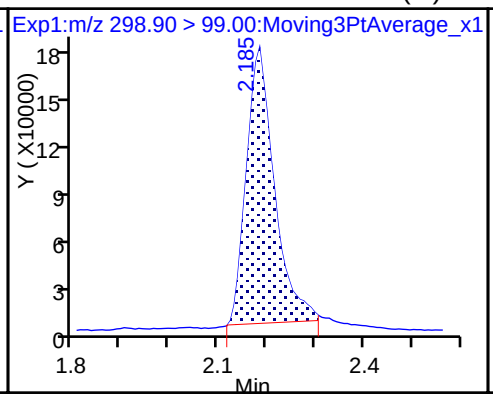
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

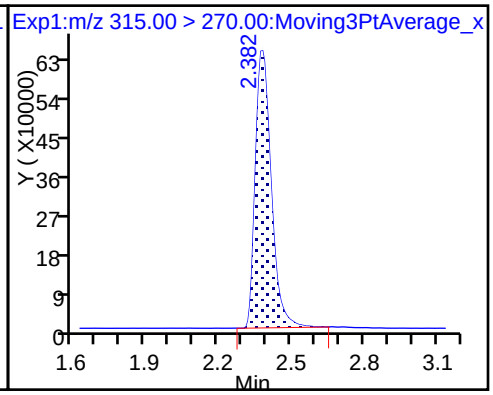
1 Perfluorobutanesulfonic acid (M)



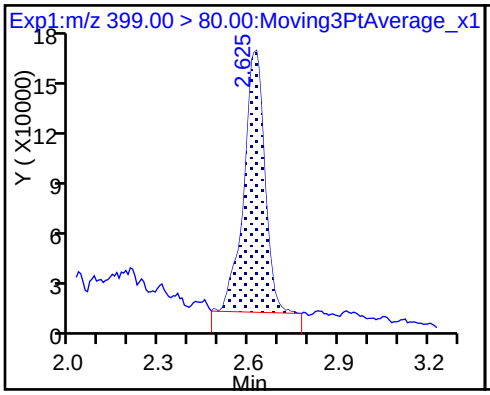
1 Perfluorobutanesulfonic acid (M)



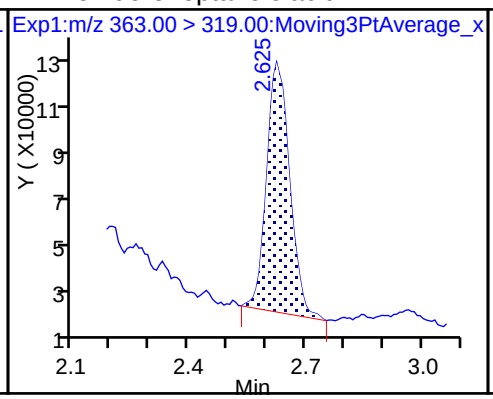
$ 2 13C2 PFHxA



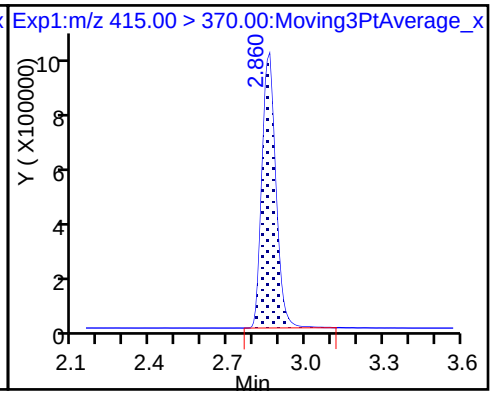
3 Perfluorohexanesulfonic acid



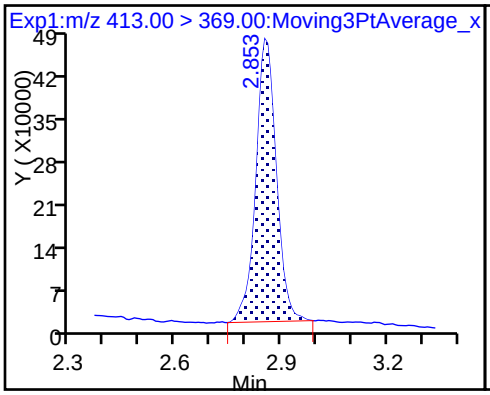
4 Perfluoroheptanoic acid



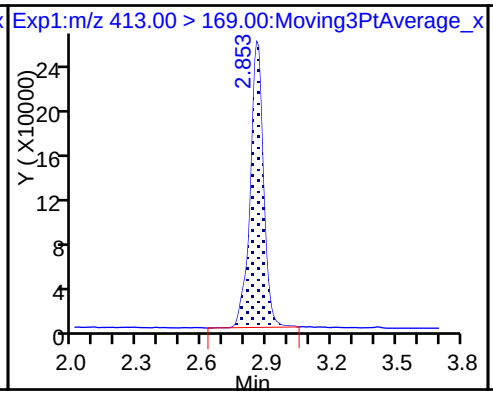
* 6 13C2-PFOA



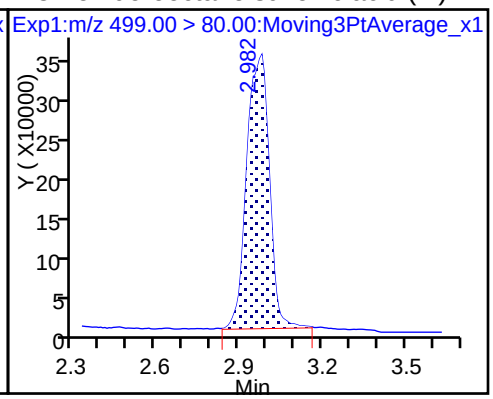
5 Perfluorooctanoic acid



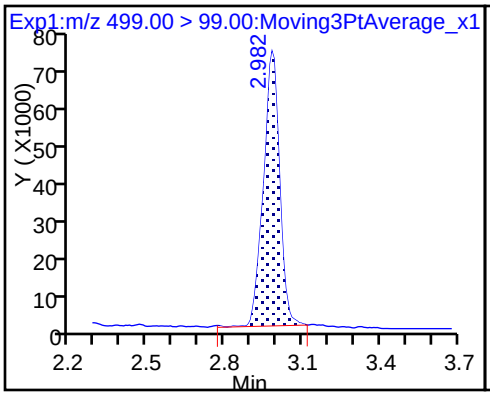
5 Perfluorooctanoic acid



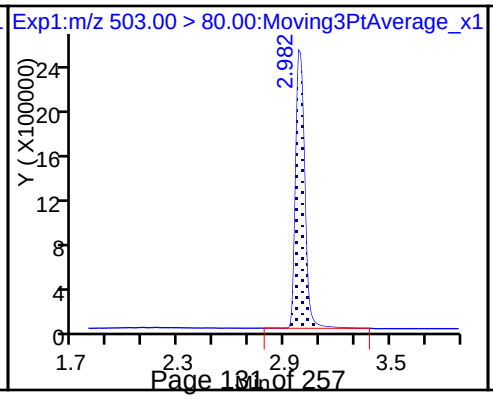
8 Perfluorooctane sulfonic acid (M)



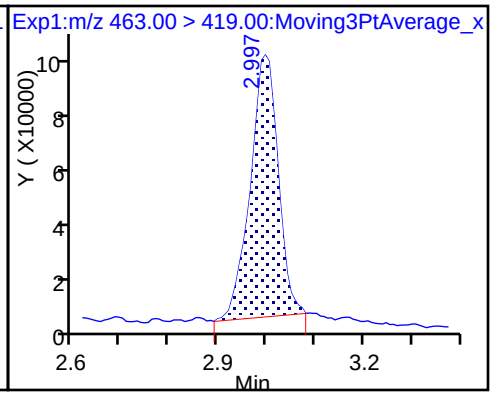
8 Perfluorooctane sulfonic acid



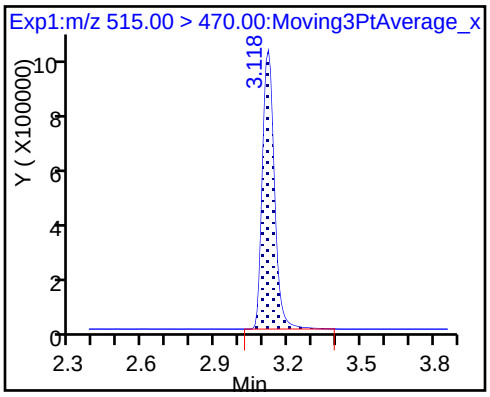
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

Report Date: 21-Jun-2017 10:57:08 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d				
Lims ID:	320-28765-A-7-A				
Client ID:	NAWC-060117-RW-38				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:38:08	ALS Bottle#:	32	Worklist Smp#:	40
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-7-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	21-Jun-2017 10:57:04	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK005				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:50:00		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.62	76.20
$ 10 13C2 PFDA	10.0	9.27	92.72

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

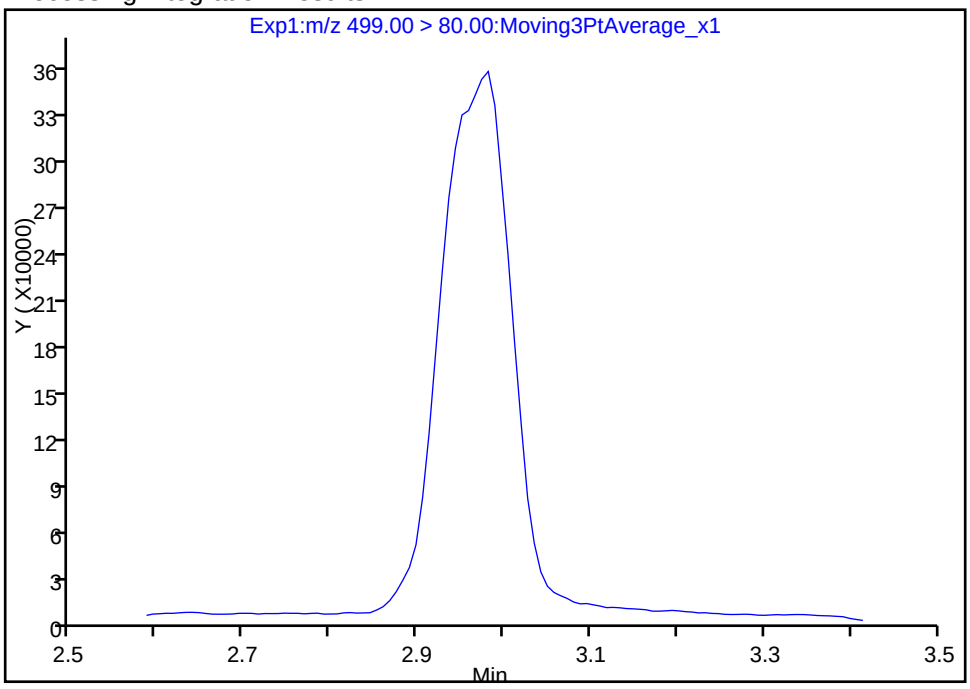
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d				
Injection Date:	19-Jun-2017 21:38:08	Instrument ID:	A8_N		
Lims ID:	320-28765-A-7-A	Lab Sample ID:	320-28765-7		
Client ID:	NAWC-060117-RW-38				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	40
Injection 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

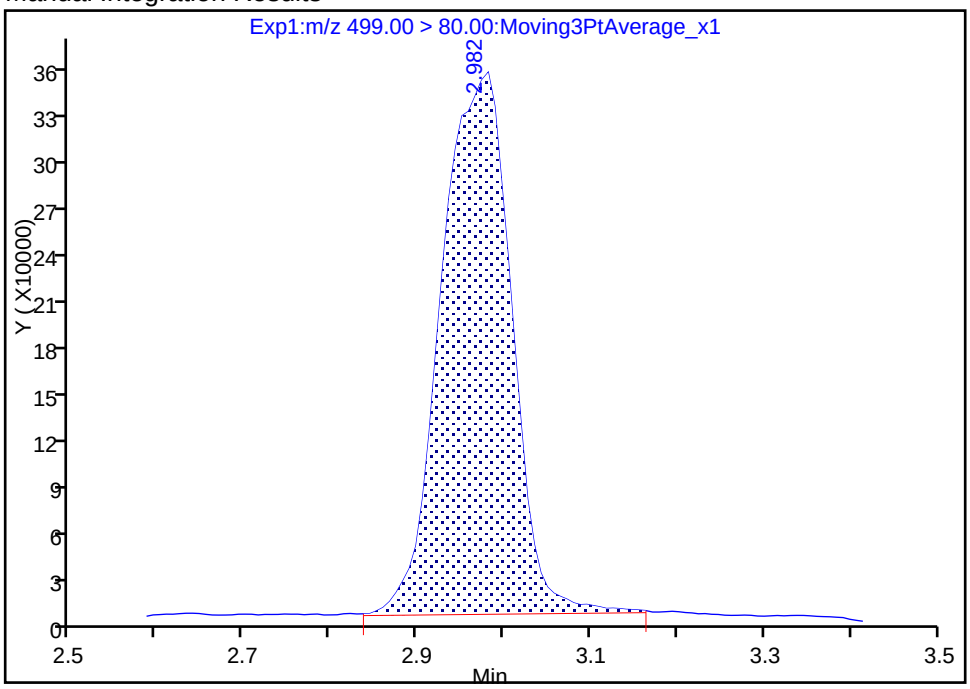
Not Detected
Expected RT: 2.99

Processing Integration Results



Manual Integration Results

RT: 2.98
Area: 1975673
Amount: 6.387268
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:49:11
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

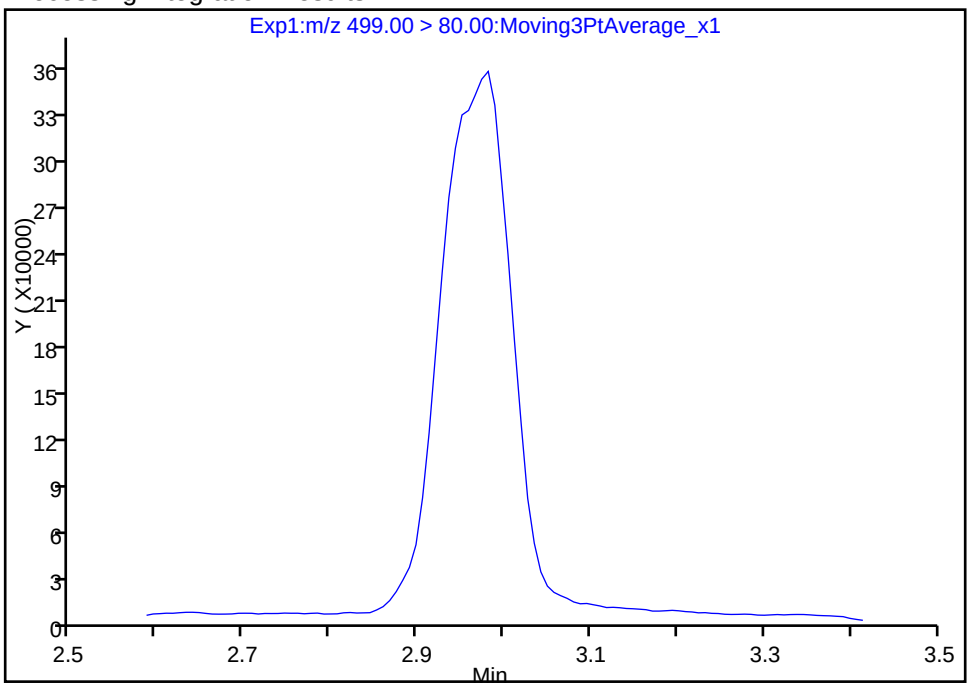
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d				
Injection Date:	19-Jun-2017 21:38:08	Instrument ID:	A8_N		
Lims ID:	320-28765-A-7-A	Lab Sample ID:	320-28765-7		
Client ID:	NAWC-060117-RW-38				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	40
Injection 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

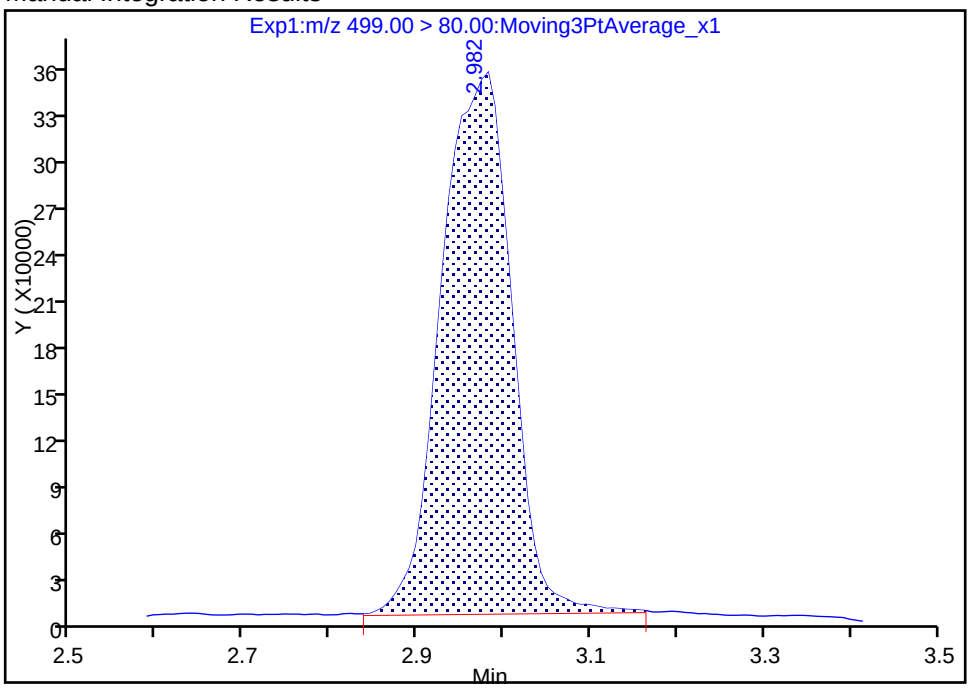
Not Detected
Expected RT: 2.99

Processing Integration Results



Manual Integration Results

RT: 2.98
Area: 1975673
Amount: 6.387268
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:49:28
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

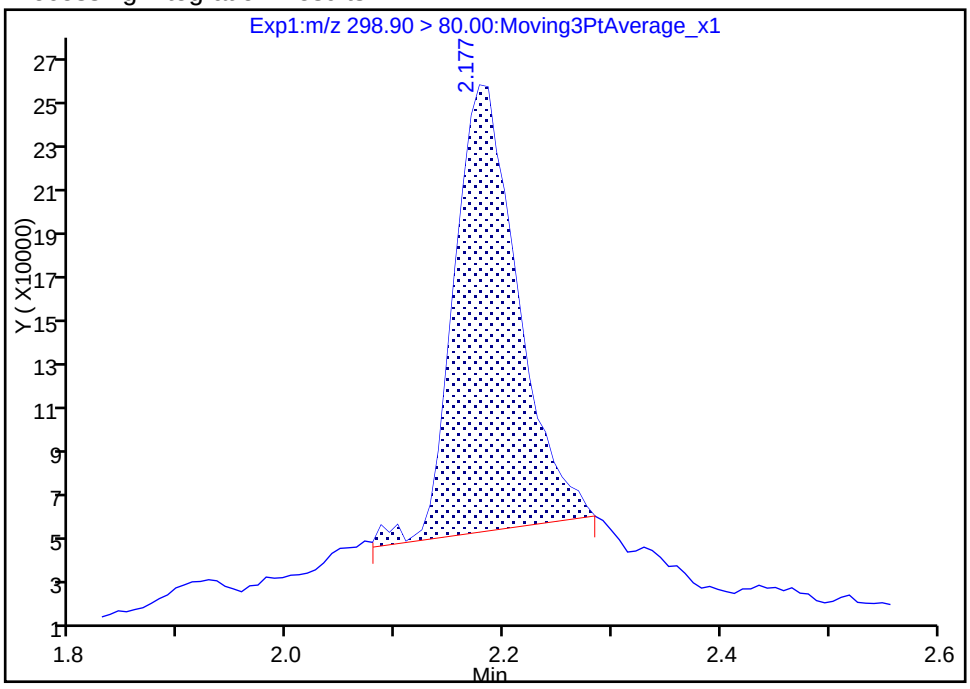
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d				
Injection Date:	19-Jun-2017 21:38:08	Instrument ID:	A8_N		
Lims ID:	320-28765-A-7-A	Lab Sample ID:	320-28765-7		
Client ID:	NAWC-060117-RW-38				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	40
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

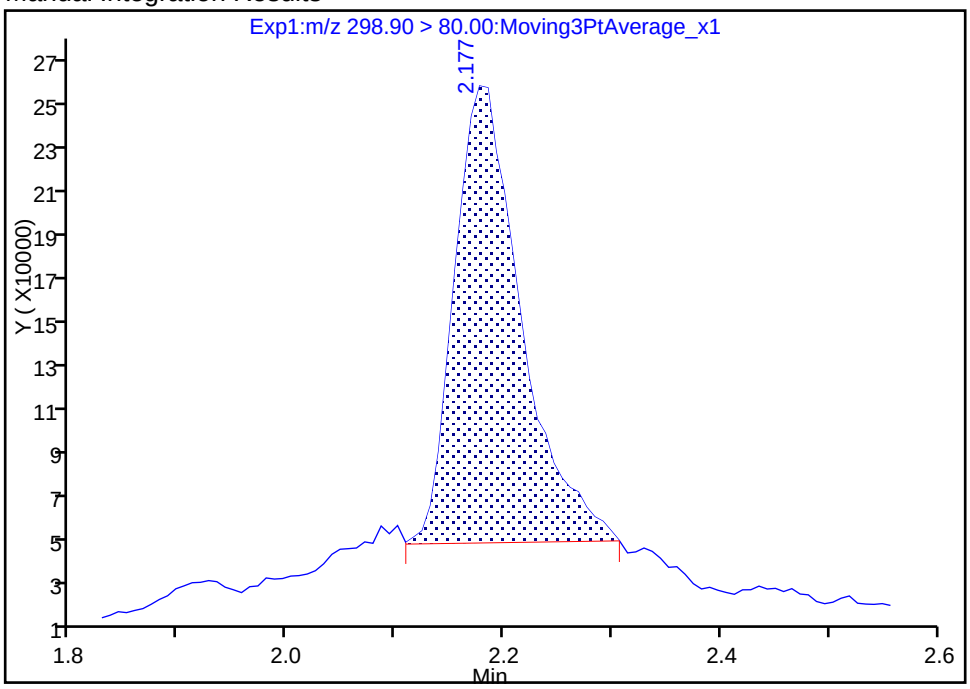
Processing Integration Results

RT: 2.18
Area: 811282
Amount: 3.081952
Amount Units: ng/ml



Manual Integration Results

RT: 2.18
Area: 867137
Amount: 3.294137
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:49:44

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

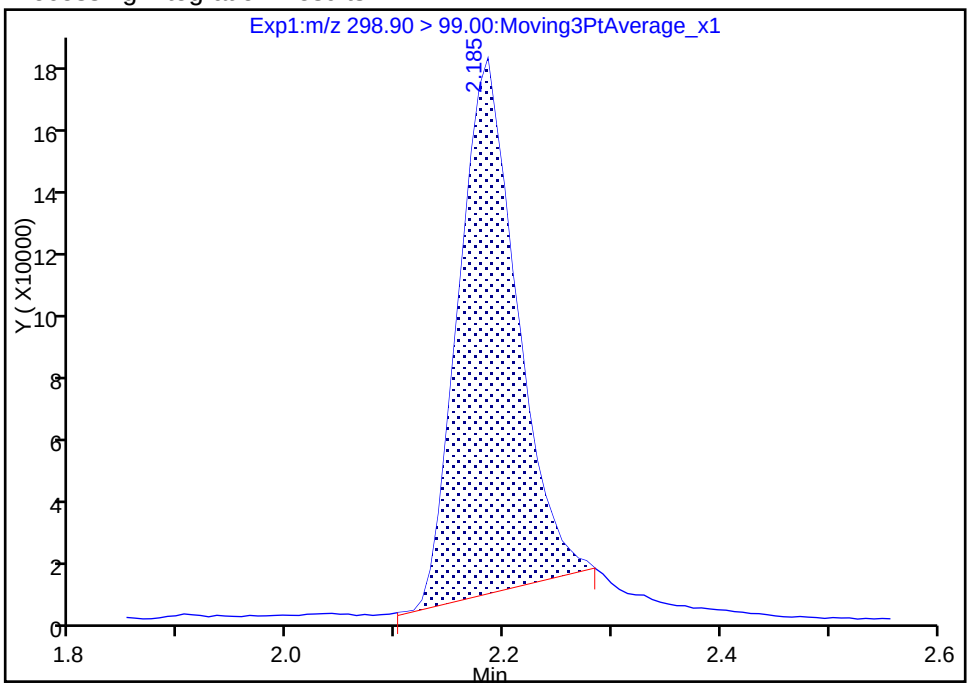
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_040.d				
Injection Date:	19-Jun-2017 21:38:08	Instrument ID:	A8_N		
Lims ID:	320-28765-A-7-A	Lab Sample ID:	320-28765-7		
Client ID:	NAWC-060117-RW-38				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	40
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

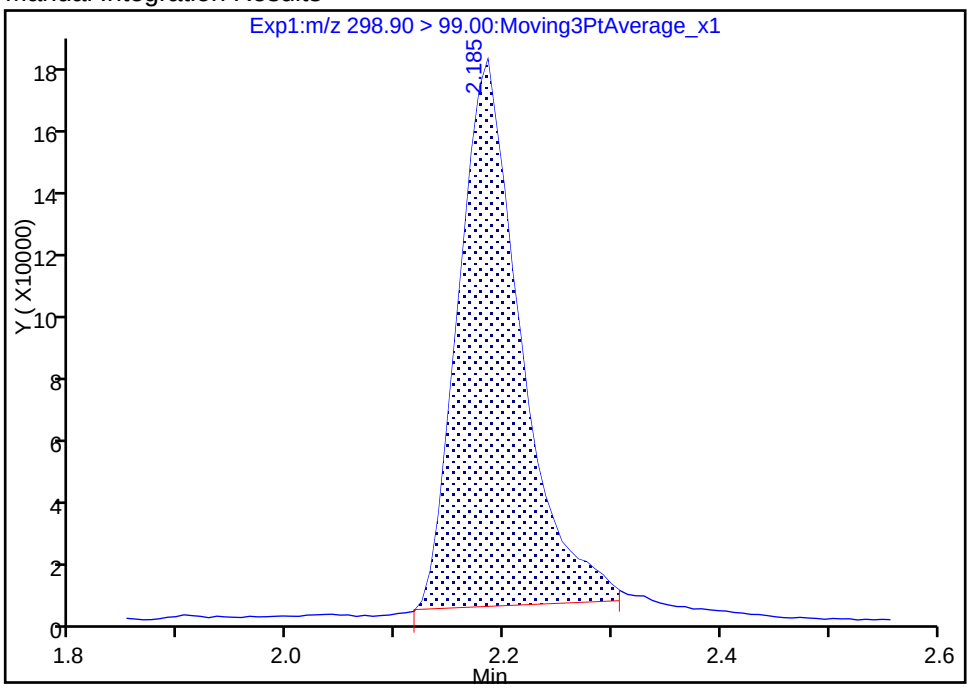
Processing Integration Results

RT: 2.19
Area: 618222
Amount: 3.081952
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 673180
Amount: 3.294137
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:49:52
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-FRB-38 | Lab Sample ID: 320-28765-8

Matrix: Water | Lab File ID: 2017.06.19_537B_041.d

Analysis Method: 537 | Date Collected: 06/01/2017 09:55

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 260.6(mL) | Date Analyzed: 06/19/2017 21:42

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.: 169968 | Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_041.d
Lims ID: 320-28765-A-8-A
Client ID: NAWC-060117-FRB-38
Sample Type: Client
Inject. Date: 19-Jun-2017 21:42:53 ALS Bottle#: 33 Worklist Smp#: 41
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.397	2.381	0.016	1.000	4043857	9.24		2716	
* 6 13C2-PFOA									
415.00 > 370.00	2.875	2.859	0.016		4215473	10.0		5867	
* 7 13C4 PFOS									
503.00 > 80.00	3.004	2.991	0.013		9185856	28.7		14826	
$ 10 13C2 PFDA									
515.00 > 470.00	3.133	3.123	0.010	1.000	3655032	9.01		13882	

Report Date: 21-Jun-2017 10:57:08 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_041.d

Injection Date: 19-Jun-2017 21:42:53 Instrument ID: A8_N

Lims ID: 320-28765-A-8-A Lab Sample ID: 320-28765-8

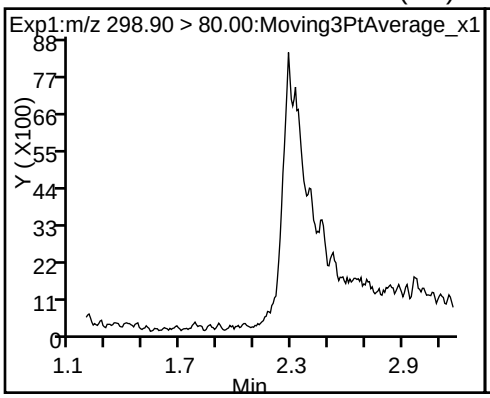
Client ID: NAWC-060117-FRB-38

Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 41

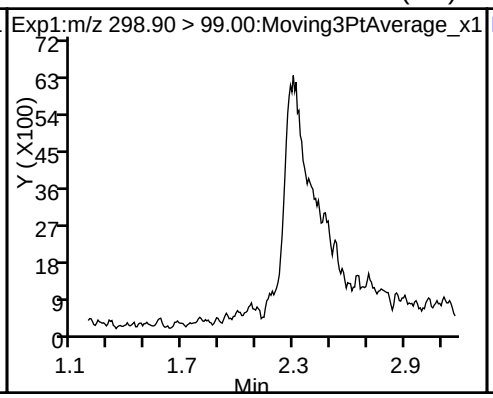
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

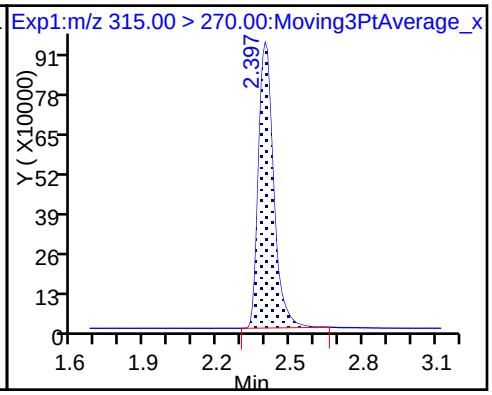
1 Perfluorobutanesulfonic acid (ND)



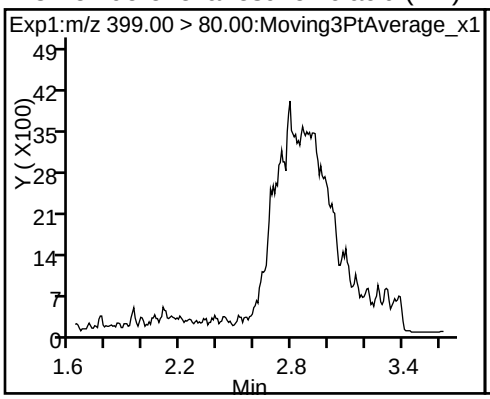
1 Perfluorobutanesulfonic acid (ND)



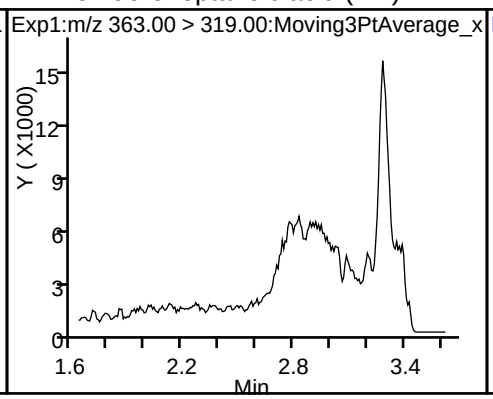
$ 2 13C2 PFHxA



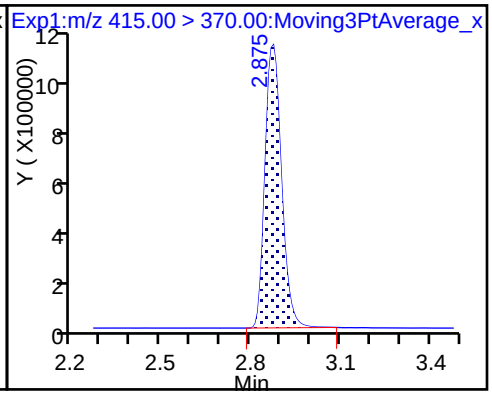
3 Perfluorohexanesulfonic acid (ND)



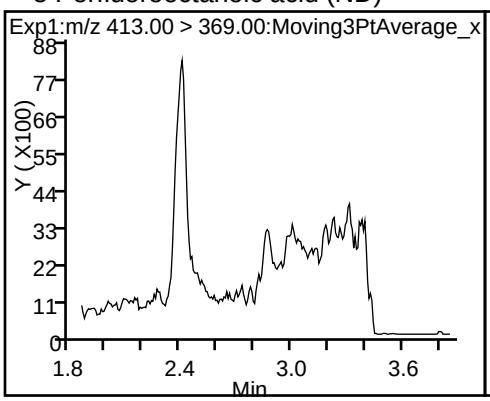
4 Perfluoroheptanoic acid (ND)



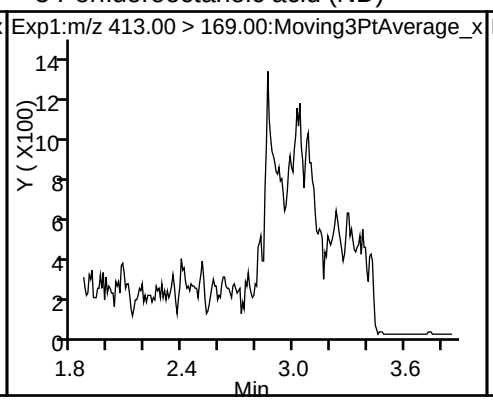
* 6 13C2-PFOA



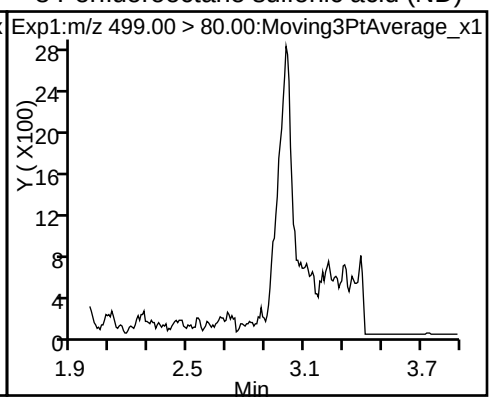
5 Perfluorooctanoic acid (ND)



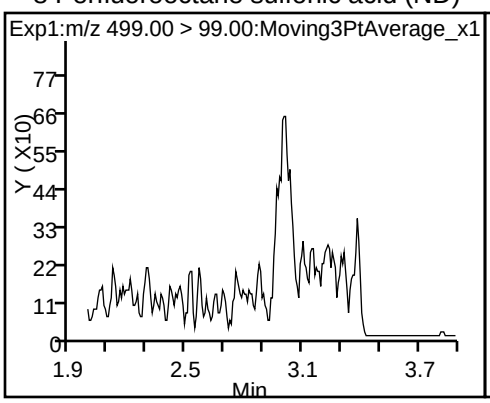
5 Perfluorooctanoic acid (ND)



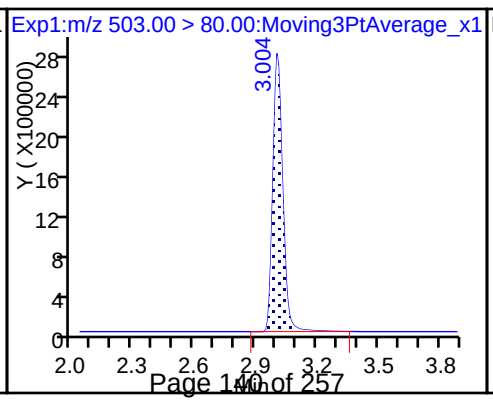
8 Perfluorooctane sulfonic acid (ND)



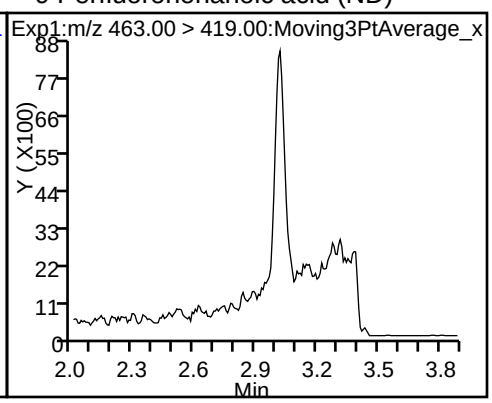
8 Perfluorooctane sulfonic acid (ND)



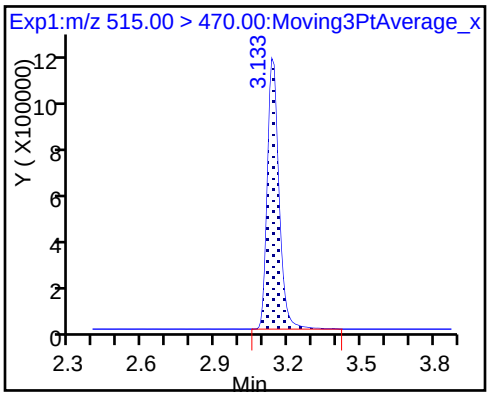
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.133
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_041.d				
Lims ID:	320-28765-A-8-A				
Client ID:	NAWC-060117-FRB-38				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:42:53	ALS Bottle#:	33	Worklist Smp#:	41
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-8-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	21-Jun-2017 10:57:04	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK005				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.24	92.45
$ 10 13C2 PFDA	10.0	9.01	90.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-RW-39 | Lab Sample ID: 320-28765-9

Matrix: Water | Lab File ID: 2017.06.19_537B_042.d

Analysis Method: 537 | Date Collected: 06/01/2017 09:50

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 262.6(mL) | Date Analyzed: 06/19/2017 21:47

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.: 169968 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	12	J	19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.3	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_042.d
Lims ID: 320-28765-A-9-A
Client ID: NAWC-060117-RW-39
Sample Type: Client
Inject. Date: 19-Jun-2017 21:47:38 ALS Bottle#: 34 Worklist Smp#: 42
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:51:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.185	2.183	0.002	1.000	396397	1.41		21.5	M
298.90 > 99.00	2.185	2.183	0.002	1.000	305571		1.30(0.00-0.00)	61.9	M
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3785360	8.61		2570	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	305681	0.8029		16.6	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	305768	0.8563		8.8	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4234557	10.0		5541	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1159152	3.13		56.4	
413.00 > 169.00	2.860	2.859	0.001	1.000	683175		1.70(0.00-0.00)	410	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	1269821	3.83		215	
499.00 > 99.00	2.989	2.989	0.0	1.000	226673		5.60(0.00-0.00)	163	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9355860	28.7		2558	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	266210	0.7370		24.9	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3744228	9.19		11439	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 21-Jun-2017 10:57:09 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_042.d

Injection Date: 19-Jun-2017 21:47:38 Instrument ID: A8_N

Lims ID: 320-28765-A-9-A Lab Sample ID: 320-28765-9

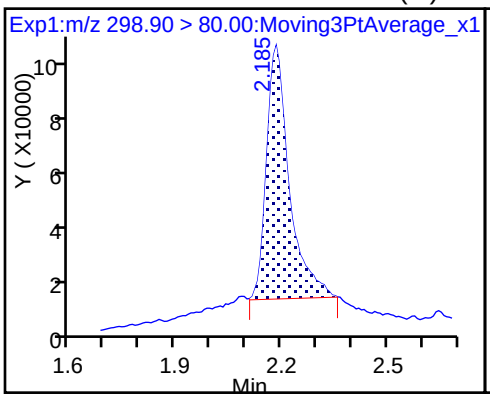
Client ID: NAWC-060117-RW-39

Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 42

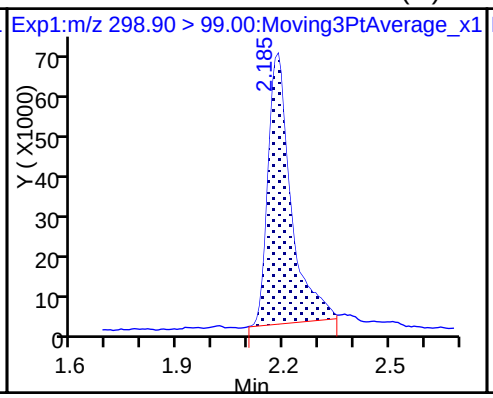
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

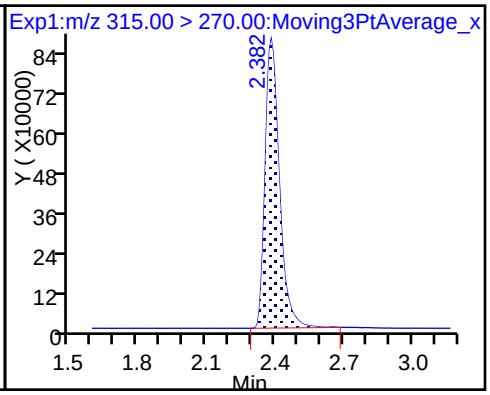
1 Perfluorobutanesulfonic acid (M)



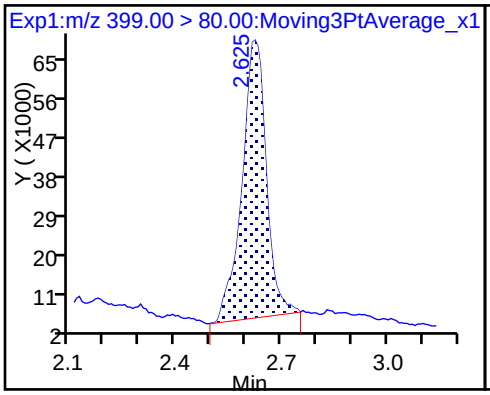
1 Perfluorobutanesulfonic acid (M)



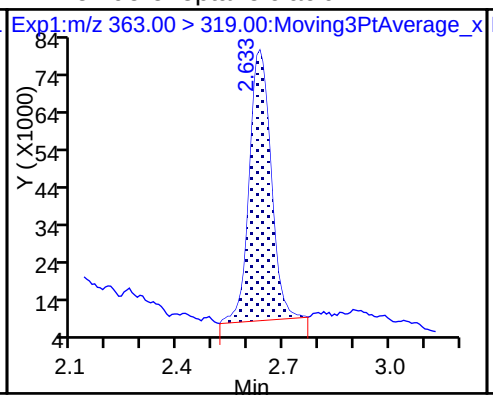
$ 2 13C2 PFHxA



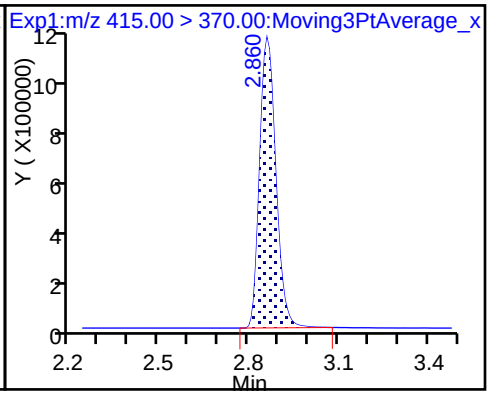
3 Perfluorohexanesulfonic acid



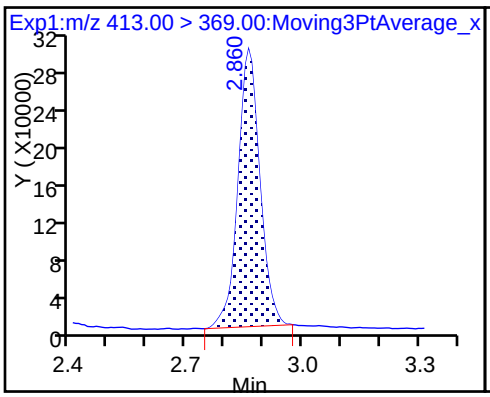
4 Perfluoroheptanoic acid



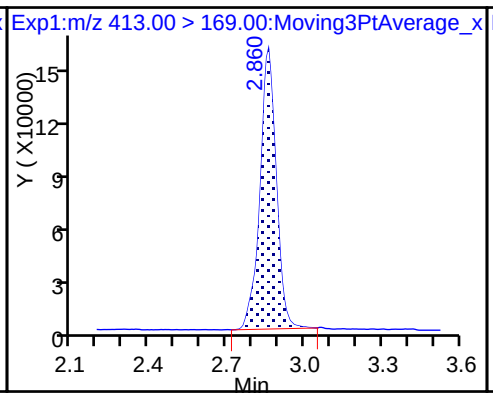
* 6 13C2-PFOA



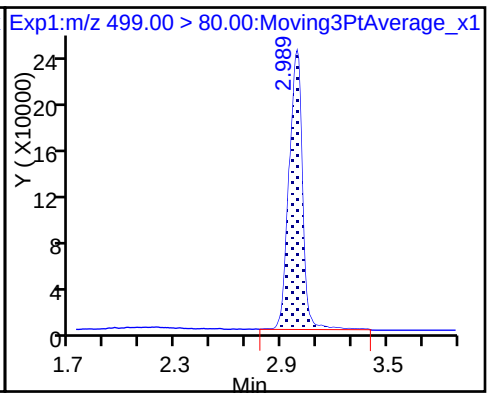
5 Perfluorooctanoic acid



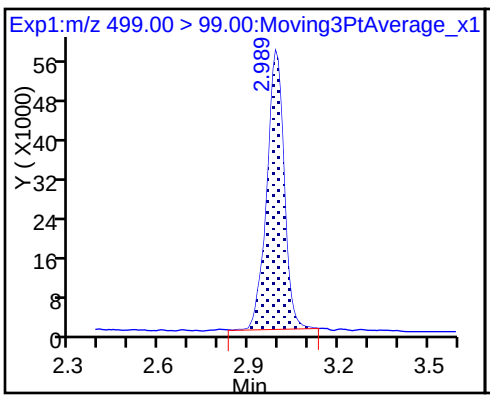
5 Perfluorooctanoic acid



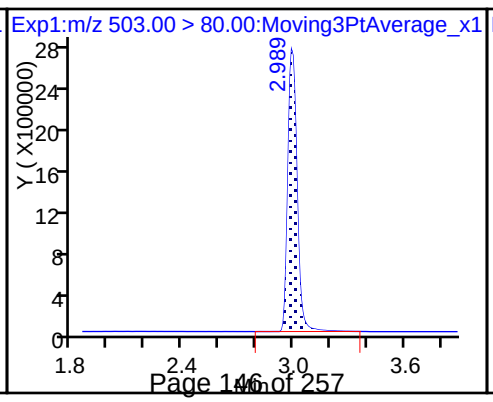
8 Perfluorooctane sulfonic acid



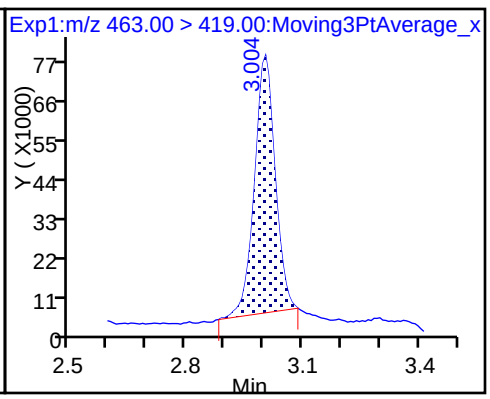
8 Perfluorooctane sulfonic acid



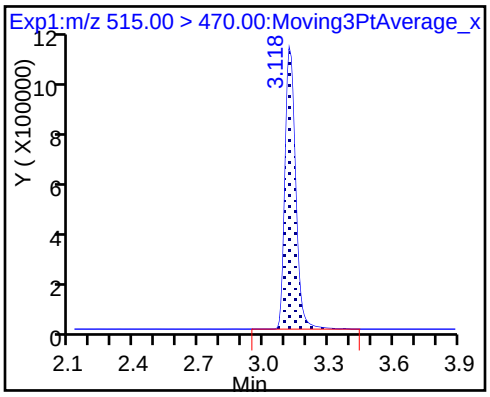
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.1
2.4
2.7
3.0
3.3
3.6
3.9
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_042.d
Lims ID: 320-28765-A-9-A
Client ID: NAWC-060117-RW-39
Sample Type: Client
Inject. Date: 19-Jun-2017 21:47:38 ALS Bottle#: 34 Worklist Smp#: 42
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:51:09

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.61	86.15
$ 10 13C2 PFDA	10.0	9.19	91.89

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

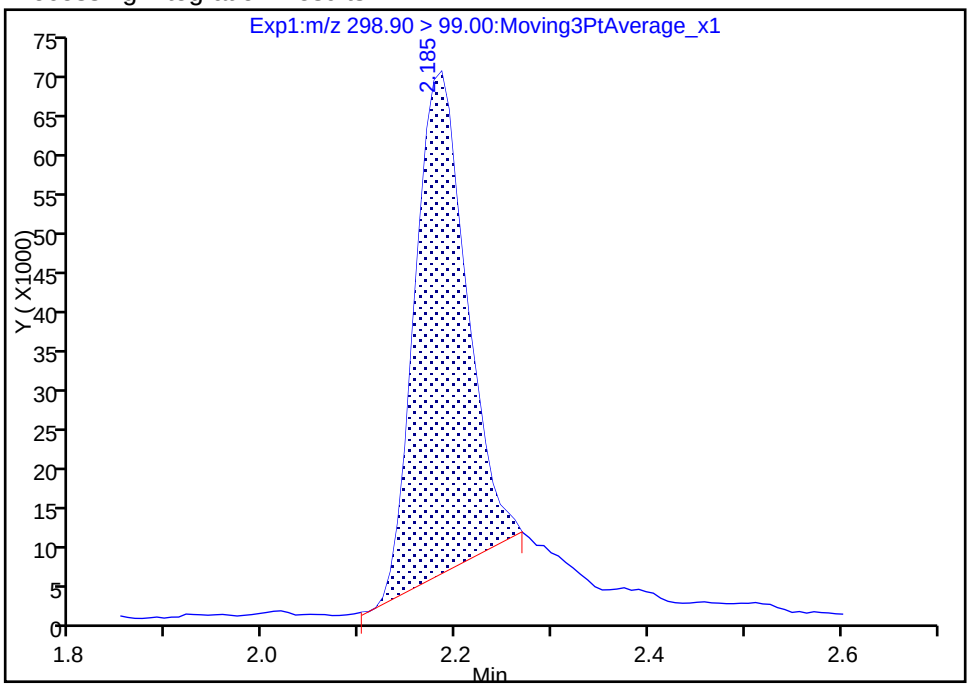
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_042.d				
Injection Date:	19-Jun-2017 21:47:38	Instrument ID:	A8_N		
Lims ID:	320-28765-A-9-A	Lab Sample ID:	320-28765-9		
Client ID:	NAWC-060117-RW-39				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

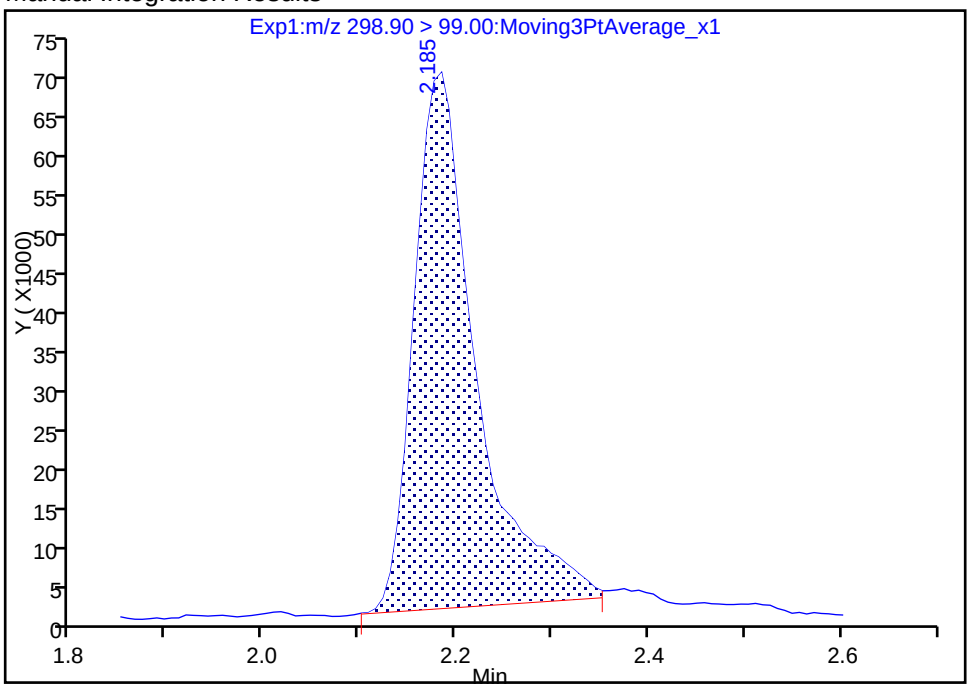
Processing Integration Results

RT: 2.19
Area: 237571
Amount: 1.114669
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 305571
Amount: 1.405626
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:50:40

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

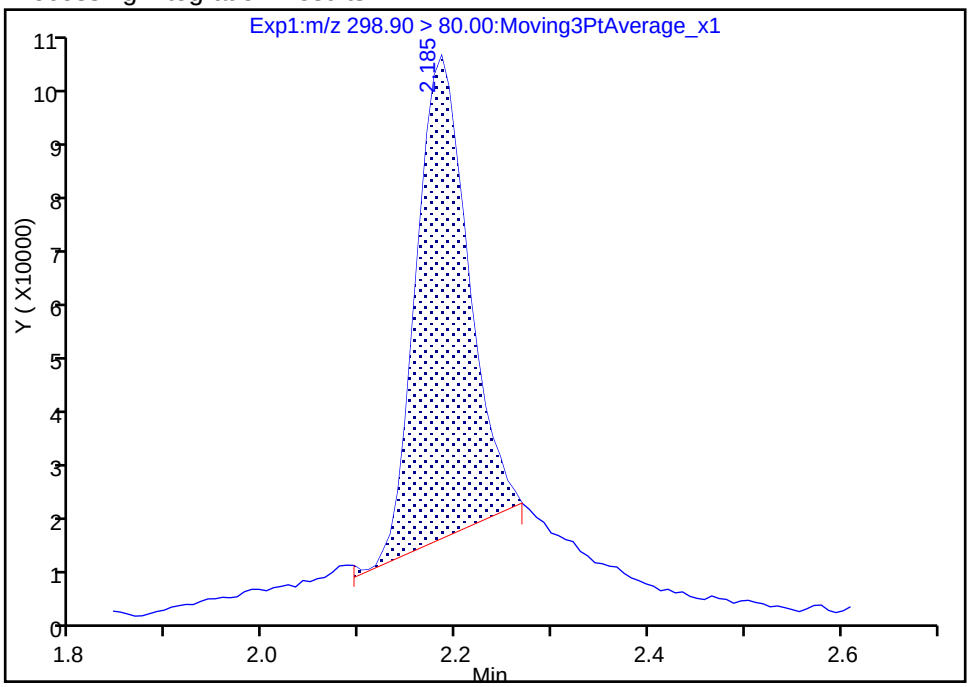
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_042.d				
Injection Date:	19-Jun-2017 21:47:38	Instrument ID:	A8_N		
Lims ID:	320-28765-A-9-A	Lab Sample ID:	320-28765-9		
Client ID:	NAWC-060117-RW-39				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	42
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

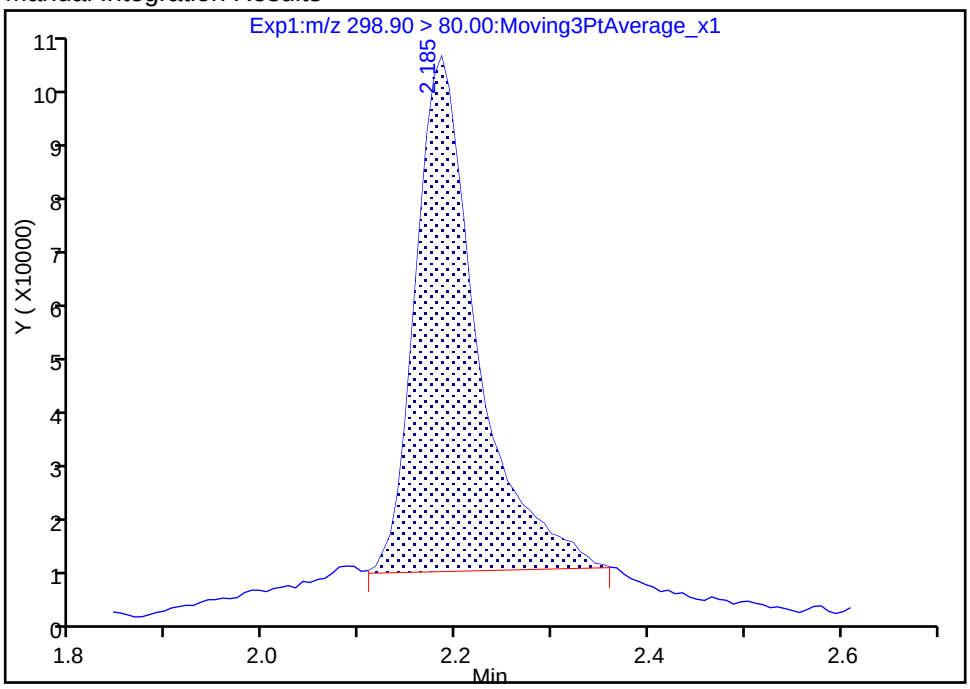
Processing Integration Results

RT: 2.19
Area: 314345
Amount: 1.114669
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 396397
Amount: 1.405626
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:50:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-FRB-39 | Lab Sample ID: 320-28765-10

Matrix: Water | Lab File ID: 2017.06.19_537B_043.d

Analysis Method: 537 | Date Collected: 06/01/2017 09:45

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 264.6(mL) | Date Analyzed: 06/19/2017 21:52

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.: 169968 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	38	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	7.6	U	19	7.6	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	85	34	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_043.d
Lims ID: 320-28765-A-10-A
Client ID: NAWC-060117-FRB-39
Sample Type: Client
Inject. Date: 19-Jun-2017 21:52:22 ALS Bottle#: 35 Worklist Smp#: 43
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:51:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4066950	8.97		2101	
* 6 13C2-PFOA									
415.00 > 370.00	2.868	2.859	0.009		4369322	10.0		7357	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		9230022	28.7		16425	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3785983	9.00		13393	

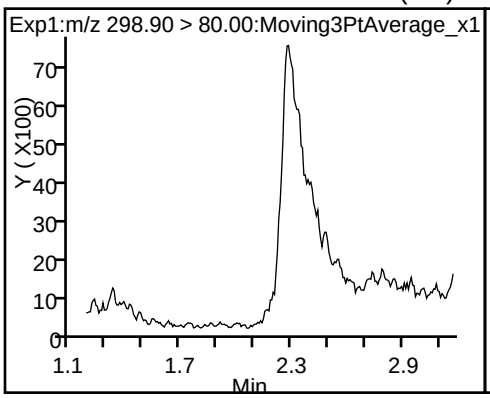
Report Date: 21-Jun-2017 10:57:10 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

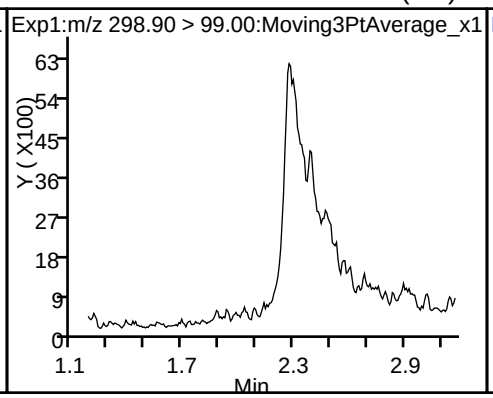
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_043.d

Injection Date:	19-Jun-2017 21:52:22	Instrument ID:	A8_N		
Lims ID:	320-28765-A-10-A	Lab Sample ID:	320-28765-10		
Client ID:	NAWC-060117-FRB-39				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	43
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

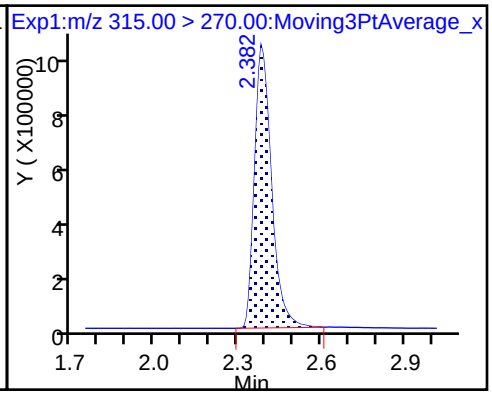
1 Perfluorobutanesulfonic acid (ND)



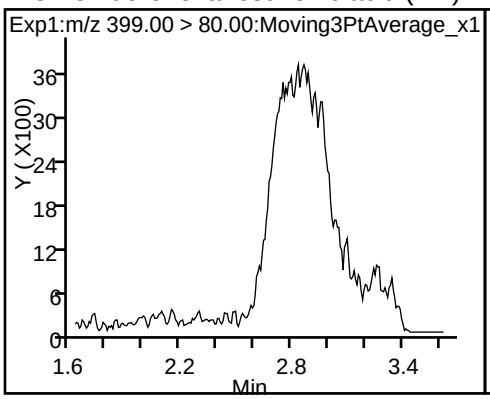
1 Perfluorobutanesulfonic acid (ND)



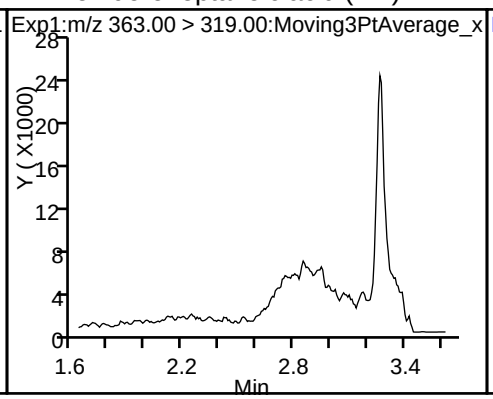
$ 2 13C2 PFHxA



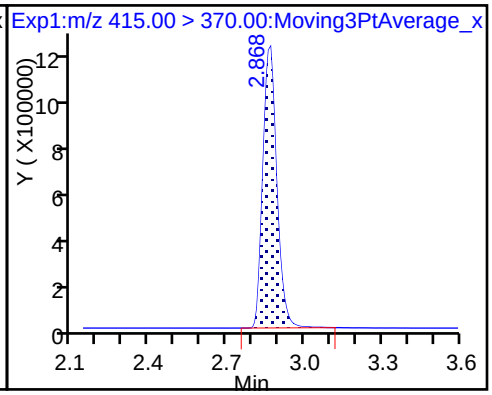
3 Perfluorohexanesulfonic acid (ND)



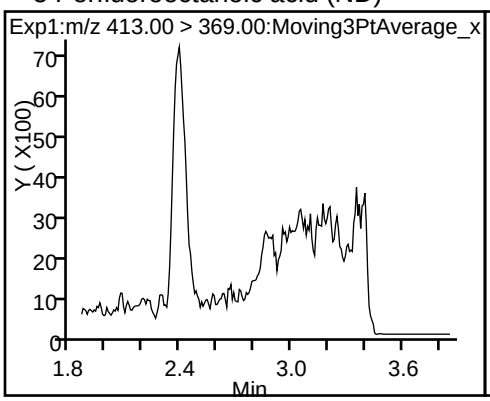
4 Perfluoroheptanoic acid (ND)



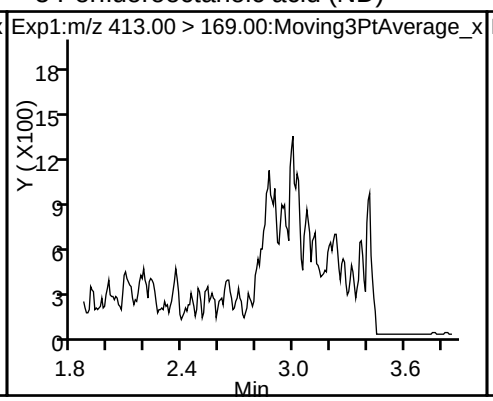
* 6 13C2-PFOA



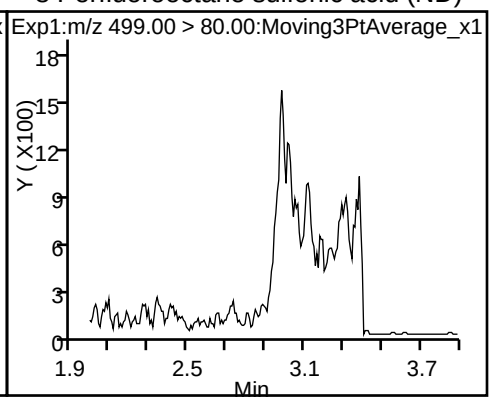
5 Perfluorooctanoic acid (ND)



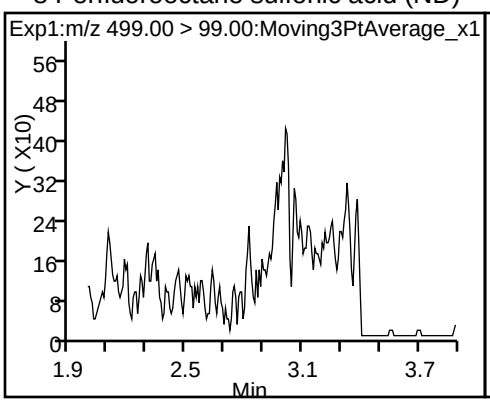
5 Perfluorooctanoic acid (ND)



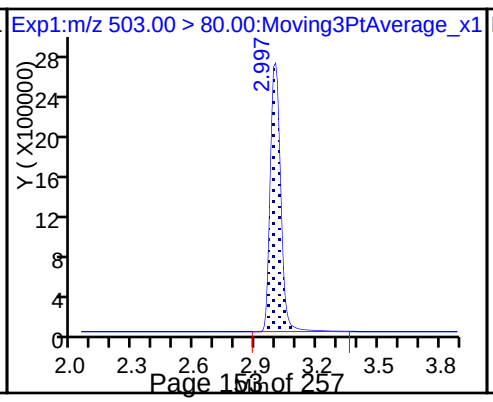
8 Perfluorooctane sulfonic acid (ND)



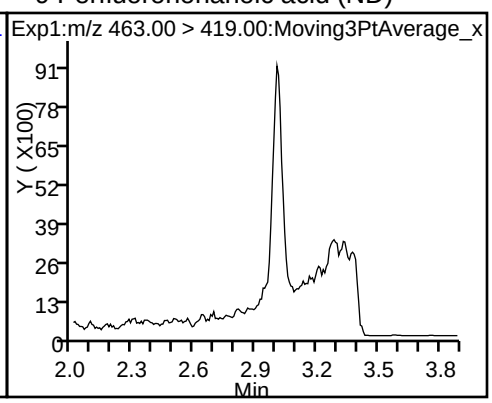
8 Perfluorooctane sulfonic acid (ND)



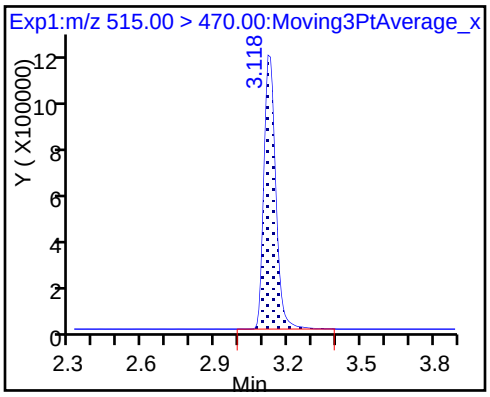
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_043.d				
Lims ID:	320-28765-A-10-A				
Client ID:	NAWC-060117-FRB-39				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:52:22	ALS Bottle#:	35	Worklist Smp#:	43
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-10-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	21-Jun-2017 10:57:04	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK005				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:51:28		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.97	89.70
$ 10 13C2 PFDA	10.0	9.00	90.05

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: NAWC-060117-DUP01 | Lab Sample ID: 320-28765-11

Matrix: Water | Lab File ID: 2017.06.19_537B_044.d

Analysis Method: 537 | Date Collected: 06/01/2017 07:00

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 262.2(mL) | Date Analyzed: 06/19/2017 21:57

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.: 169968 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	23		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	13	J	29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.5	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U M	86	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_044.d
Lims ID: 320-28765-A-11-A
Client ID: NAWC-060117-DUP01
Sample Type: Client
Inject. Date: 19-Jun-2017 21:57:07 ALS Bottle#: 36 Worklist Smp#: 44
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-28765-a-11-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:52:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									M
298.90 > 80.00	2.185	2.183	0.002	1.000	784161	2.92		41.5	M
298.90 > 99.00	2.177	2.183	-0.006	0.997	621730		1.26(0.00-0.00)	119	M
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3697639	8.89		2551	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	1190165	3.29		60.2	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	575850	1.70		16.8	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4006732	10.0		5648	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	2073663	5.91		98.5	
413.00 > 169.00	2.860	2.859	0.001	1.000	1244046		1.67(0.00-0.00)	688	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	1949293	6.19		293	
499.00 > 99.00	2.989	2.989	0.0	1.000	341241		5.71(0.00-0.00)	216	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8895567	28.7		2331	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	233334	0.6827		21.9	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3640614	9.44		12604	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 21-Jun-2017 10:57:11 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_044.d

Injection Date: 19-Jun-2017 21:57:07 Instrument ID: A8_N

Lims ID: 320-28765-A-11-A Lab Sample ID: 320-28765-11

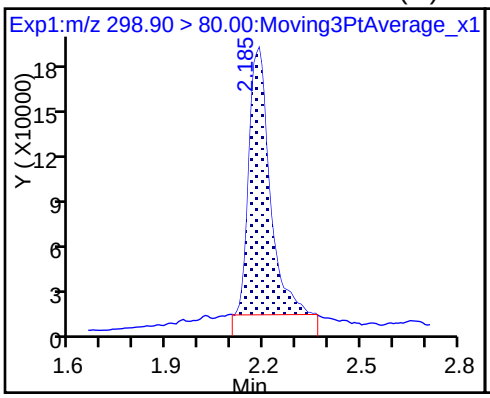
Client ID: NAWC-060117-DUP01

Operator ID: SACINSTLCMS01 ALS Bottle#: 36 Worklist Smp#: 44

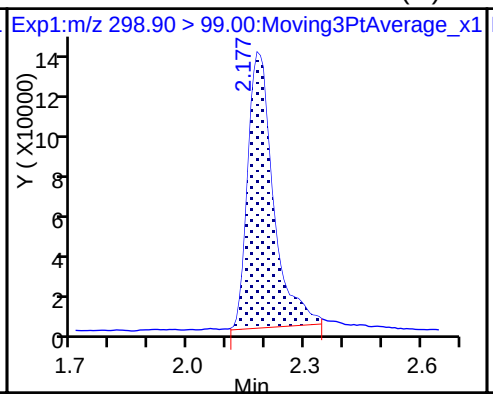
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

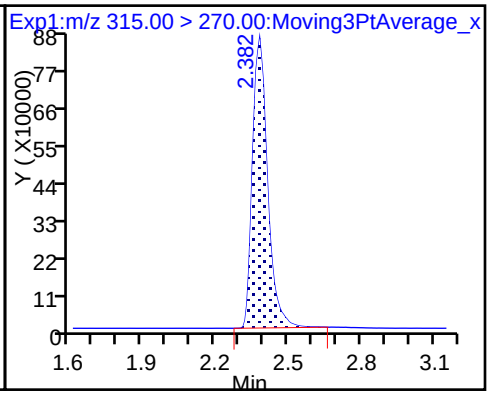
1 Perfluorobutanesulfonic acid (M)



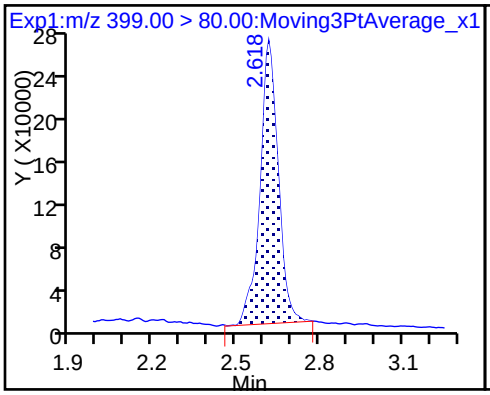
1 Perfluorobutanesulfonic acid (M)



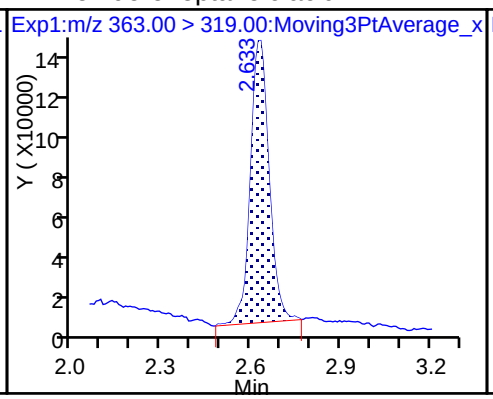
$ 2 13C2 PFHxA



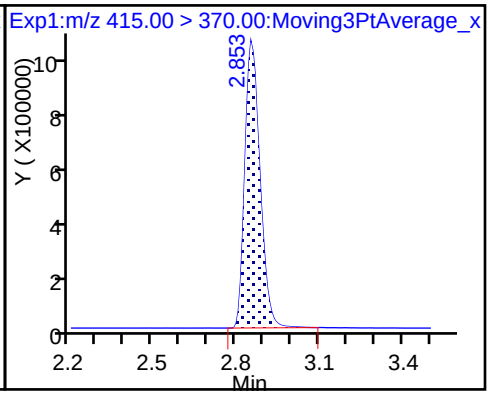
3 Perfluorohexanesulfonic acid



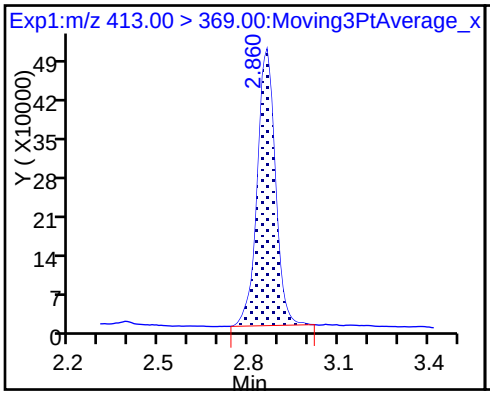
4 Perfluoroheptanoic acid



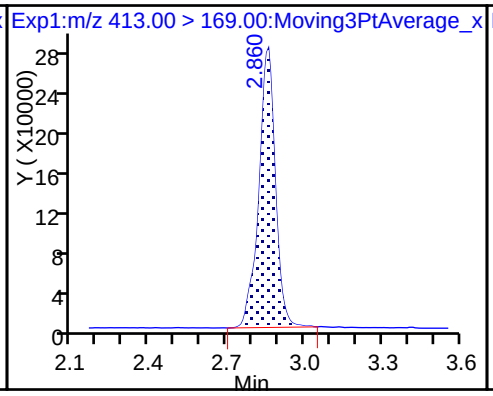
* 6 13C2-PFOA



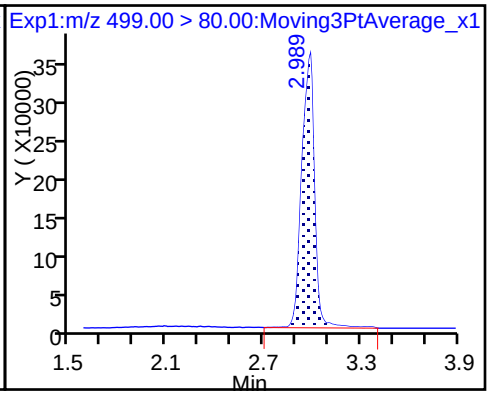
5 Perfluorooctanoic acid



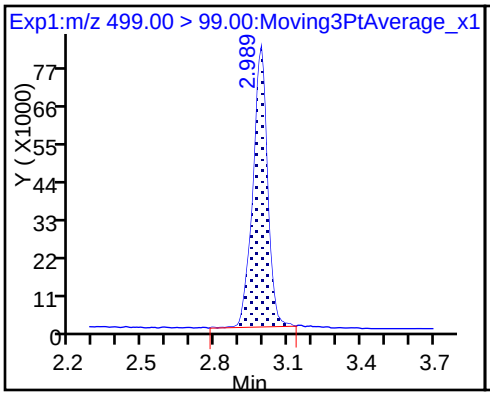
5 Perfluorooctanoic acid



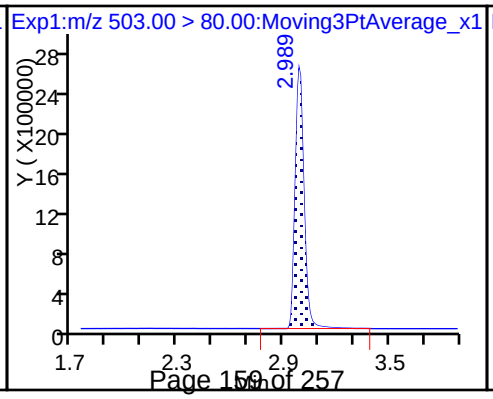
8 Perfluorooctane sulfonic acid



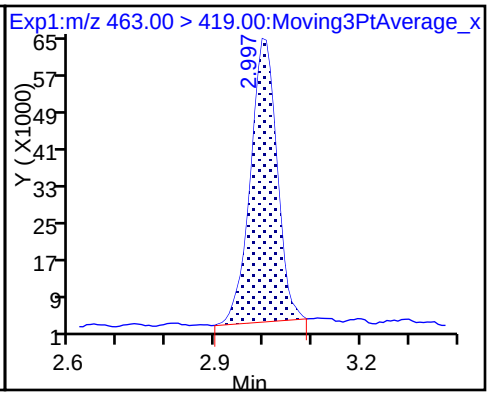
8 Perfluorooctane sulfonic acid



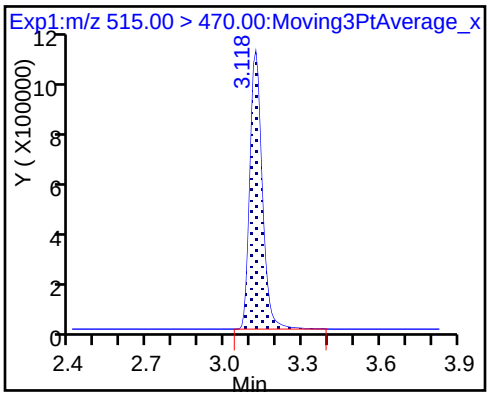
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.4
2.7
3.0
3.3
3.6
3.9
Min

Report Date: 21-Jun-2017 10:57:11 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_044.d				
Lims ID:	320-28765-A-11-A				
Client ID:	NAWC-060117-DUP01				
Sample Type:	Client				
Inject. Date:	19-Jun-2017 21:57:07	ALS Bottle#:	36	Worklist Smp#:	44
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-28765-a-11-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	21-Jun-2017 10:57:04	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK005				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:52:05		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.89	88.94
$ 10 13C2 PFDA	10.0	9.44	94.43

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

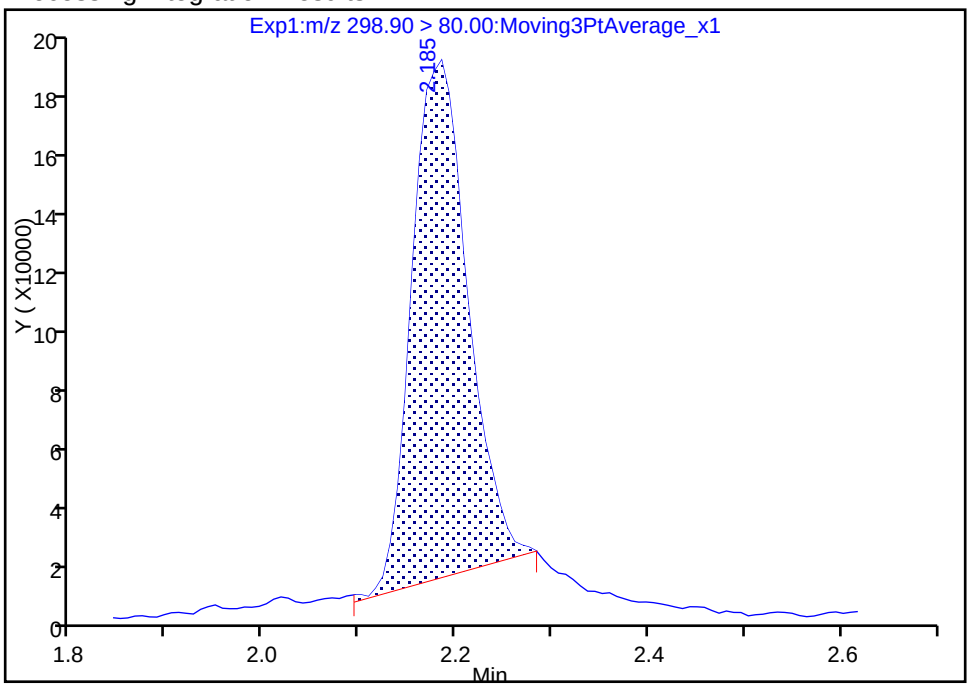
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_044.d				
Injection Date:	19-Jun-2017 21:57:07	Instrument ID:	A8_N		
Lims ID:	320-28765-A-11-A	Lab Sample ID:	320-28765-11		
Client ID:	NAWC-060117-DUP01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	44
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

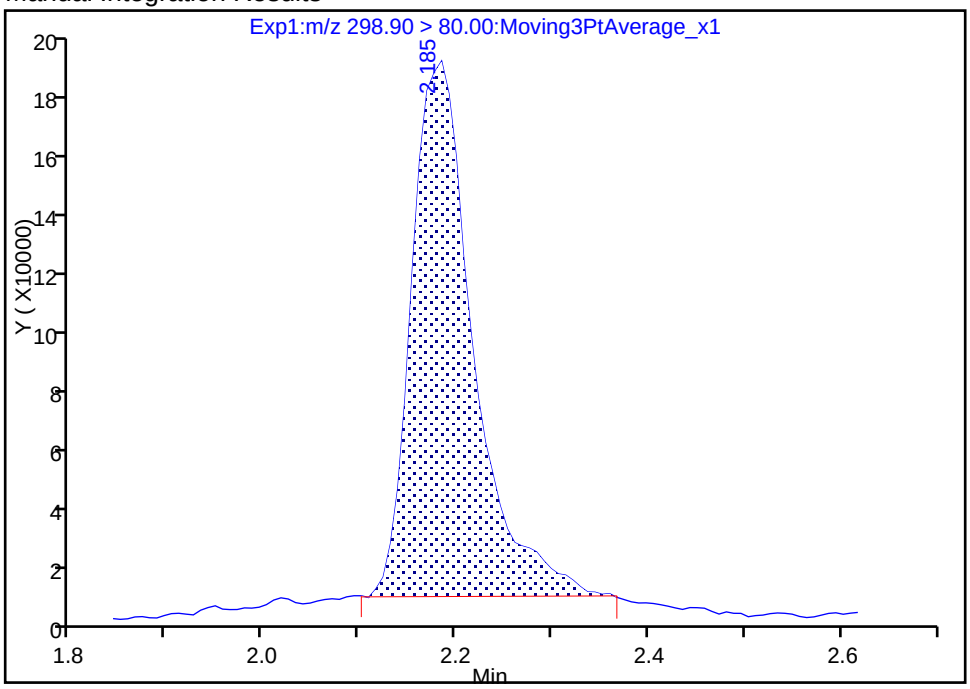
Processing Integration Results

RT: 2.19
Area: 688509
Amount: 2.567787
Amount Units: ng/ml



Manual Integration Results

RT: 2.19
Area: 784161
Amount: 2.924520
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:51:50

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

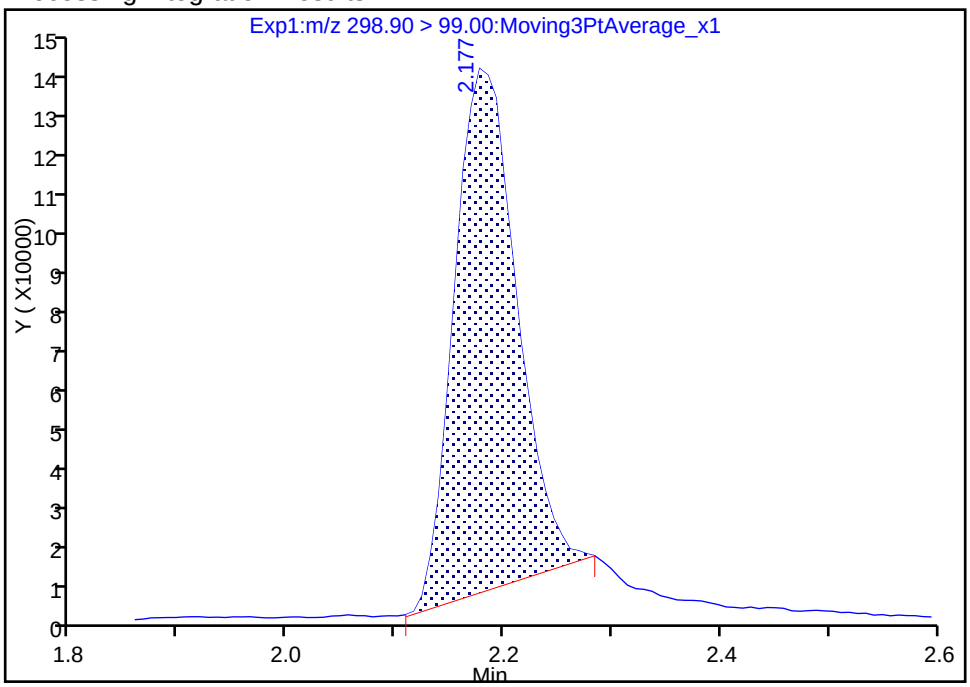
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_044.d				
Injection Date:	19-Jun-2017 21:57:07	Instrument ID:	A8_N		
Lims ID:	320-28765-A-11-A	Lab Sample ID:	320-28765-11		
Client ID:	NAWC-060117-DUP01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	44
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

1 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

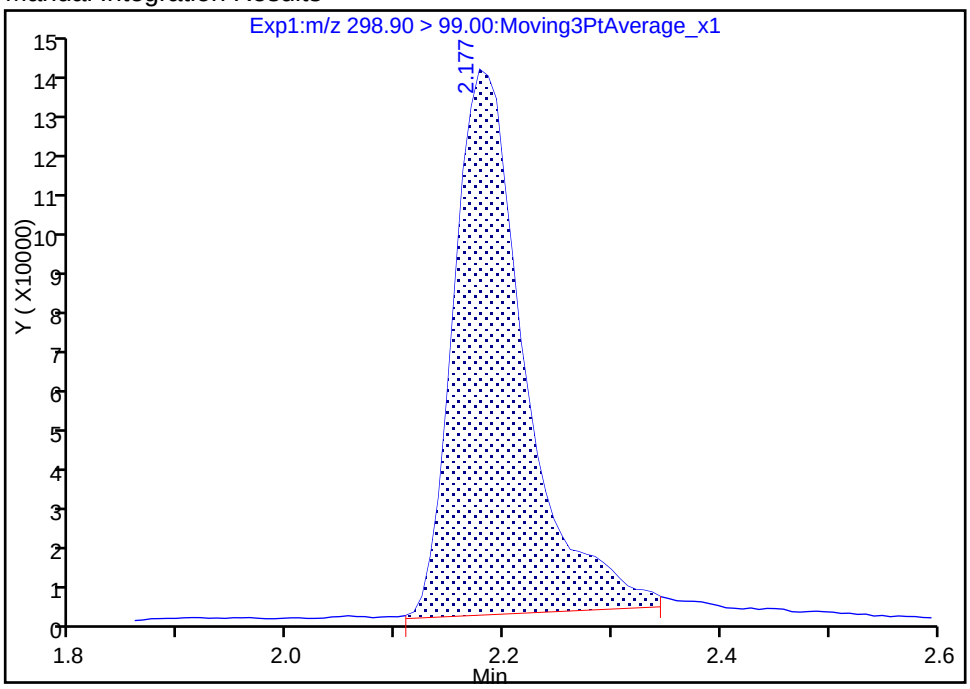
Processing Integration Results

RT: 2.18
Area: 525605
Amount: 2.567787
Amount Units: ng/ml



Manual Integration Results

RT: 2.18
Area: 621730
Amount: 2.924520
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:51:56

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

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

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1 Analy Batch No.: 169955

SDG No.:

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

Calibration Start Date: 06/19/2017 17:40 Calibration End Date: 06/19/2017 18:04 Calibration ID: 31800

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-169955/4	2017.06.19_537A_ICAL_004.d
Level 2	IC 320-169955/5	2017.06.19_537A_ICAL_005.d
Level 3	IC 320-169955/6	2017.06.19_537A_ICAL_006.d
Level 4	IC 320-169955/7	2017.06.19_537A_ICAL_007.d
Level 5	IC 320-169955/8	2017.06.19_537A_ICAL_008.d
Level 6	IC 320-169955/9	2017.06.19_537A_ICAL_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)	0.8507 0.7713	0.9245	0.9209	0.8993	0.8202	Ave		0.8645				7.1		30.0			
Perfluorohexanesulfonic acid (PFHxS)	1.0986 1.2032	1.1398	1.1650	1.2147	1.1817	Ave		1.1672				3.7		30.0			
Perfluoroheptanoic acid (PFHpA)	0.7891 0.8718	0.8248	0.8229	0.8642	0.8866	Ave		0.8433				4.4		30.0			
Perfluorooctanoic acid (PFOA)	0.8301 0.8992	0.8817	0.8545	0.8779	0.9114	Ave		0.8758				3.4		30.0			
Perfluorooctanesulfonic acid (PFOS)	0.9620 1.0275	1.0017	1.0209	1.0440	1.0387	Ave		1.0158				3.0		30.0			
Perfluorononanoic acid (PFNA)	0.8823 0.8046	0.8981	0.8287	0.8656	0.8391	Ave		0.8531				4.1		30.0			
13C2 PFHxA	0.9940 1.0771	1.0270	1.0324	1.0293	1.0661	Ave		1.0377				2.9		30.0			
13C2 PFDA	0.9372 1.0284	0.9499	0.8947	0.9980	0.9652	Ave		0.9622				4.9		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.: 320-28765-1 Analy Batch No.: 169955

SDG No.:

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

Calibration Start Date: 06/19/2017 17:40 Calibration End Date: 06/19/2017 18:04 Calibration ID: 31800

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-169955/4	2017.06.19_537A_ICAL_004.d
Level 2	IC 320-169955/5	2017.06.19_537A_ICAL_005.d
Level 3	IC 320-169955/6	2017.06.19_537A_ICAL_006.d
Level 4	IC 320-169955/7	2017.06.19_537A_ICAL_007.d
Level 5	IC 320-169955/8	2017.06.19_537A_ICAL_008.d
Level 6	IC 320-169955/9	2017.06.19_537A_ICAL_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	Ave	2332510 46244402	5989080	14078909	23681909	35795970	8.83 176	21.2	44.4	89.4	133
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	1024970 24546576	2512643	6060498	10884436	17549225	3.01 59.7	7.21	15.1	30.4	45.1
Perfluoroheptanoic acid (PFHpA)	13PFOA	Ave	289244 7166616	730235	1714811	3092048	5084081	0.990 19.7	2.38	4.97	10.0	14.9
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	614079 14918357	1575504	3593653	6339348	10547603	2.00 39.7	4.80	10.0	20.2	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	1195186 27918279	2940776	7072765	12458294	20543461	4.00 79.6	9.61	20.1	40.5	60.0
Perfluorononanoic acid (PFNA)	13PFOA	Ave	629127 12866660	1546914	3359467	6025078	9360498	1.93 38.3	4.62	9.68	19.5	28.9
13C2 PFHxA	13PFOA	Ave	3680309 4499723	3826956	4324388	3674058	4116656	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	3469979 4296473	3539389	3747801	3562371	3726982	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:
Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1 Analy Batch No.: 169955

SDG No.:

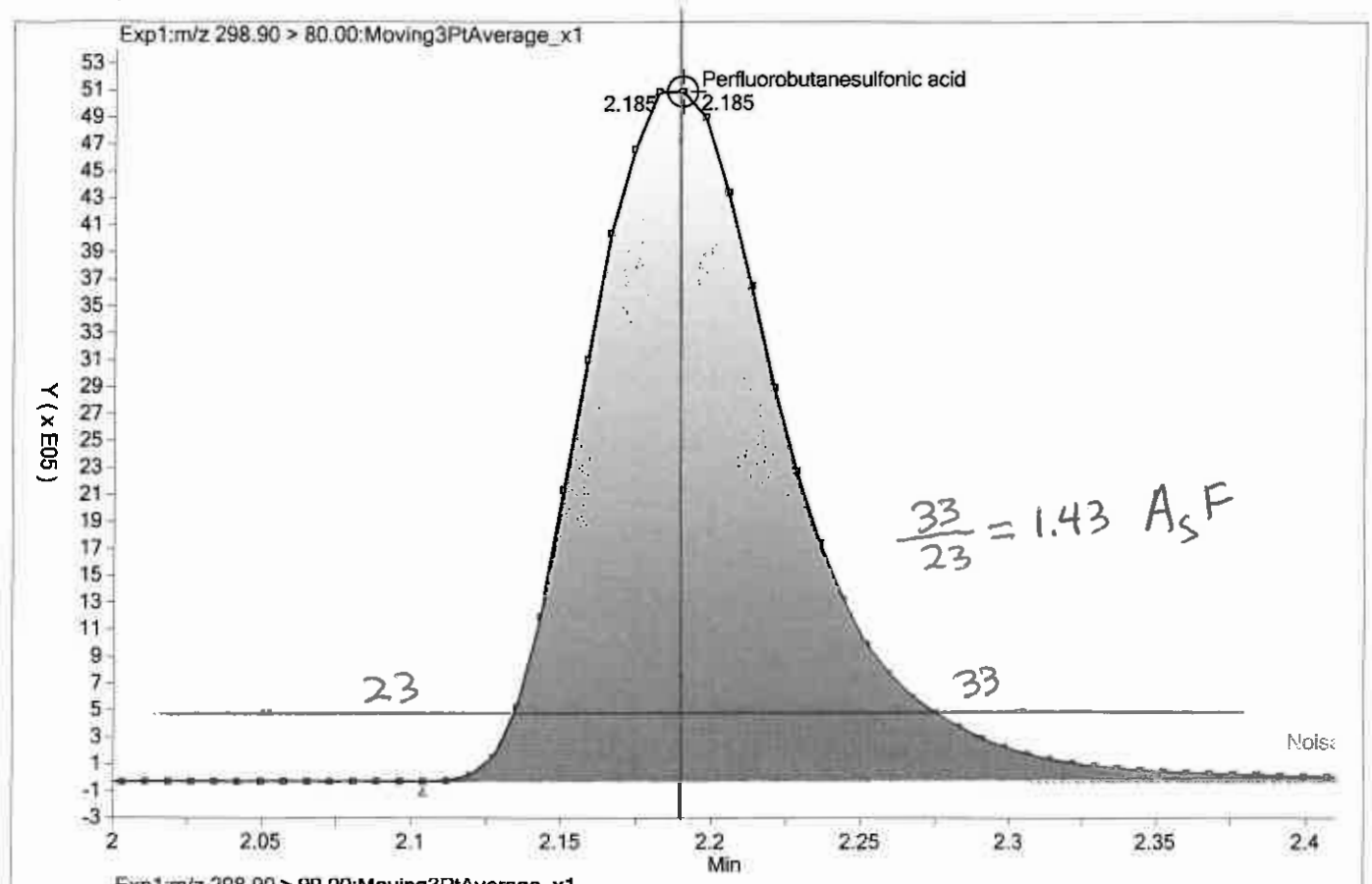
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

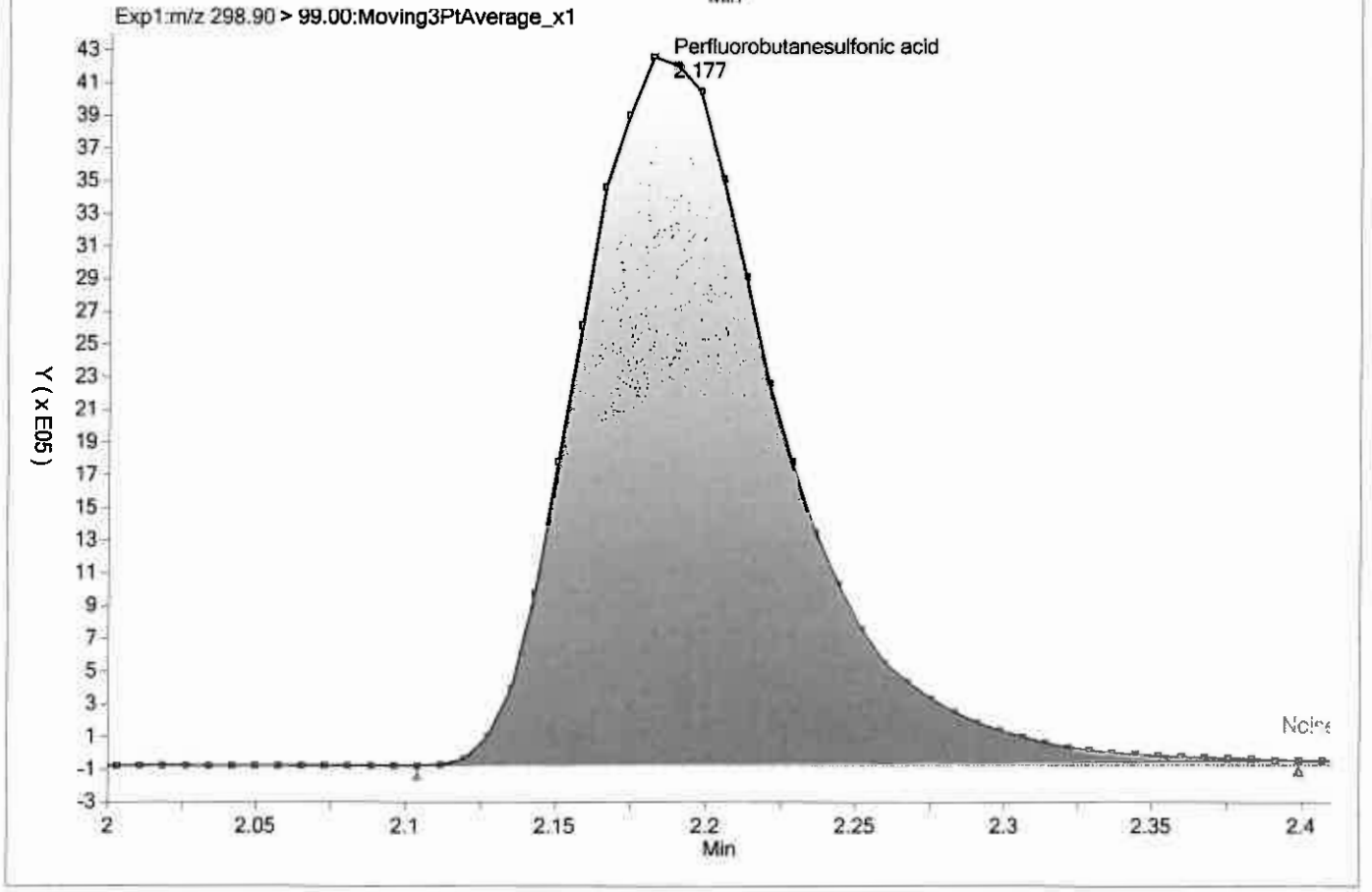
Calibration Start Date: 06/19/2017 17:40 Calibration End Date: 06/19/2017 18:04 Calibration ID: 31800

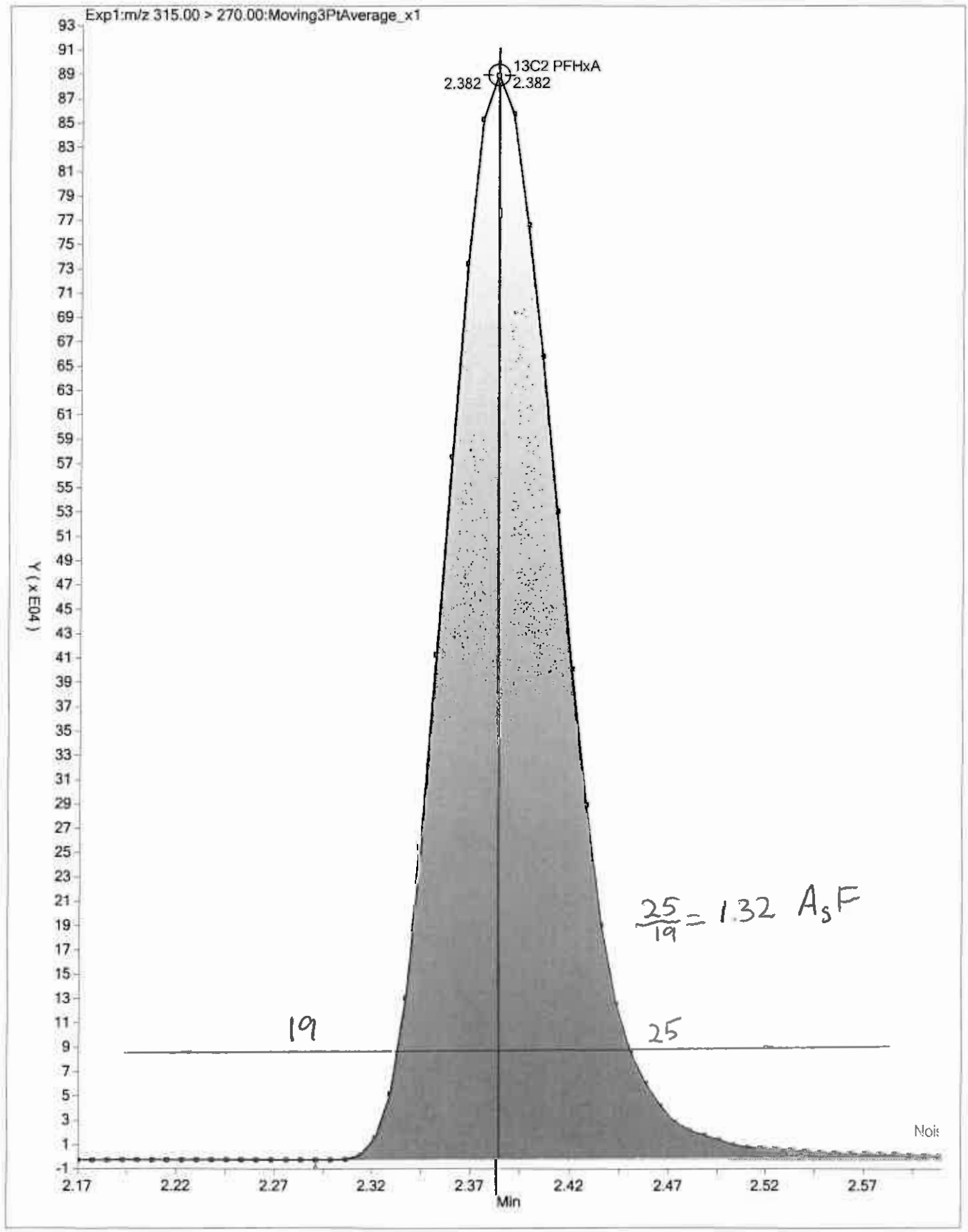
Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-169955/4	2017.06.19_537A_ICAL_004.d
Level 2	IC 320-169955/5	2017.06.19_537A_ICAL_005.d
Level 3	IC 320-169955/6	2017.06.19_537A_ICAL_006.d
Level 4	IC 320-169955/7	2017.06.19_537A_ICAL_007.d
Level 5	IC 320-169955/8	2017.06.19_537A_ICAL_008.d
Level 6	IC 320-169955/9	2017.06.19_537A_ICAL_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)	-1.6	6.9	6.5	4.0	-5.1	-10.8	50	50	50	50	50	50
Perfluorohexanesulfonic acid (PFHxS)	-5.9	-2.3	-0.2	4.1	1.2	3.1	50	50	50	50	50	50
Perfluoroheptanoic acid (PFHpA)	-6.4	-2.2	-2.4	2.5	5.1	3.4	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-5.2	0.7	-2.4	0.2	4.1	2.7	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-5.3	-1.4	0.5	2.8	2.3	1.2	50	50	50	50	50	50
Perfluorononanoic acid (PFNA)	3.4	5.3	-2.9	1.5	-1.6	-5.7	50	50	50	50	50	50
13C2 PFHxA	-4.2	-1.0	-0.5	-0.8	2.7	3.8	30	30	30	30	30	30
13C2 PFDA	-2.6	-1.3	-7.0	3.7	0.3	6.9	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
2.185
2.185
Y (x E05)
Min
23
33
33/23 = 1.43 A_S F


Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
2.177
Y (x E05)
Min


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
2.382
2.382
Y (x E04)
Min
19
25
$\frac{25}{19} = 1.32$ $A_S F$

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 19-Jun-2017 17:40:57 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:40 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:22:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	2332510	8.69		505	
298.90 > 99.00	2.185	2.183	0.002	1.003	1908008		1.22(0.00-0.00)	450	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3680309	9.58		3596	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.633	2.625	0.008	1.000	1024970	2.83		411	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	289244	0.9264		43.6	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	614079	1.89		110	
413.00 > 169.00	2.860	2.859	0.001	1.000	349047		1.76(0.00-0.00)	389	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3702444	10.0		7418	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	1195186	3.79		3927	
499.00 > 99.00	2.989	2.982	0.007	1.000	252400		4.74(0.00-0.00)	772	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8901064	28.7		12694	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	629127	1.99		317	
$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3469979	9.74		12506	

Reagents:

LC537-L1_00018 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:40 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_004.d

Injection Date: 19-Jun-2017 17:40:57 Instrument ID: A8_N

Lims ID: IC L1

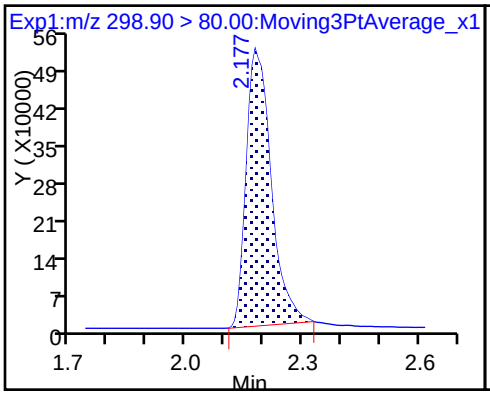
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4

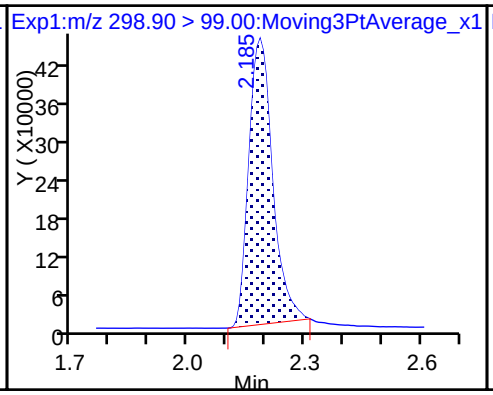
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

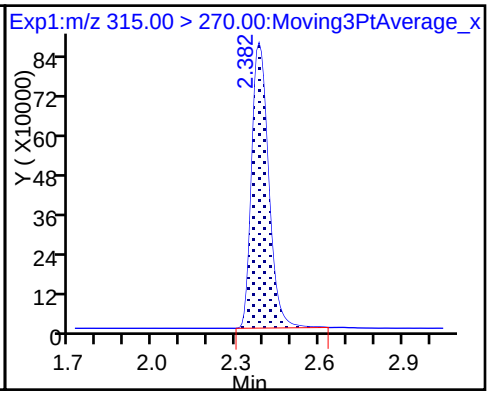
1 Perfluorobutanesulfonic acid



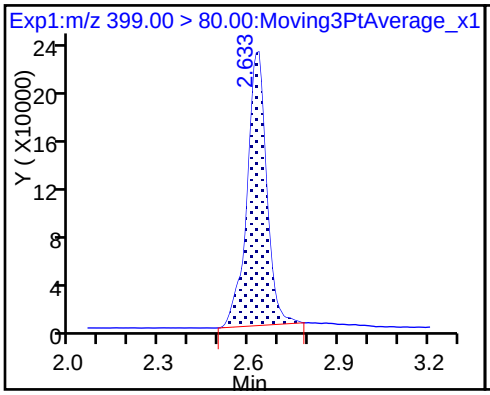
1 Perfluorobutanesulfonic acid



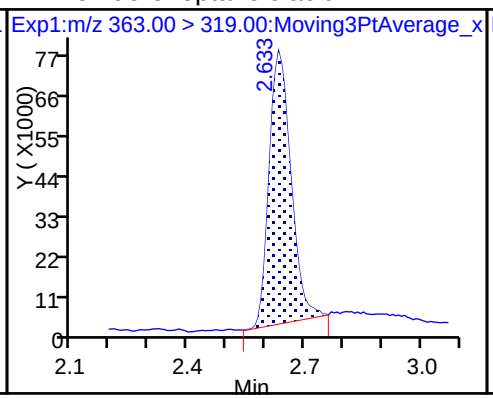
$ 2 13C2 PFHxA



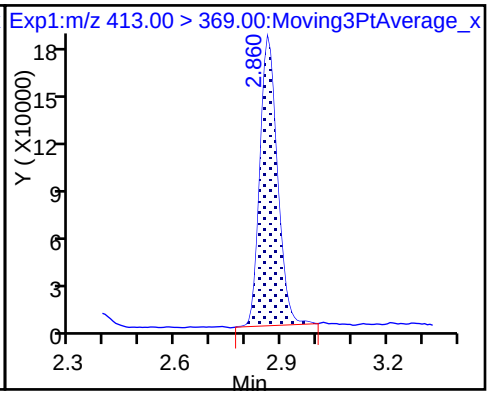
3 Perfluorohexanesulfonic acid



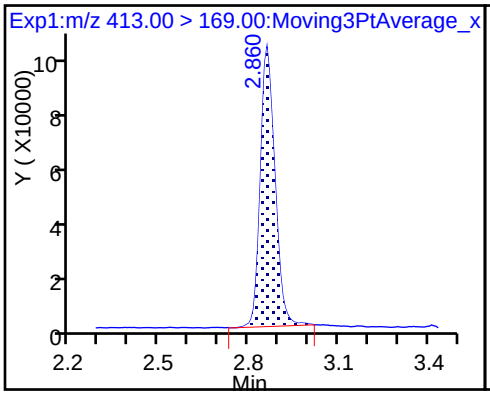
4 Perfluoroheptanoic acid



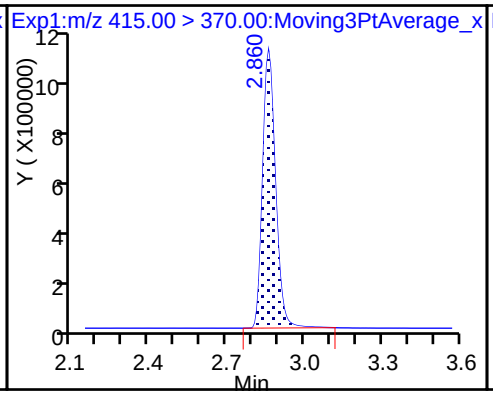
5 Perfluorooctanoic acid



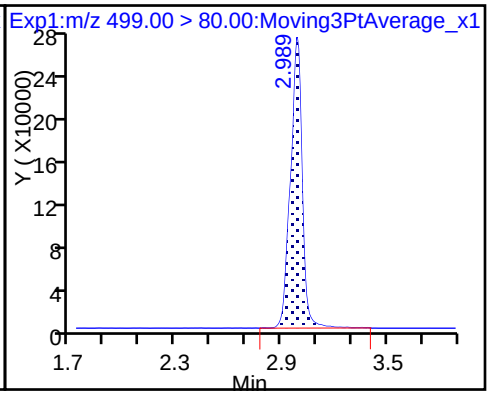
5 Perfluorooctanoic acid



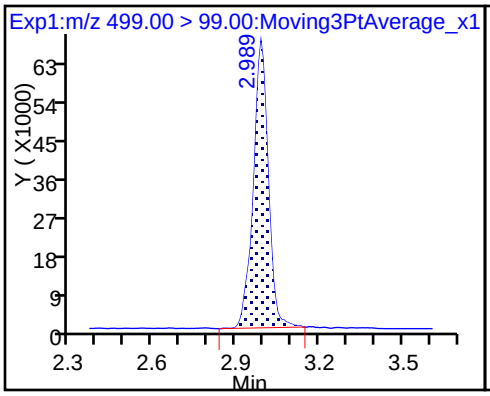
* 6 13C2-PFOA



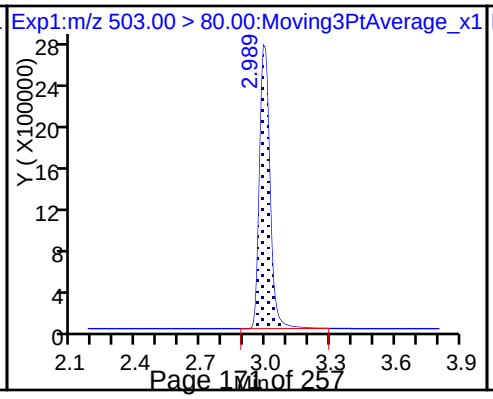
8 Perfluorooctane sulfonic acid



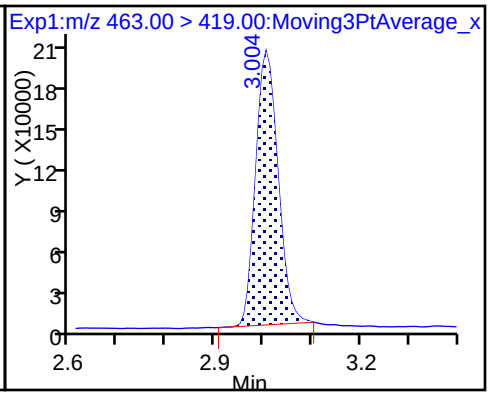
8 Perfluorooctane sulfonic acid



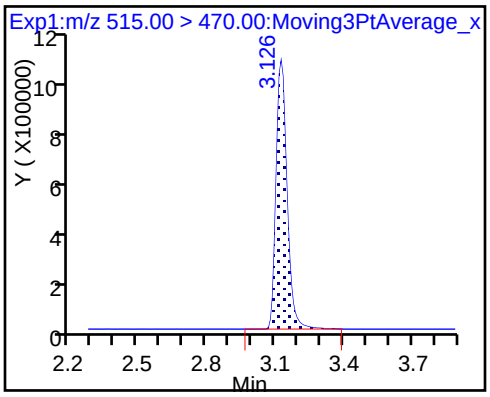
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.126
Y (X100000)
12
10
8
6
4
2
0
2.2
2.5
2.8
3.1
3.4
3.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 19-Jun-2017 17:45:45 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:41 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:22:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	5989080	22.7		1091	
298.90 > 99.00	2.185	2.183	0.002	1.000	4863302		1.23(0.00-0.00)	925	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3826956	9.90		4102	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	2512643	7.05		933	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	730235	2.32		97.2	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3726225	10.0		7660	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1575504	4.83		271	
413.00 > 169.00	2.860	2.859	0.001	1.000	868749		1.81(0.00-0.00)	913	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	2940776	9.47		8105	
499.00 > 99.00	2.989	2.982	0.007	1.000	644706		4.56(0.00-0.00)	1875	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		8763141	28.7		16058	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	1546914	4.87		742	
$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3539389	9.87		10257	

Reagents:

LC537-L2_00018 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:41 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_005.d

Injection Date: 19-Jun-2017 17:45:45 Instrument ID: A8_N

Lims ID: IC L2

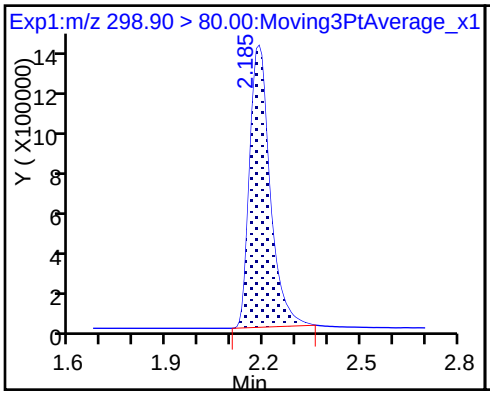
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 5

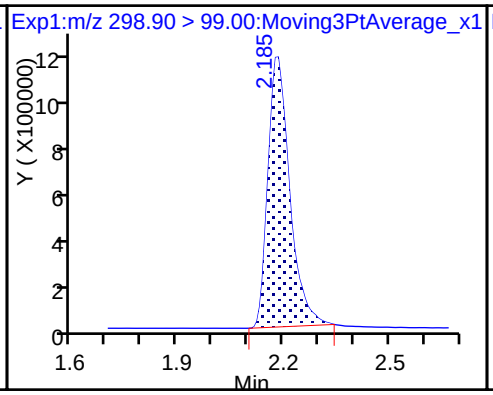
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

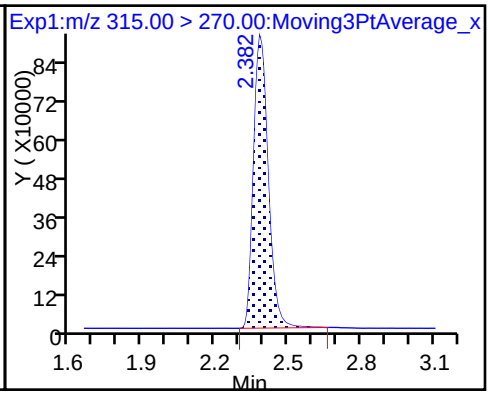
1 Perfluorobutanesulfonic acid



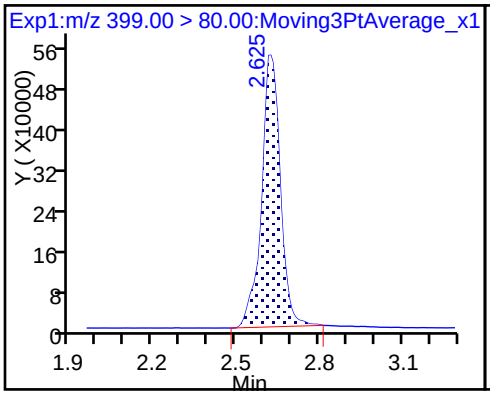
1 Perfluorobutanesulfonic acid



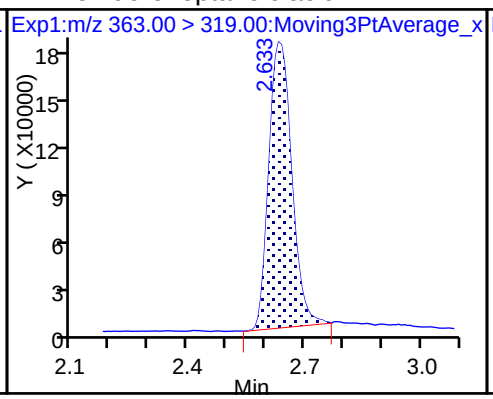
$ 2 13C2 PFHxA



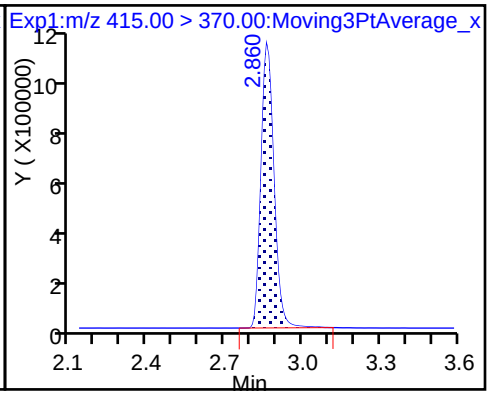
3 Perfluorohexanesulfonic acid



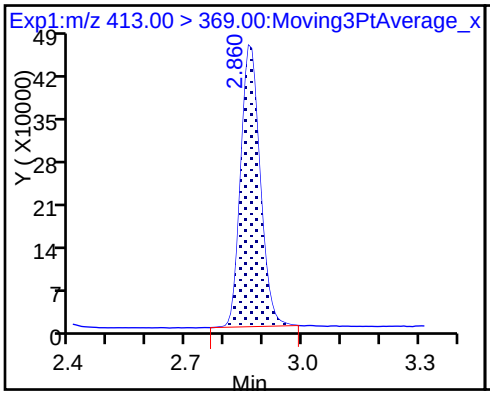
4 Perfluoroheptanoic acid



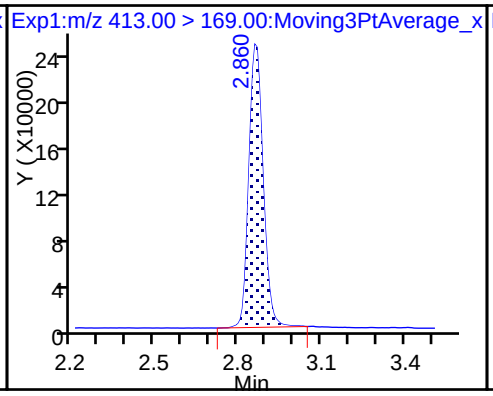
* 6 13C2-PFOA



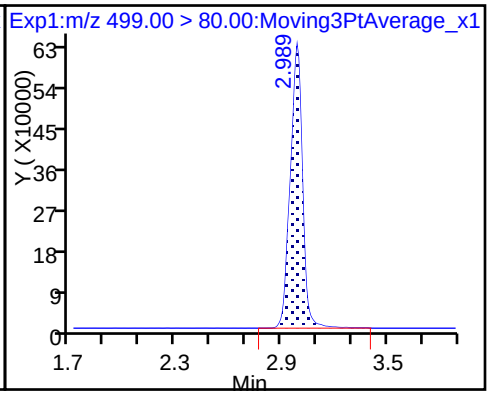
5 Perfluorooctanoic acid



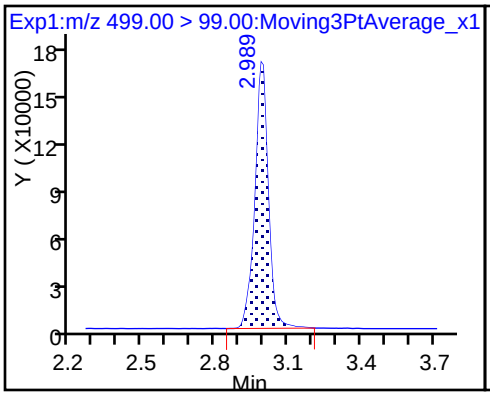
5 Perfluorooctanoic acid



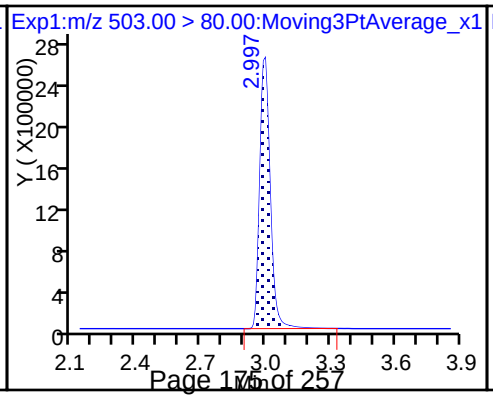
8 Perfluorooctane sulfonic acid



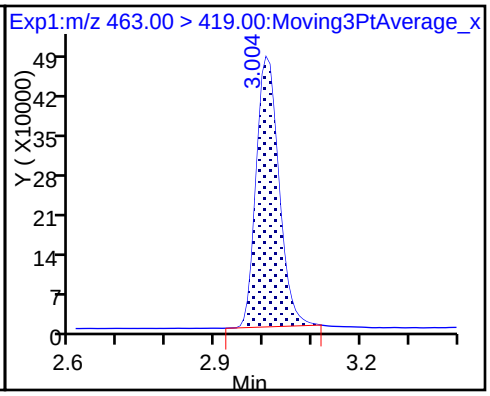
8 Perfluorooctane sulfonic acid



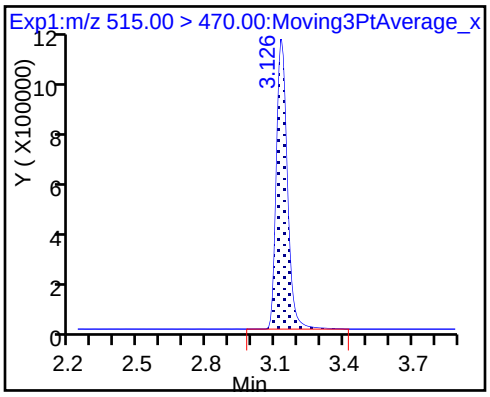
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.126
Y (X100000)
12
10
8
6
4
2
0
2.2
2.5
2.8
3.1
3.4
3.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 19-Jun-2017 17:50:31 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:42 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:23:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	14078909	47.3		1725	
298.90 > 99.00	2.177	2.183	-0.006	1.000	11416286		1.23(0.00-0.00)	1531	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	4324388	9.95		4628	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	6060498	15.1		2120	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	1714811	4.85		230	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	3593653	9.80		599	
413.00 > 169.00	2.860	2.859	0.001	1.000	2004974		1.79(0.00-0.00)	2034	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4188714	10.0		10342	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	7072765	20.2		16591	
499.00 > 99.00	2.989	2.982	0.007	1.000	1570517		4.50(0.00-0.00)	4323	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9877270	28.7		17530	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	3359467	9.40		1478	
$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3747801	9.30		10298	

Reagents:

LC537-L3_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:42 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_006.d

Injection Date: 19-Jun-2017 17:50:31 Instrument ID: A8_N

Lims ID: IC L3

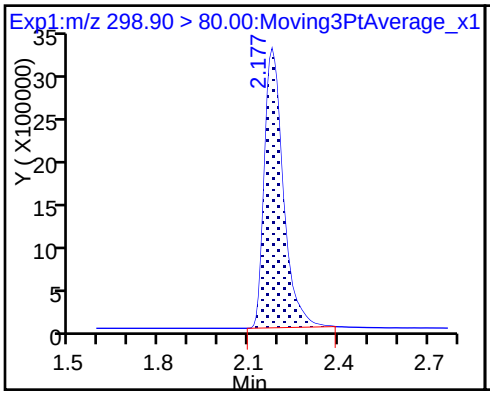
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 6

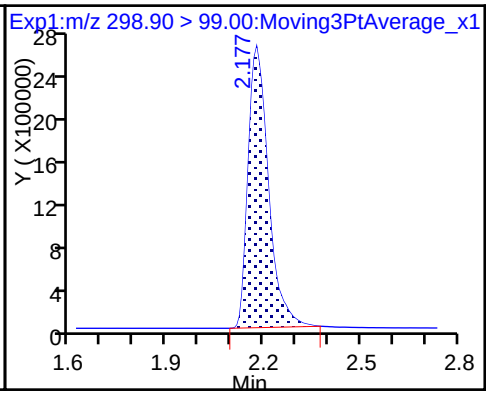
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

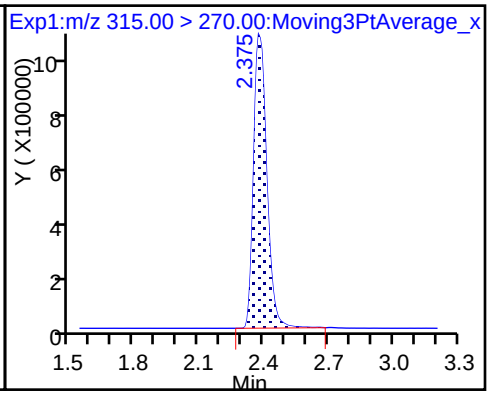
1 Perfluorobutanesulfonic acid



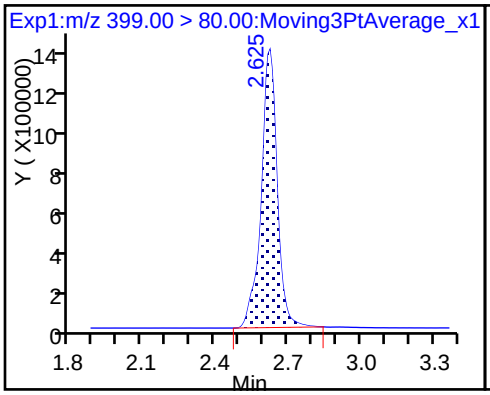
1 Perfluorobutanesulfonic acid



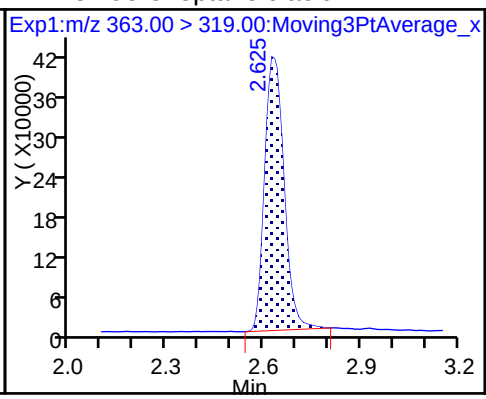
$ 2 13C2 PFHxA



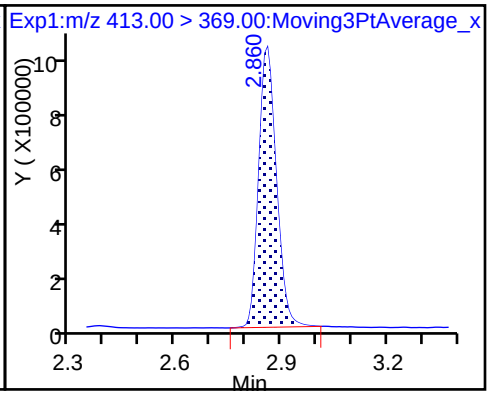
3 Perfluorohexanesulfonic acid



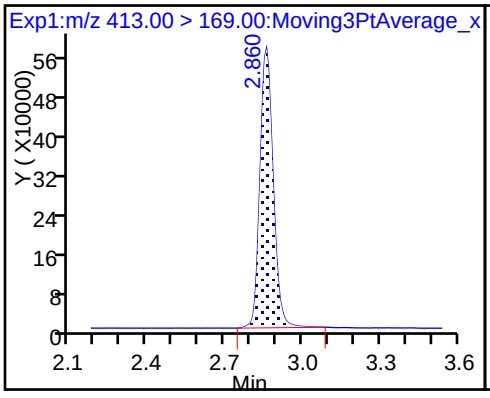
4 Perfluoroheptanoic acid



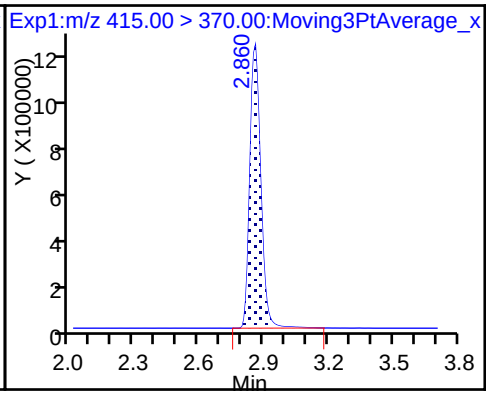
5 Perfluorooctanoic acid



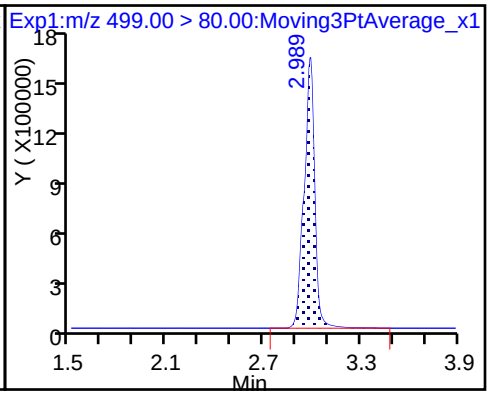
5 Perfluorooctanoic acid



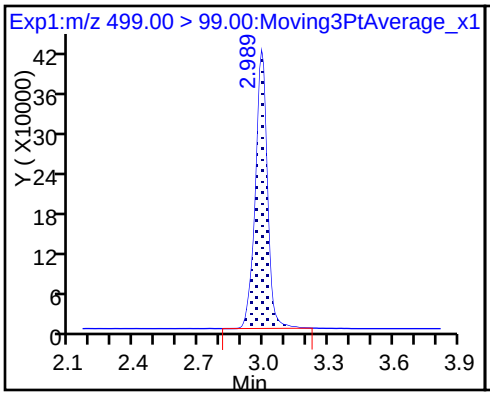
* 6 13C2-PFOA



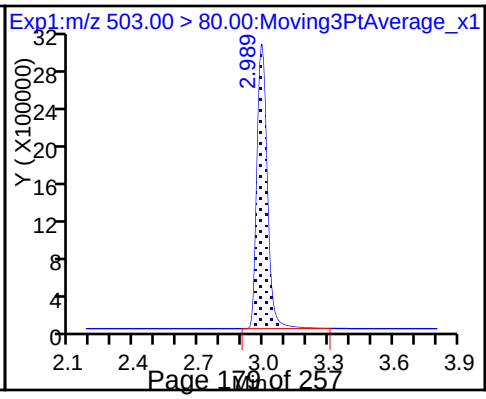
8 Perfluorooctane sulfonic acid



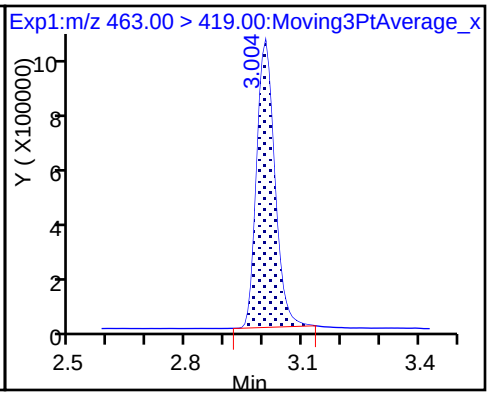
8 Perfluorooctane sulfonic acid



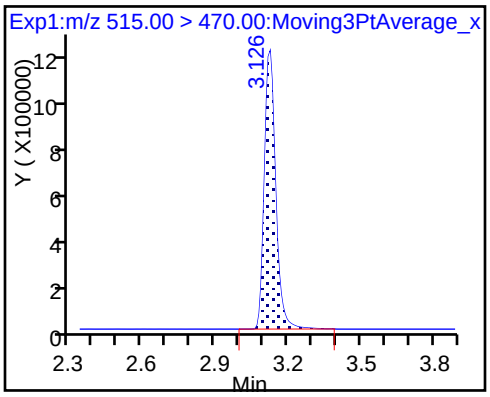
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.126
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_007.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 19-Jun-2017 17:55:14 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:43 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:22:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	23681909	93.0		2103	
298.90 > 99.00	2.177	2.183	-0.006	0.997	19279111		1.23(0.00-0.00)	1851	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3674058	9.92		3533	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	10884436	31.7		2979	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	3092048	10.3		423	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3569446	10.0		7613	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	6339348	20.3		910	
413.00 > 169.00	2.860	2.859	0.001	1.000	3614623		1.75(0.00-0.00)	2747	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	12458294	41.7		22549	
499.00 > 99.00	2.989	2.982	0.007	1.000	2773908		4.49(0.00-0.00)	6283	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8443710	28.7		17037	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	6025078	19.8		2149	
$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3562371	10.4		8880	

Reagents:

LC537-L4_00018 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:43 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_007.d

Injection Date: 19-Jun-2017 17:55:14 Instrument ID: A8_N

Lims ID: IC L4

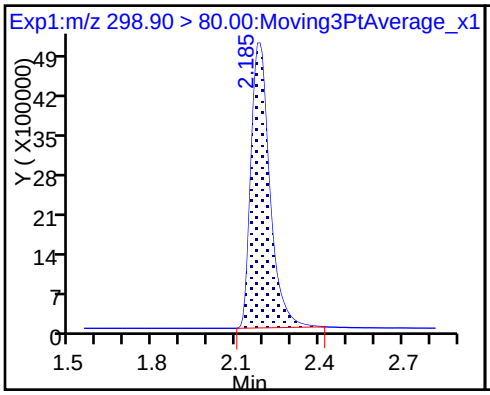
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 7

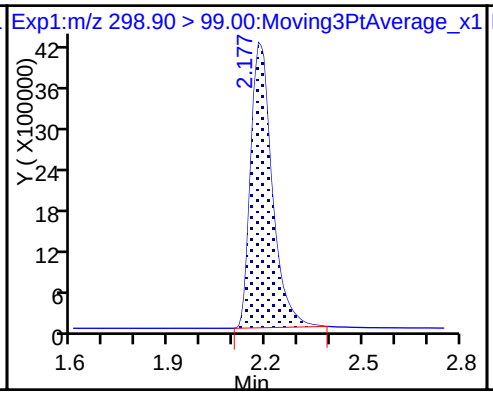
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

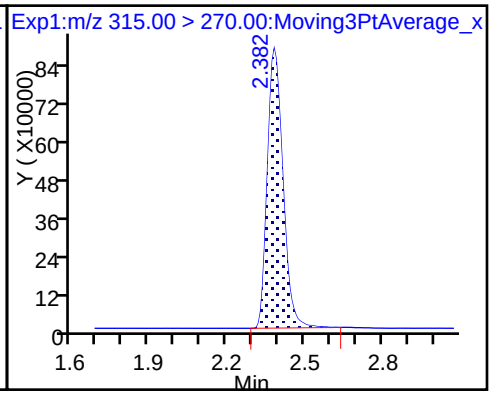
1 Perfluorobutanesulfonic acid



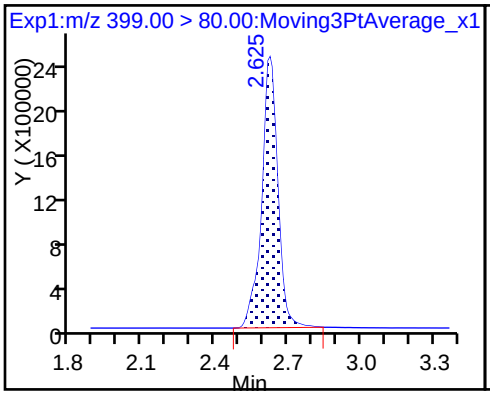
1 Perfluorobutanesulfonic acid



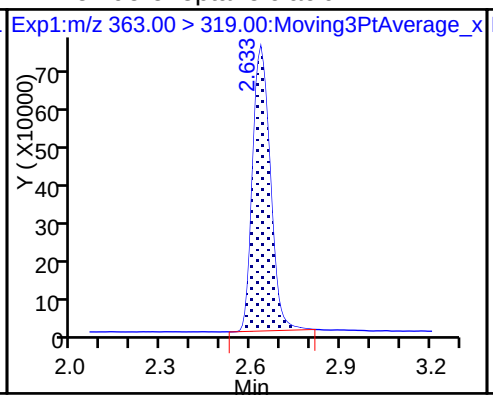
$ 2 13C2 PFHxA



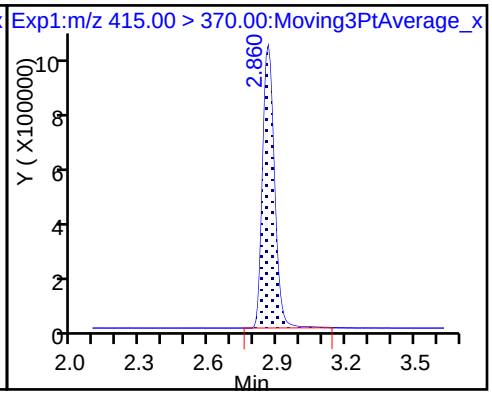
3 Perfluorohexanesulfonic acid



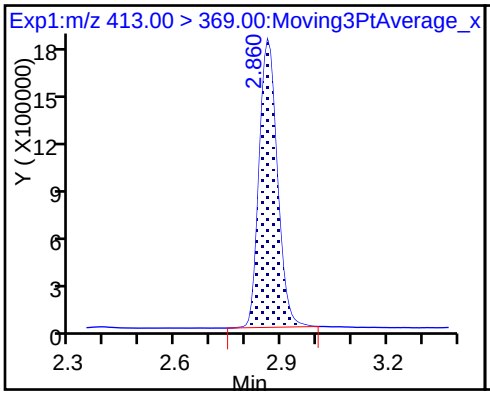
4 Perfluoroheptanoic acid



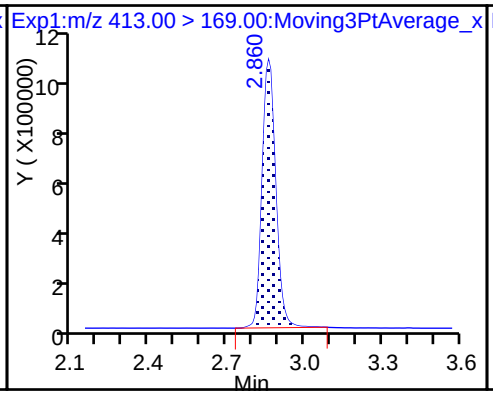
* 6 13C2-PFOA



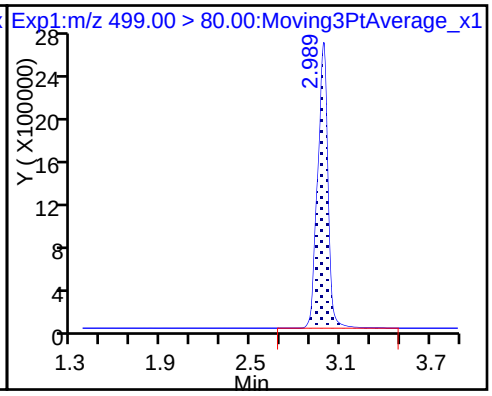
5 Perfluorooctanoic acid



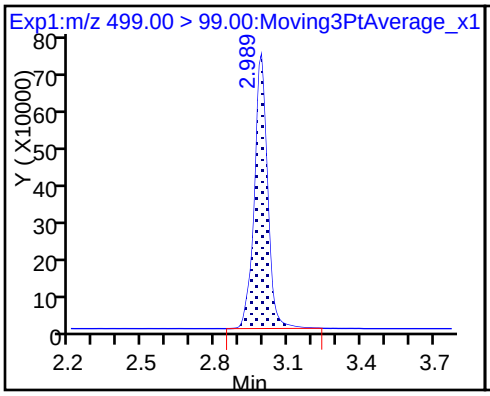
5 Perfluorooctanoic acid



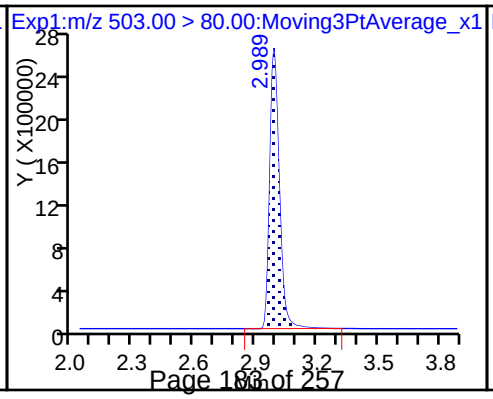
8 Perfluorooctane sulfonic acid



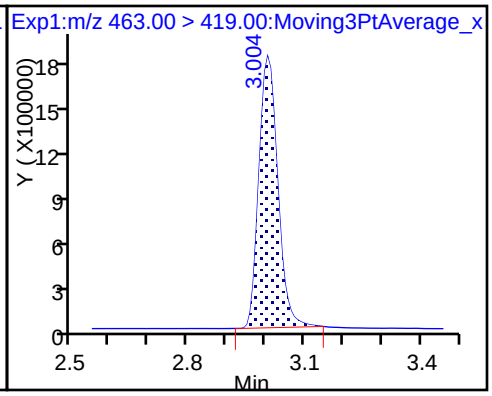
8 Perfluorooctane sulfonic acid



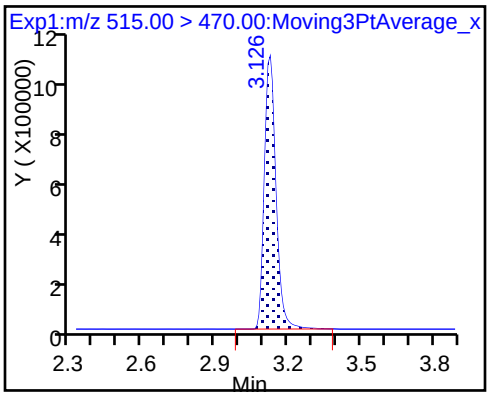
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.126
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 19-Jun-2017 17:59:58 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:44 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:23:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	35795970	125.7		2021	
298.90 > 99.00	2.185	2.183	0.002	1.000	29851648		1.20(0.00-0.00)	2318	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4116656	10.3		3234	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17549225	45.7		4202	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	5084081	15.6		737	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	10547603	31.2		1518	
413.00 > 169.00	2.860	2.859	0.001	1.000	5893768		1.79(0.00-0.00)	5500	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3861310	10.0		6380	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	20543461	61.4		27604	
499.00 > 99.00	2.989	2.982	0.007	1.000	4568104		4.50(0.00-0.00)	9840	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9445975	28.7		13989	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9360498	28.4		2543	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3726982	10.0		9457	

Reagents:

LC537-L5_00021 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:44 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_008.d

Injection Date: 19-Jun-2017 17:59:58 Instrument ID: A8_N

Lims ID: IC L5

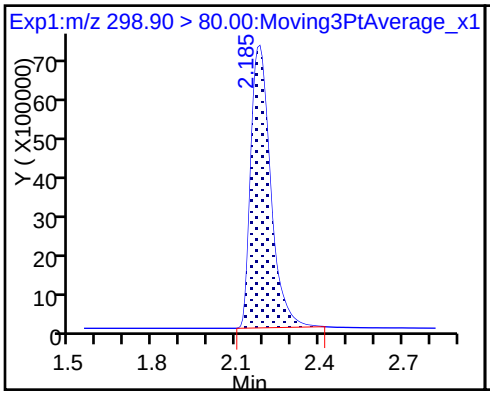
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 8

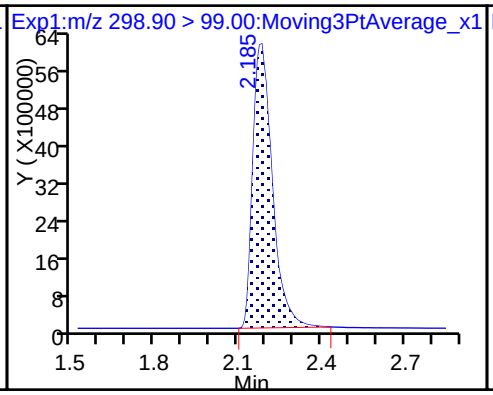
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

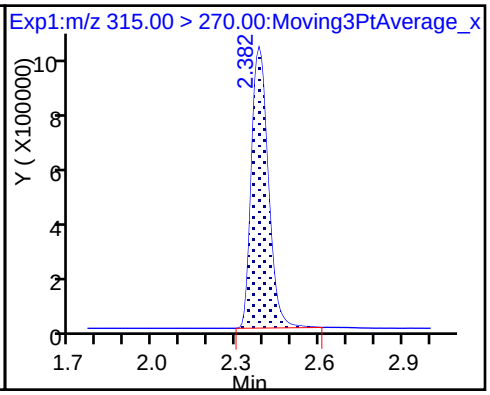
1 Perfluorobutanesulfonic acid



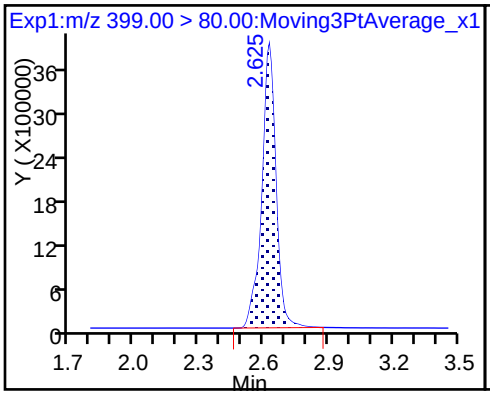
1 Perfluorobutanesulfonic acid



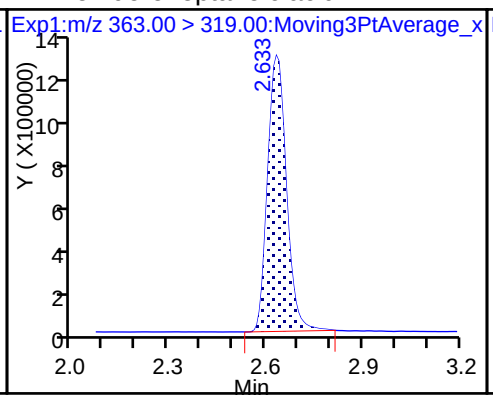
$ 2 13C2 PFHxA



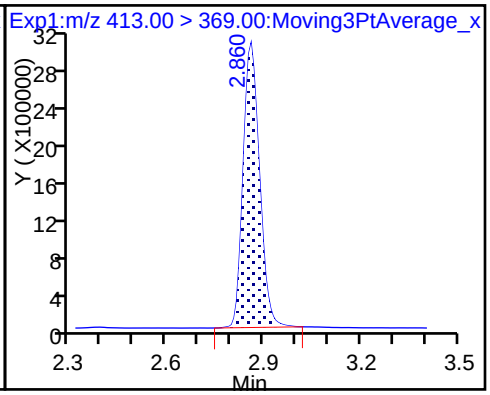
3 Perfluorohexanesulfonic acid



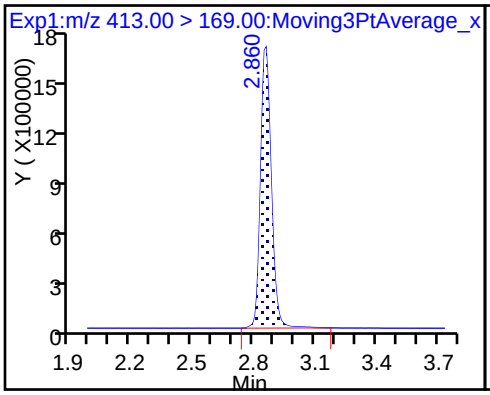
4 Perfluoroheptanoic acid



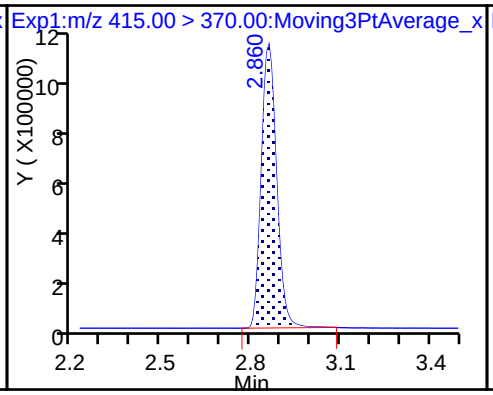
5 Perfluorooctanoic acid



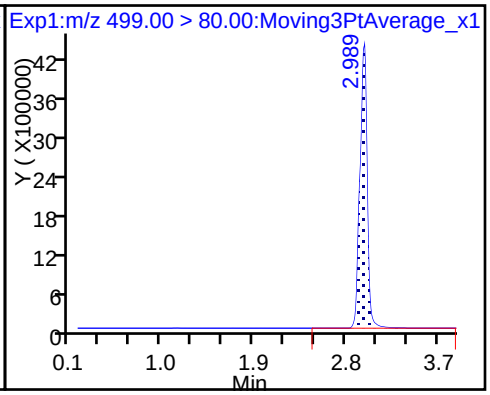
5 Perfluorooctanoic acid



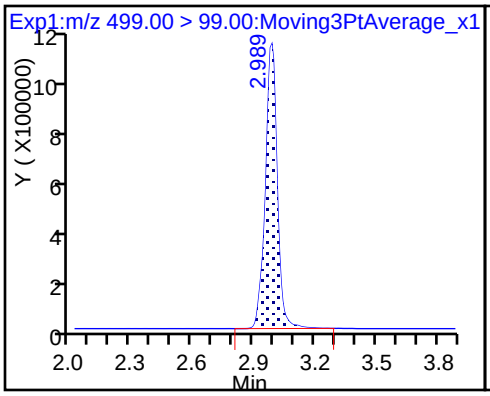
* 6 13C2-PFOA



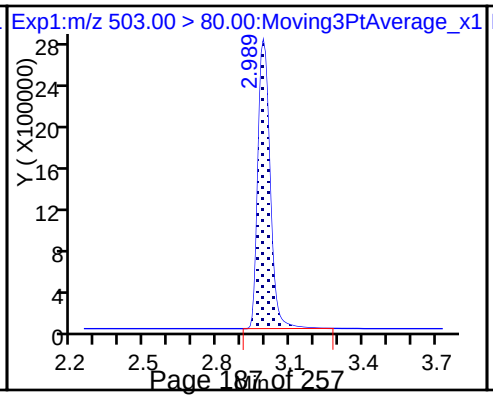
8 Perfluorooctane sulfonic acid



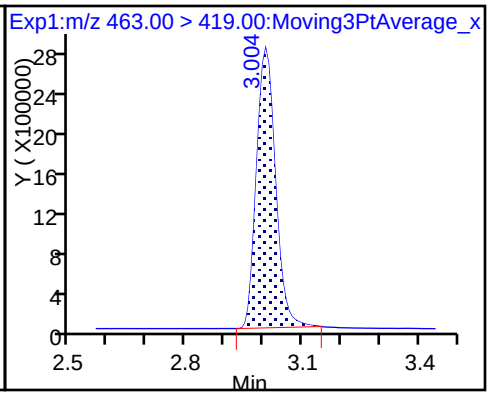
8 Perfluorooctane sulfonic acid



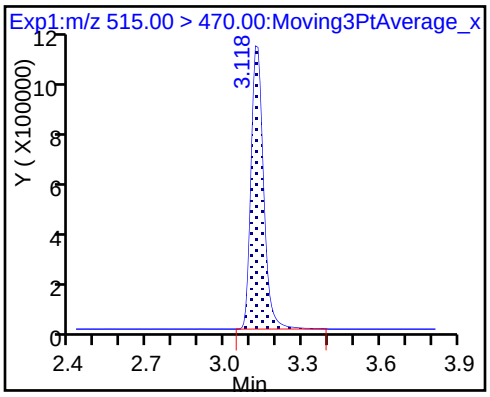
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.4
2.7
3.0
3.3
3.6
3.9
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 19-Jun-2017 18:04:42 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:45 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:23:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	46244402	156.7		1994	
298.90 > 99.00	2.177	2.183	-0.006	0.997	38450203		1.20(0.00-0.00)	2037	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4499723	10.4		3470	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	24546576	61.6		4971	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	7166616	20.3		1025	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4177713	10.0		6058	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	14918357	40.8		1802	
413.00 > 169.00	2.853	2.859	-0.006	1.000	8666954		1.72(0.00-0.00)	8092	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.982	0.0	1.000	27918279	80.5		31072	
499.00 > 99.00	2.982	2.982	0.0	1.000	6349926		4.40(0.00-0.00)	18668	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9793572	28.7		19130	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	12866660	36.1		3609	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	4296473	10.7		11949	

Reagents:

LC537-L6_00017 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:45 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Injection Date: 19-Jun-2017 18:04:42 Instrument ID: A8_N

Lims ID: IC L6

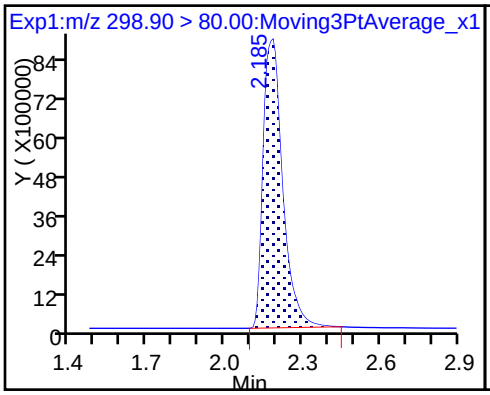
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 9

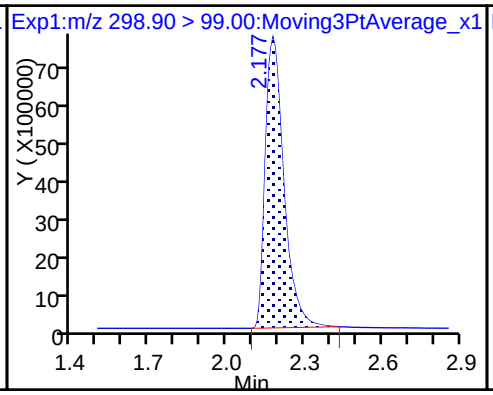
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

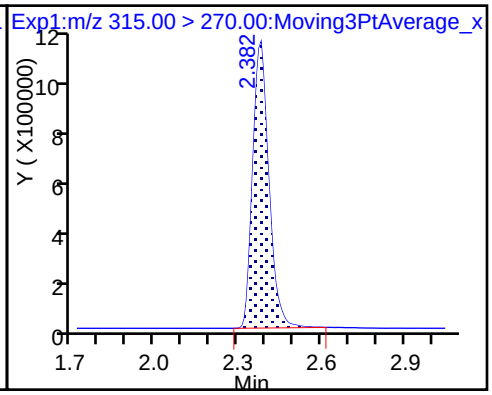
1 Perfluorobutanesulfonic acid



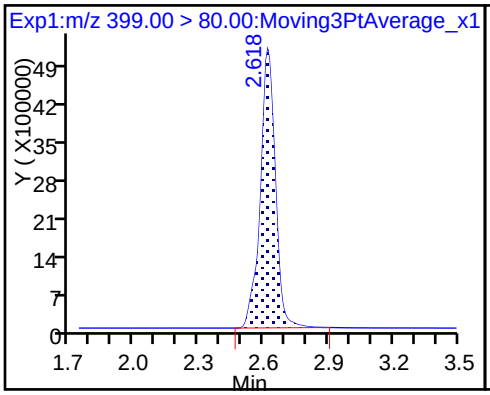
1 Perfluorobutanesulfonic acid



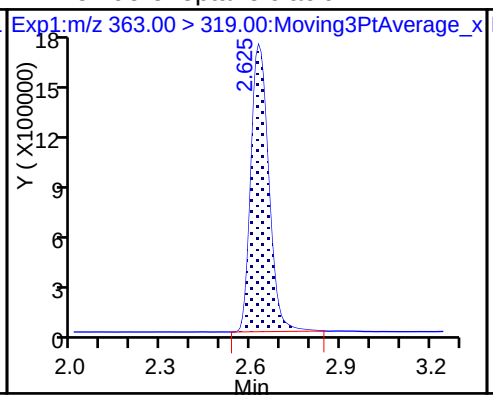
$ 2 13C2 PFHxA



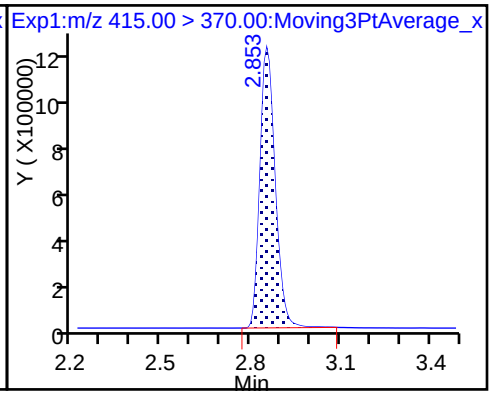
3 Perfluorohexanesulfonic acid



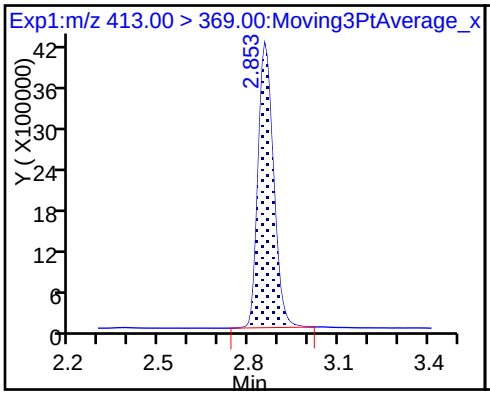
4 Perfluoroheptanoic acid



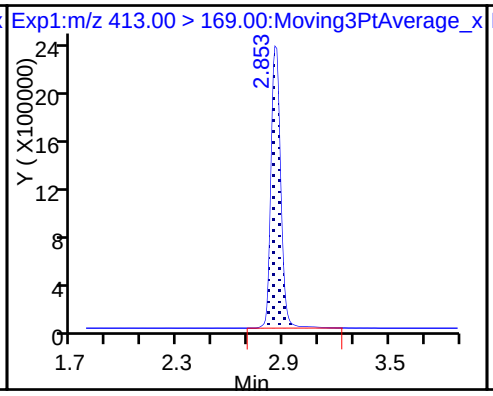
* 6 13C2-PFOA



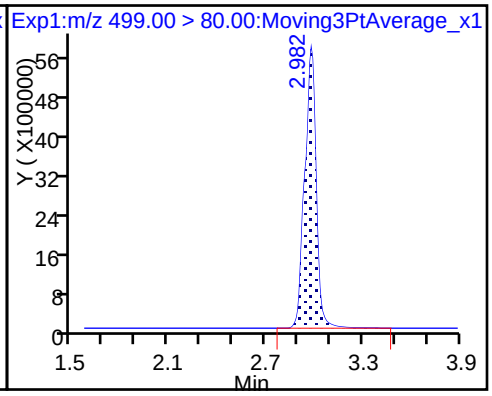
5 Perfluorooctanoic acid



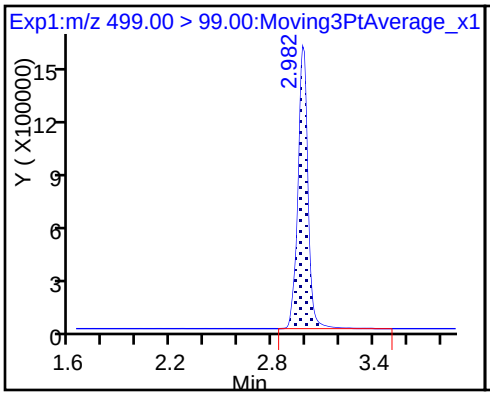
5 Perfluorooctanoic acid



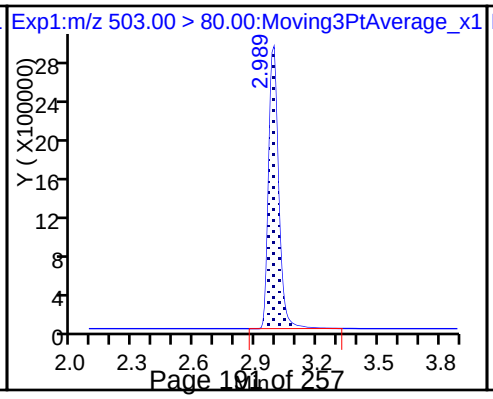
8 Perfluorooctane sulfonic acid



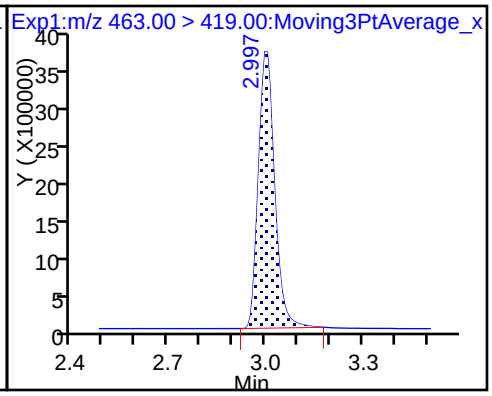
8 Perfluorooctane sulfonic acid



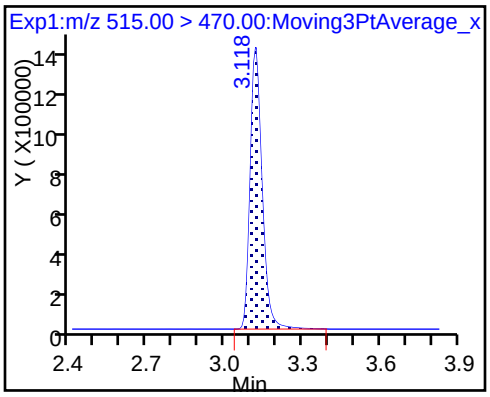
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
14
12
10
8
6
4
2
0
2.4
2.7
3.0
3.3
3.6
3.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab Sample ID: CCVL 320-169955/11 Calibration Date: 06/19/2017 18:14

Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/19/2017 18:04

Lab File ID: 2017.06.19_537A_ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9450		23.2	21.2	9.3	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.179		7.29	7.21	1.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8532		2.40	2.38	1.2	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8753		4.79	4.80	-0.0	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.024		9.69	9.61	0.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8772		4.75	4.62	2.8	50.0
13C2 PFHxA	Ave	1.038	1.019		9.82	10.0	-1.8	30.0
13C2 PFDA	Ave	0.9622	0.9654		10.0	10.0	0.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 19-Jun-2017 18:14:11 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:47 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:26:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	6119266	23.2		1090	
298.90 > 99.00	2.177	2.183	-0.006	1.000	4828214		1.27(0.00-0.00)	940	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	3793675	9.82		3005	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	2598248	7.29		1032	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	754972	2.40		111	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	1563113	4.79		276	
413.00 > 169.00	2.860	2.859	0.001	1.000	891112		1.75(0.00-0.00)	972	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3724287	10.0		7530	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	3005378	9.69		8873	
499.00 > 99.00	2.989	2.982	0.007	1.000	647078		4.64(0.00-0.00)	1786	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8759638	28.7		18344	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	1510040	4.75		678	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3595473	10.0		12802	

Reagents:

LC537-L2_00018 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:47 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_011.d

Injection Date: 19-Jun-2017 18:14:11 Instrument ID: A8_N

Lims ID: CCVL

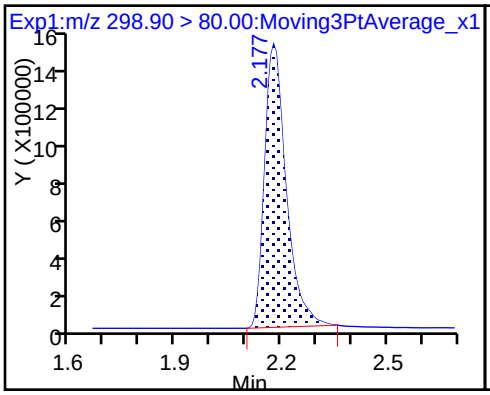
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 11

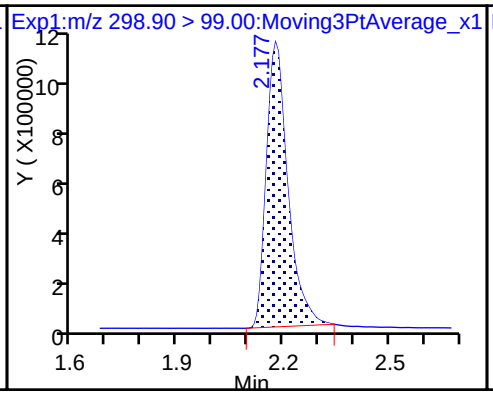
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

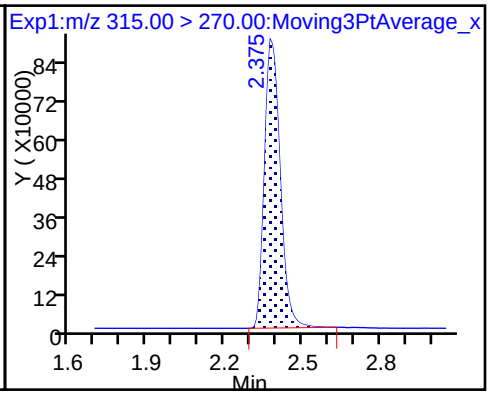
1 Perfluorobutanesulfonic acid



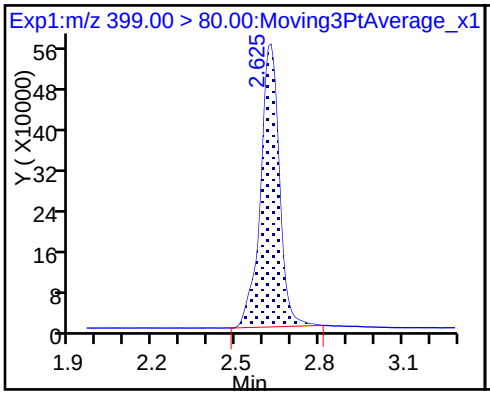
1 Perfluorobutanesulfonic acid



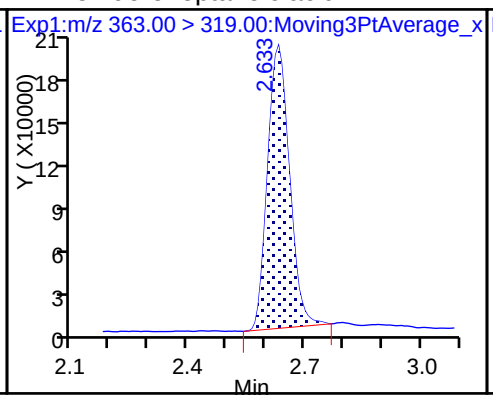
$ 2 13C2 PFHxA



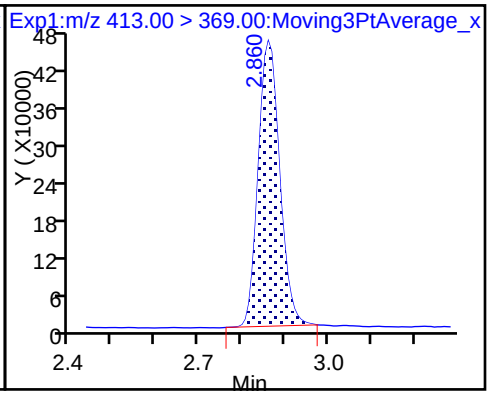
3 Perfluorohexanesulfonic acid



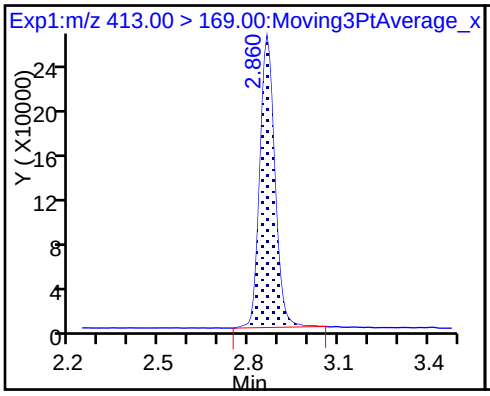
4 Perfluoroheptanoic acid



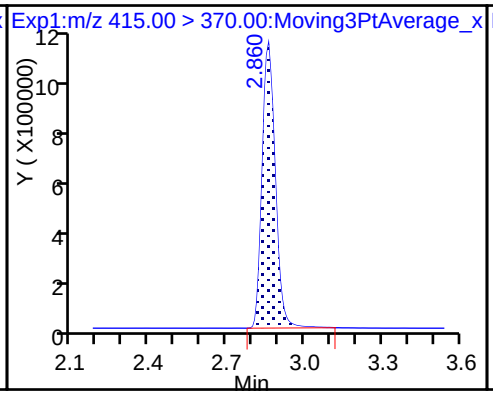
5 Perfluorooctanoic acid



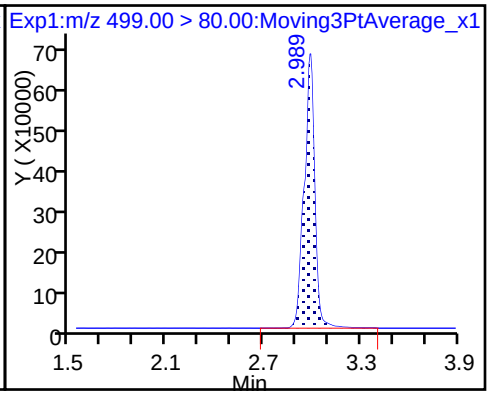
5 Perfluorooctanoic acid



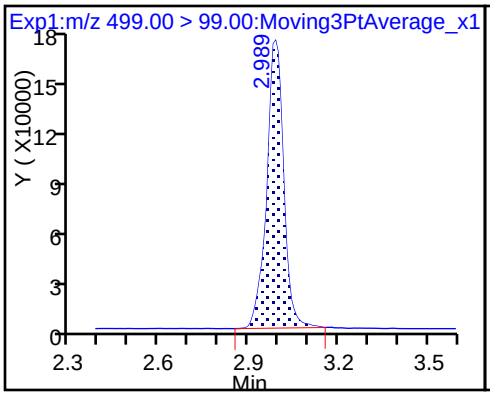
* 6 13C2-PFOA



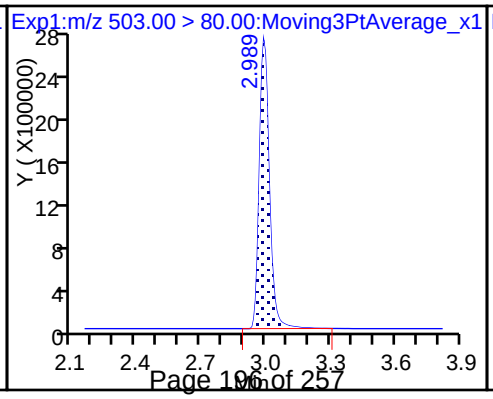
8 Perfluorooctane sulfonic acid



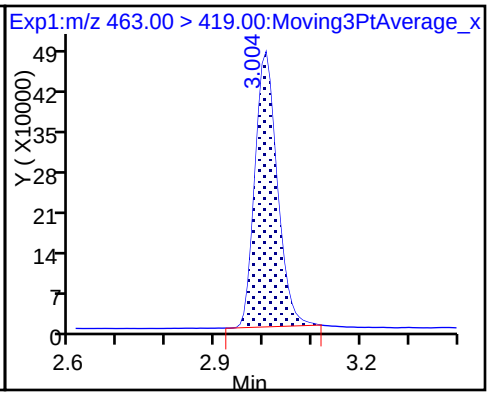
8 Perfluorooctane sulfonic acid



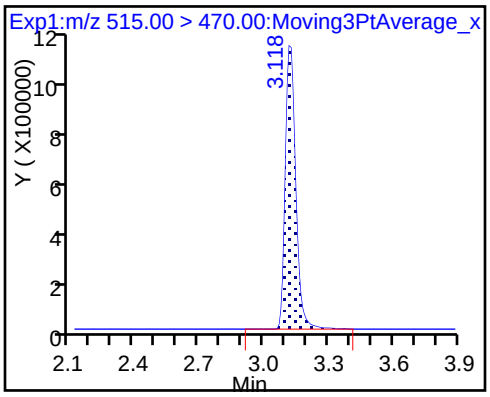
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.1
2.4
2.7
3.0
3.3
3.6
3.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab Sample ID: ICV 320-169955/13 Calibration Date: 06/19/2017 18:23

Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/19/2017 18:04

Lab File ID: 2017.06.19_537A_ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8921		104	101	3.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.265		23.0	21.2	8.4	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8190		9.79	10.1	-2.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.9521		21.8	20.0	8.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.080		22.0	20.7	6.3	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8825		20.7	20.0	3.5	30.0
13C2 PFHxA	Ave	1.038	1.057		10.2	10.0	1.8	30.0
13C2 PFDA	Ave	0.9622	1.049		10.9	10.0	9.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 19-Jun-2017 18:23:38 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\20170619-44448.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 10:57:48 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: phomsophat Date: 19-Jun-2017 19:34:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	29499258	103.9		2039	
298.90 > 99.00	2.177	2.183	-0.006	1.000	24839559		1.19(0.00-0.00)	1897	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	4035623	10.2		4361	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	8802712	23.0		2710	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	3152523	9.79		444	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	7278322	21.8		1054	
413.00 > 169.00	2.860	2.859	0.001	1.000	3946679		1.84(0.00-0.00)	3880	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		3818724	10.0		6298	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.982	0.0	1.000	7338229	22.0		20107	
499.00 > 99.00	2.982	2.982	0.0	1.000	1253171		5.86(0.00-0.00)	3549	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9420237	28.7		22623	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	6742905	20.7		2160	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	4006098	10.9		14118	

Reagents:

LC537-ICV_00020 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 10:57:48 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_013.d

Injection Date: 19-Jun-2017 18:23:38 Instrument ID: A8_N

Lims ID: ICV

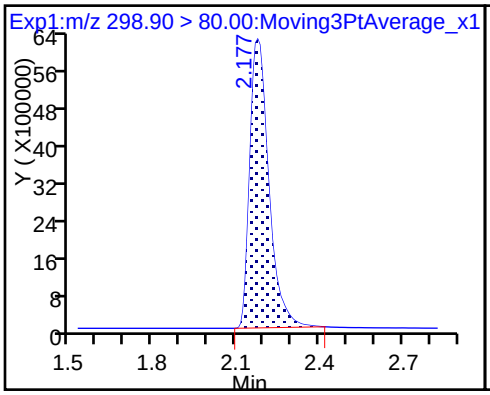
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 13

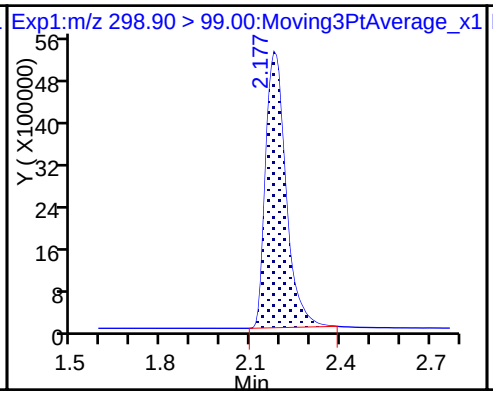
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

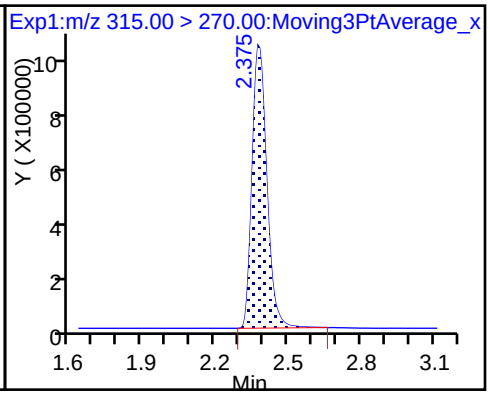
1 Perfluorobutanesulfonic acid



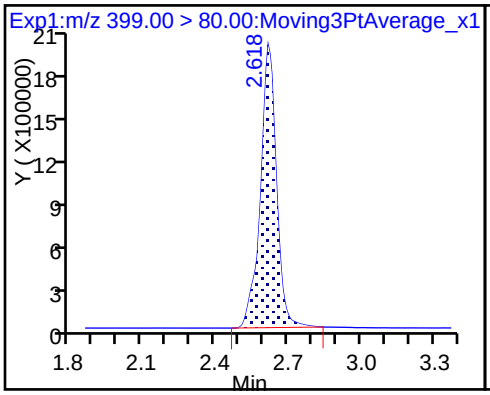
1 Perfluorobutanesulfonic acid



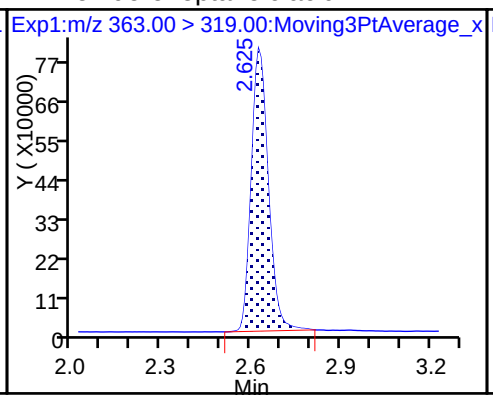
$ 2 13C2 PFHxA



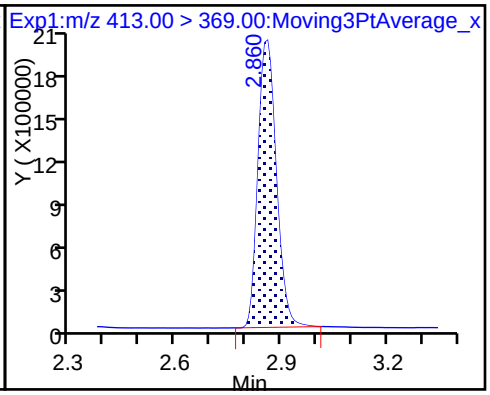
3 Perfluorohexanesulfonic acid



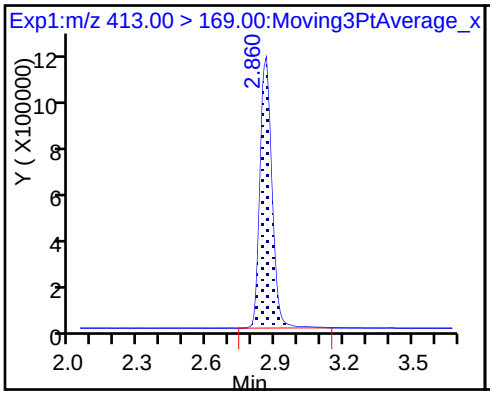
4 Perfluoroheptanoic acid



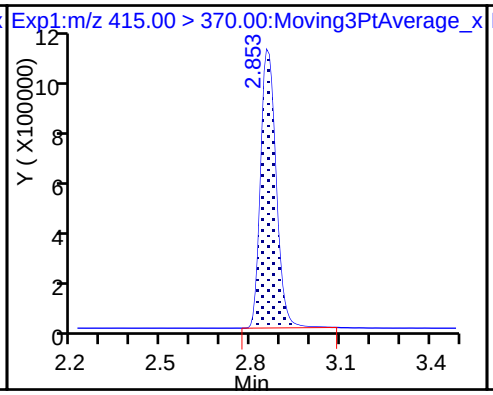
5 Perfluorooctanoic acid



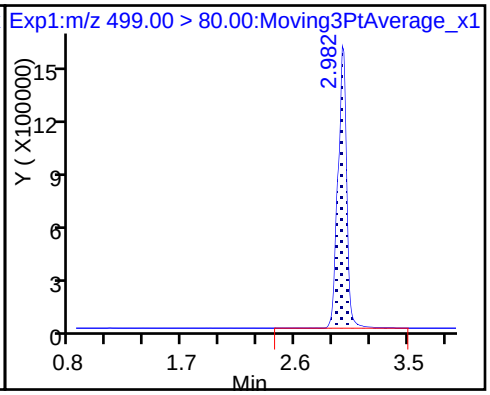
5 Perfluorooctanoic acid



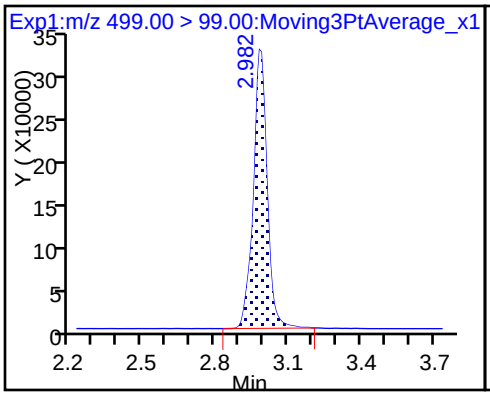
* 6 13C2-PFOA



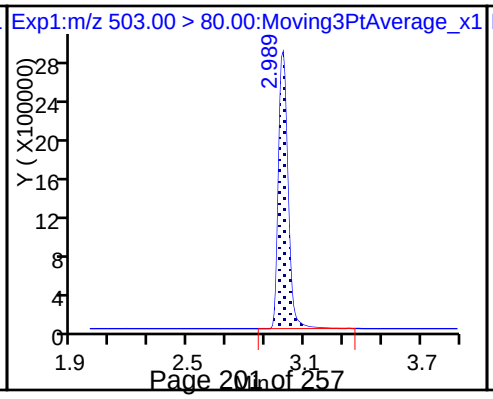
8 Perfluorooctane sulfonic acid



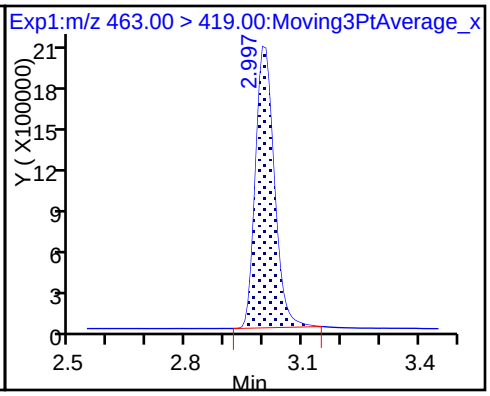
8 Perfluorooctane sulfonic acid



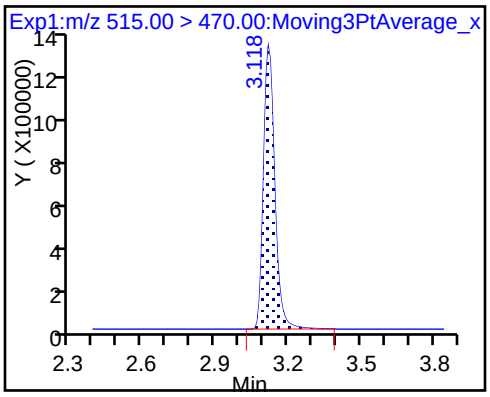
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
14
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab Sample ID: CCV 320-169966/25 Calibration Date: 06/19/2017 20:26

Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/19/2017 18:04

Lab File ID: 2017.06.19_537B_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8911		137	133	3.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.263		48.8	45.1	8.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8602		15.1	14.9	2.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.9150		31.3	30.0	4.5	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.042		61.6	60.0	2.6	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8034		27.2	28.9	-5.8	30.0
13C2 PFHxA	Ave	1.038	1.043		10.1	10.0	0.5	30.0
13C2 PFDA	Ave	0.9622	0.8895		9.24	10.0	-7.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_025.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Jun-2017 20:26:59 ALS Bottle#: 5 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 11:42:44 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 11:27:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	36564898	136.6		1873	
298.90 > 99.00	2.177	2.183	-0.006	0.997	29435282		1.24(0.00-0.00)	2067	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4271021	10.1		3608	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17635515	48.8		3841	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.633	2.630	0.003	1.000	5230886	15.1		693	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4094794	10.0		5123	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	11228763	31.3		1393	
413.00 > 169.00	2.860	2.859	0.001	1.000	6337943		1.77(0.00-0.00)	3879	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.982	0.007	1.000	19374308	61.6		39895	
499.00 > 99.00	2.989	2.982	0.007	1.000	4332432		4.47(0.00-0.00)	11545	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8881256	28.7		17625	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9504246	27.2		1835	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3642105	9.24		8408	

Reagents:

LC537-L5_00021 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 11:42:45 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_025.d

Injection Date: 19-Jun-2017 20:26:59 Instrument ID: A8_N

Lims ID: CCV L5

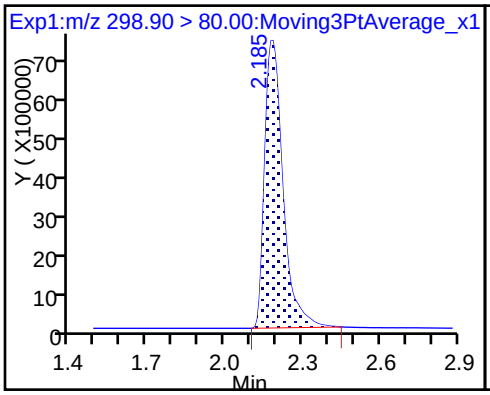
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 25

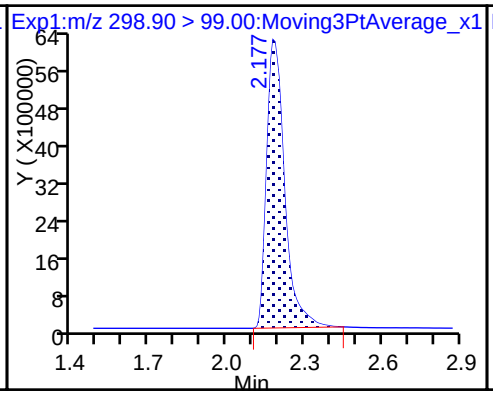
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

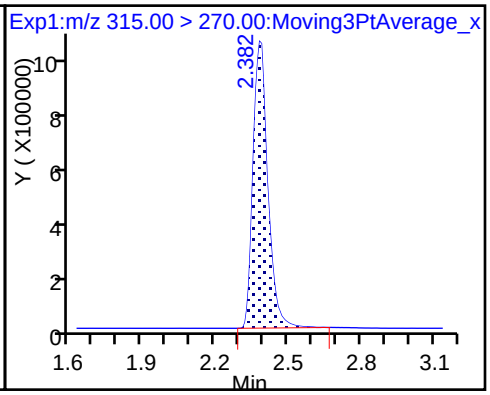
1 Perfluorobutanesulfonic acid



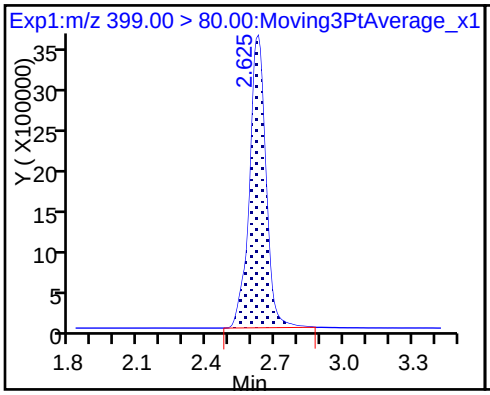
1 Perfluorobutanesulfonic acid



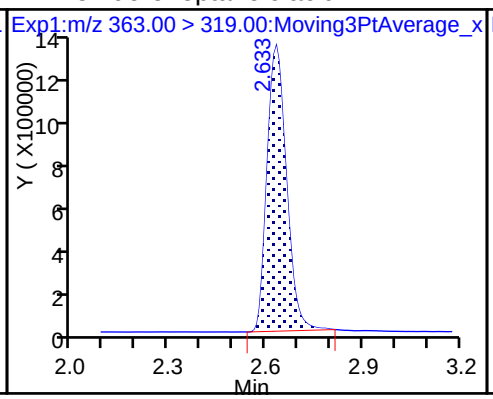
$ 2 13C2 PFHxA



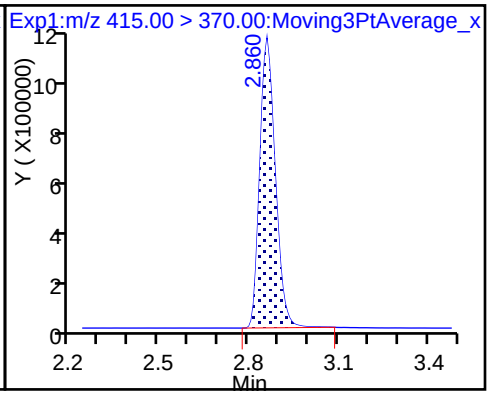
3 Perfluorohexanesulfonic acid



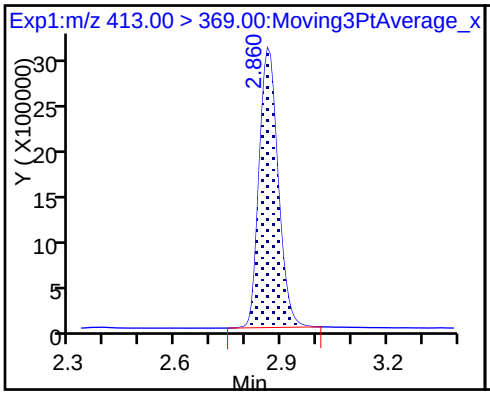
4 Perfluoroheptanoic acid



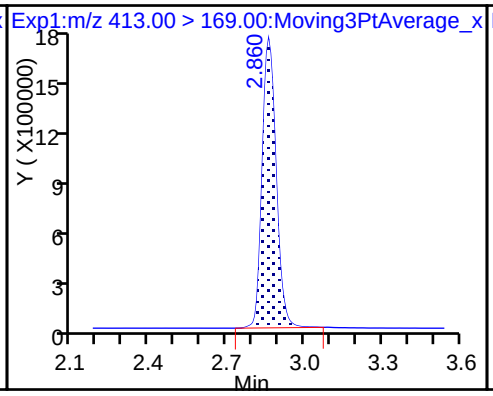
* 6 13C2-PFOA



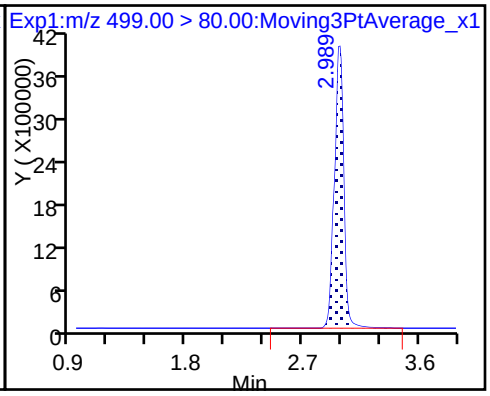
5 Perfluorooctanoic acid



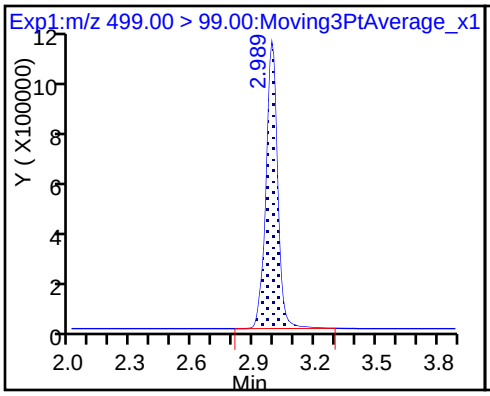
5 Perfluorooctanoic acid



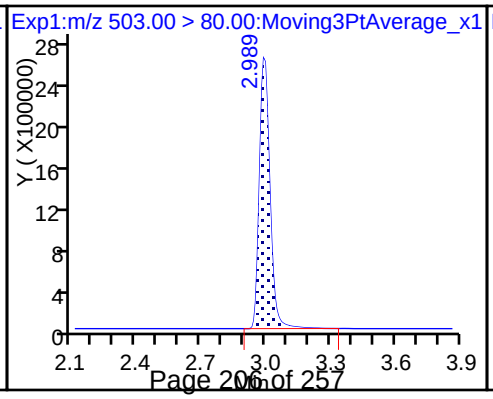
8 Perfluorooctane sulfonic acid



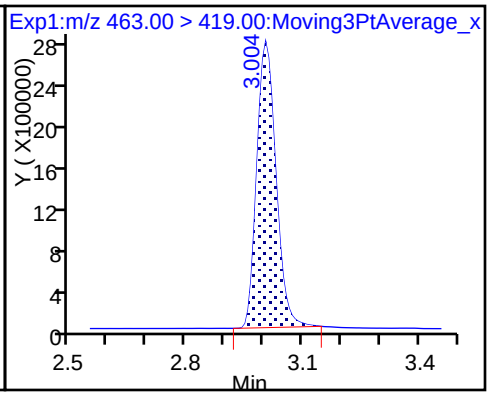
8 Perfluorooctane sulfonic acid



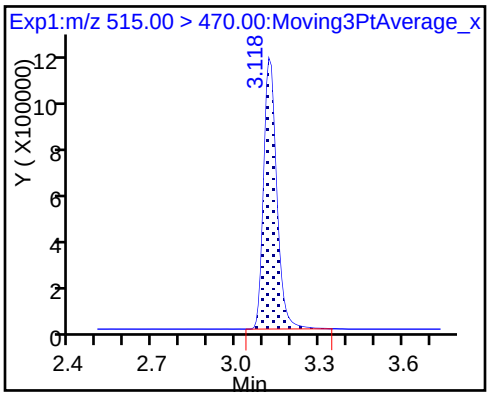
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.4
2.7
3.0
3.3
3.6
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab Sample ID: CCV 320-169966/37 Calibration Date: 06/19/2017 21:23

Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/19/2017 18:04

Lab File ID: 2017.06.19_537B_037.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9190		47.2	44.4	6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.147		14.8	15.1	-1.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8161		4.81	4.97	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8955		10.3	10.0	2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	0.997		19.7	20.1	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8375		9.50	9.68	-1.8	30.0
13C2 PFHxA	Ave	1.038	0.9910		9.55	10.0	-4.5	30.0
13C2 PFDA	Ave	0.9622	0.8690		9.03	10.0	-9.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab Sample ID: CCV 320-169968/37 Calibration Date: 06/19/2017 21:23

Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/19/2017 18:04

Lab File ID: 2017.06.19_537B_037.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.9190		47.2	44.4	6.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.147		14.8	15.1	-1.7	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8161		4.81	4.97	-3.2	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.8955		10.3	10.0	2.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	0.997		19.7	20.1	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8375		9.50	9.68	-1.8	30.0
13C2 PFHxA	Ave	1.038	0.9910		9.55	10.0	-4.5	30.0
13C2 PFDA	Ave	0.9622	0.8690		9.03	10.0	-9.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_037.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Jun-2017 21:23:55 ALS Bottle#: 3 Worklist Smp#: 37
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\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:48:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	14413570	47.2		1486	
298.90 > 99.00	2.185	2.183	0.002	1.000	11388978		1.27(0.00-0.00)	1458	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.390	2.381	0.009	1.000	4218349	9.55		2588	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	6123638	14.8		1817	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.640	2.630	0.010	1.000	1728166	4.81		235	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4256821	10.0		5724	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	3827093	10.3		613	
413.00 > 169.00	2.868	2.859	0.009	1.003	2119551		1.81(0.00-0.00)	1990	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	7082558	19.7		14732	
499.00 > 99.00	2.989	2.989	0.0	1.000	1597143		4.43(0.00-0.00)	4148	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		10132995	28.7		19137	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	3450273	9.50		1013	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3699307	9.03		7791	

Reagents:

LC537-L3_00020 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_037.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Jun-2017 21:23:55 ALS Bottle#: 3 Worklist Smp#: 37
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\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 21-Jun-2017 10:57:04 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK005

First Level Reviewer: barnettj Date: 20-Jun-2017 14:48:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.185	2.183	0.002	1.000	14413570	47.2		1486	
298.90 > 99.00	2.185	2.183	0.002	1.000	11388978		1.27(0.00-0.00)	1458	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.390	2.381	0.009	1.000	4218349	9.55		2588	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	6123638	14.8		1817	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.640	2.630	0.010	1.000	1728166	4.81		235	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4256821	10.0		5724	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	3827093	10.3		613	
413.00 > 169.00	2.868	2.859	0.009	1.003	2119551		1.81(0.00-0.00)	1990	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	7082558	19.7		14732	
499.00 > 99.00	2.989	2.989	0.0	1.000	1597143		4.43(0.00-0.00)	4148	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		10132995	28.7		19137	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	3450273	9.50		1013	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3699307	9.03		7791	

Reagents:

LC537-L3_00020 Amount Added: 1.00 Units: mL

Report Date: 21-Jun-2017 10:57:05 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_037.d

Injection Date: 19-Jun-2017 21:23:55 Instrument ID: A8_N

Lims ID: CCV L3

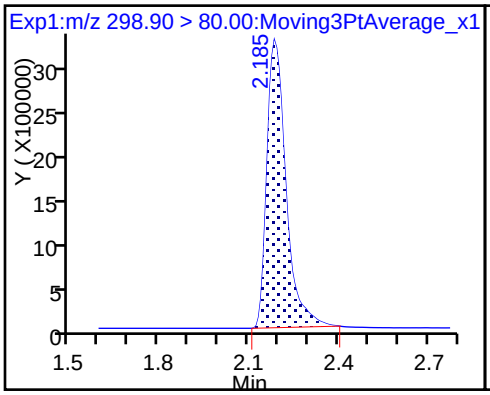
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 37

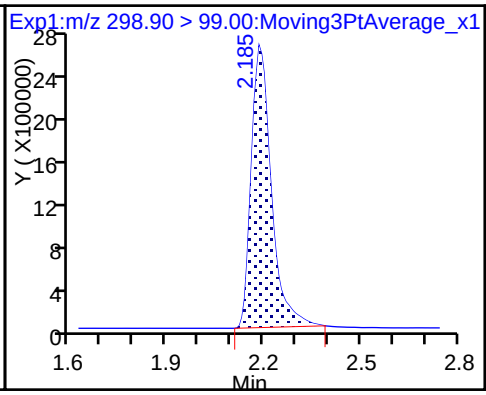
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

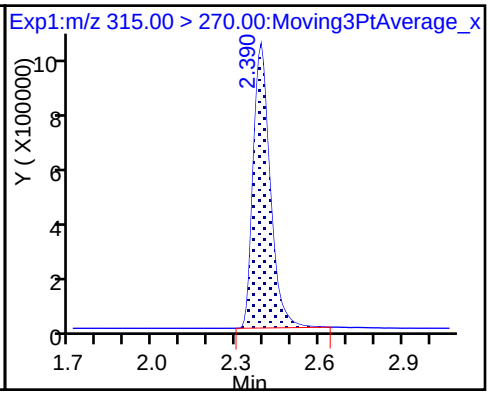
1 Perfluorobutanesulfonic acid



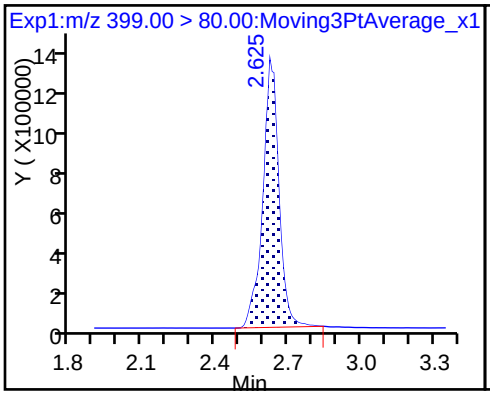
1 Perfluorobutanesulfonic acid



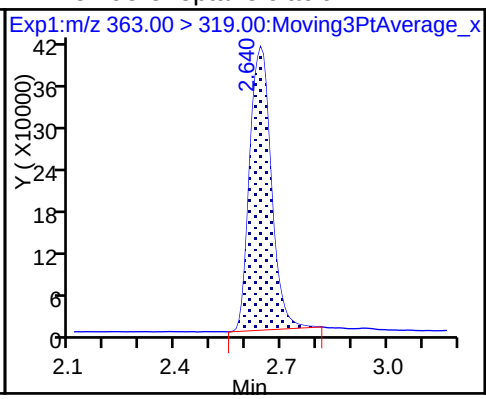
$ 2 13C2 PFHxA



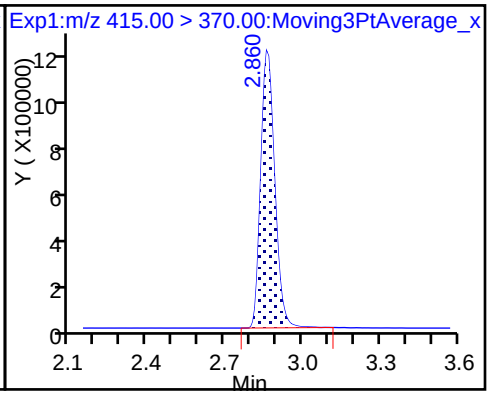
3 Perfluorohexanesulfonic acid



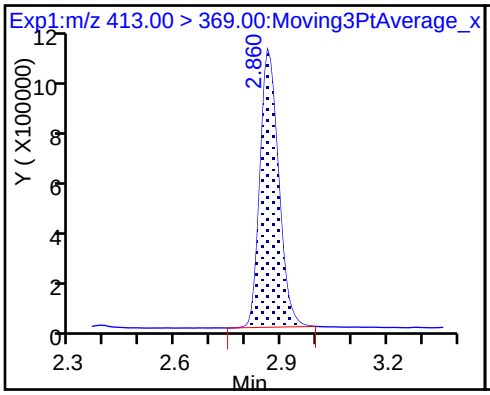
4 Perfluoroheptanoic acid



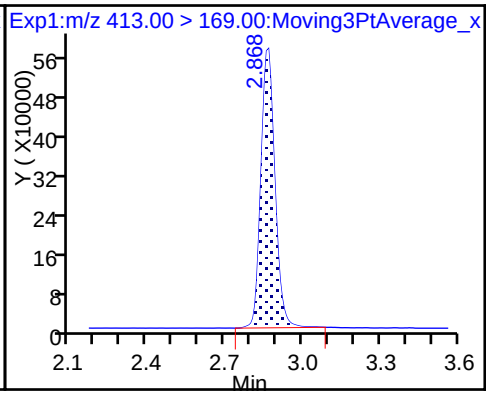
* 6 13C2-PFOA



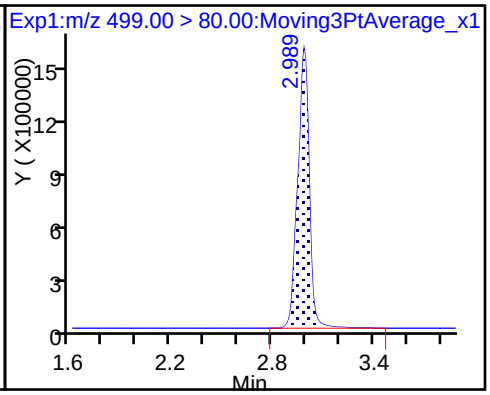
5 Perfluorooctanoic acid



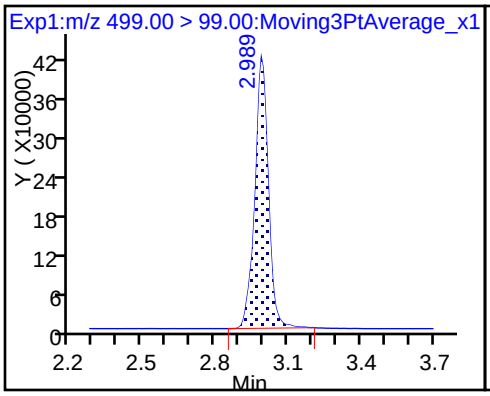
5 Perfluorooctanoic acid



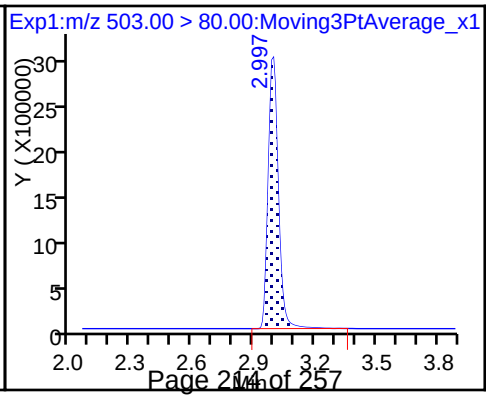
8 Perfluorooctane sulfonic acid



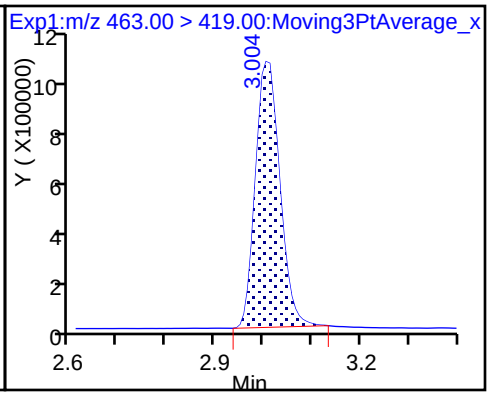
8 Perfluorooctane sulfonic acid



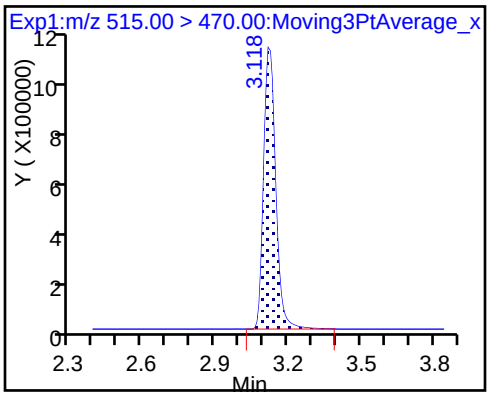
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

Report Date: 21-Jun-2017 10:57:05 Chrom Revision: 2.2 20-Jun-2017 07:42:38

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_037.d

Injection Date: 19-Jun-2017 21:23:55 Instrument ID: A8_N

Lims ID: CCV L3

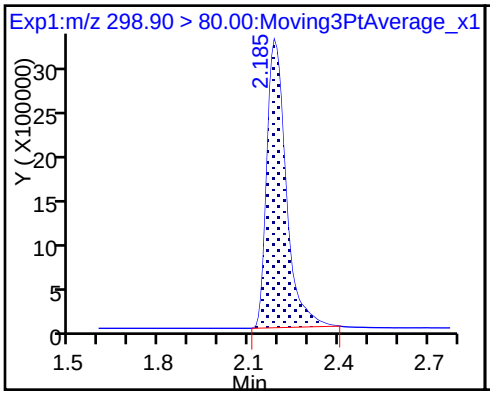
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 37

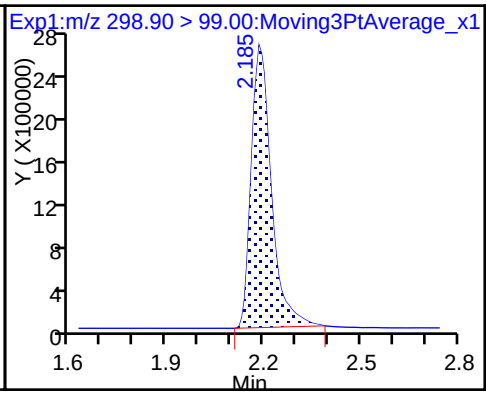
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

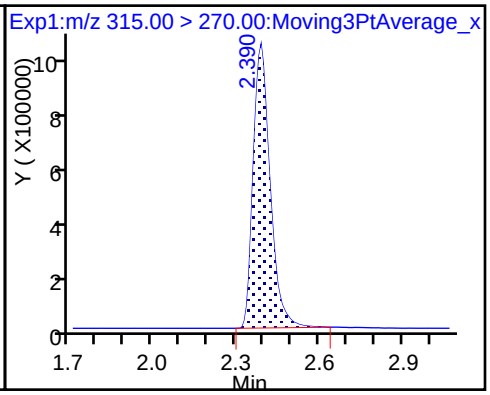
1 Perfluorobutanesulfonic acid



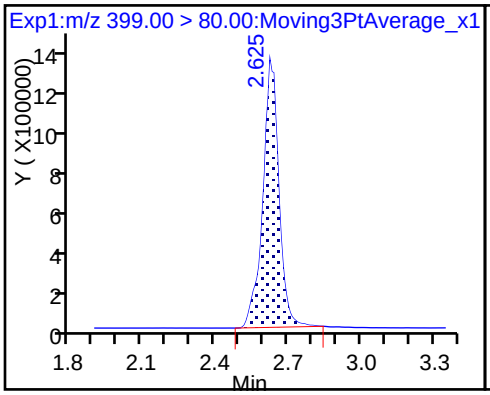
1 Perfluorobutanesulfonic acid



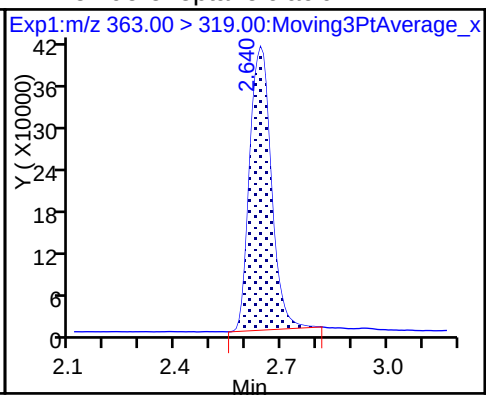
$ 2 13C2 PFHxA



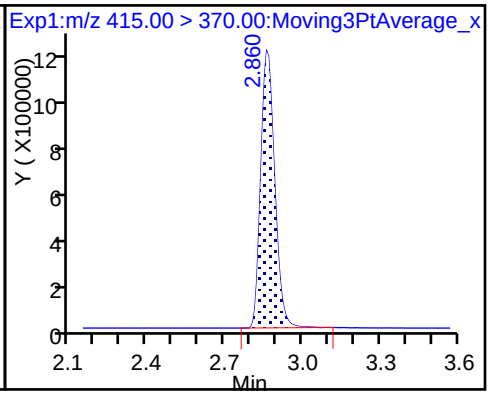
3 Perfluorohexanesulfonic acid



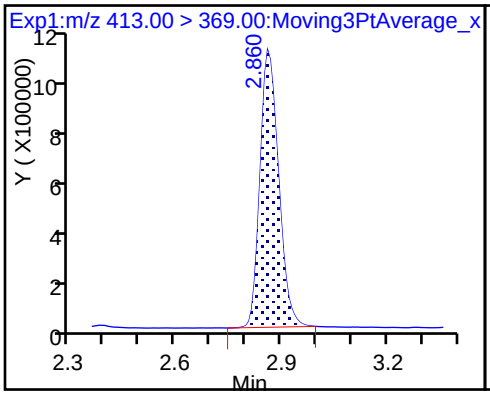
4 Perfluoroheptanoic acid



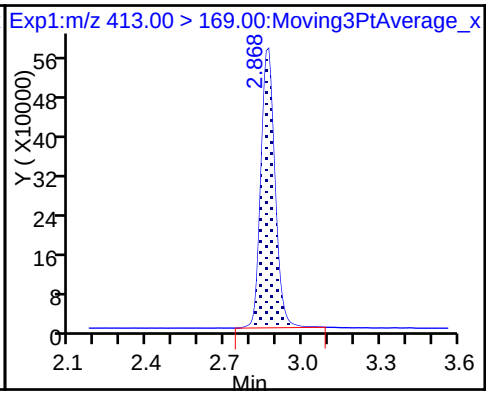
* 6 13C2-PFOA



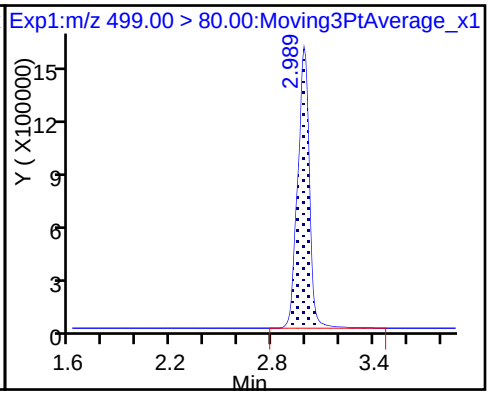
5 Perfluorooctanoic acid



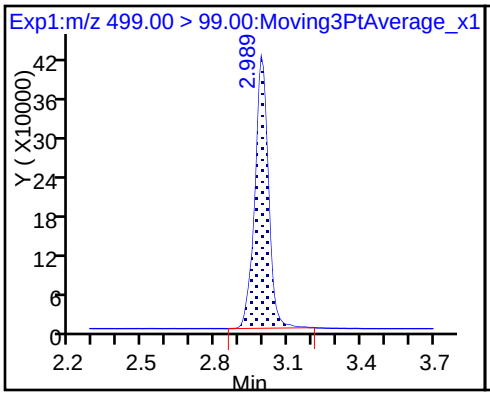
5 Perfluorooctanoic acid



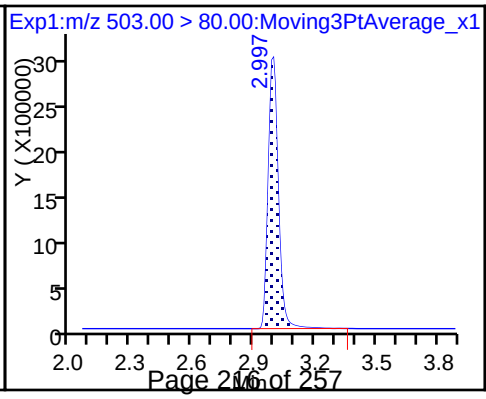
8 Perfluorooctane sulfonic acid



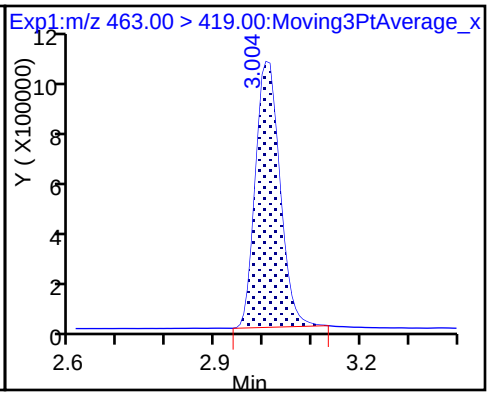
8 Perfluorooctane sulfonic acid



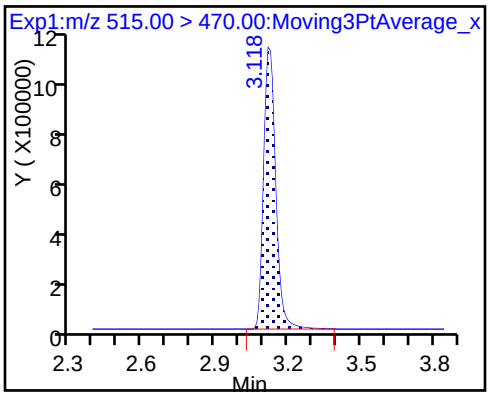
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Lab Sample ID: CCV 320-169968/45 Calibration Date: 06/19/2017 22:01

Instrument ID: A8_N Calib Start Date: 06/19/2017 17:40

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/19/2017 18:04

Lab File ID: 2017.06.19_537B_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.8645	0.8478		130	133	-1.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.167	1.209		46.7	45.1	3.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	0.8433	0.8738		15.4	14.9	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8758	0.9177		31.4	30.0	4.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.016	1.047		61.9	60.0	3.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8531	0.8190		27.7	28.9	-4.0	30.0
13C2 PFHxA	Ave	1.038	1.049		10.1	10.0	1.1	30.0
13C2 PFDA	Ave	0.9622	0.8994		9.35	10.0	-6.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_045.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 19-Jun-2017 22:01:50 ALS Bottle#: 5 Worklist Smp#: 45
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\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:56:25 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:52:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.193	2.183	0.010	1.000	35553146	130.0		1924	
298.90 > 99.00	2.185	2.183	0.002	0.997	29095596		1.22(0.00-0.00)	1842	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3947864	10.1		3188	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.625	2.625	0.0	1.000	17248307	46.7		3882	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.640	2.630	0.010	1.000	4881036	15.4		651	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		3761744	10.0		5506	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.868	2.859	0.009	1.000	10346537	31.4		1402	
413.00 > 169.00	2.868	2.859	0.009	1.000	5664830		1.83(0.00-0.00)	4045	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.989	2.989	0.0	1.000	19901918	61.9		31169	
499.00 > 99.00	2.997	2.989	0.008	1.003	4627641		4.30(0.00-0.00)	10133	
* 7 13C4 PFOS									
503.00 > 80.00	2.997	2.991	0.006		9075793	28.7		17303	
9 Perfluorononanoic acid									
463.00 > 419.00	3.012	3.003	0.009	1.000	8900932	27.7		2107	
$ 10 13C2 PFDA									
515.00 > 470.00	3.126	3.123	0.003	1.000	3383133	9.35		7489	

Reagents:

LC537-L5_00021 Amount Added: 1.00 Units: mL

Report Date: 20-Jun-2017 14:56:26 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_045.d

Injection Date: 19-Jun-2017 22:01:50 Instrument ID: A8_N

Lims ID: CCV L5

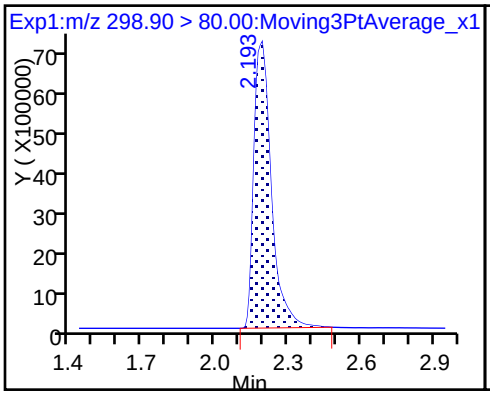
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 45

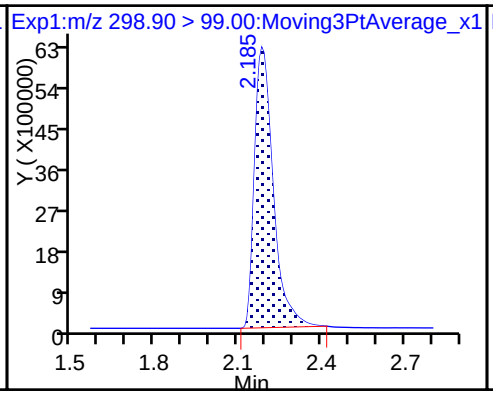
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

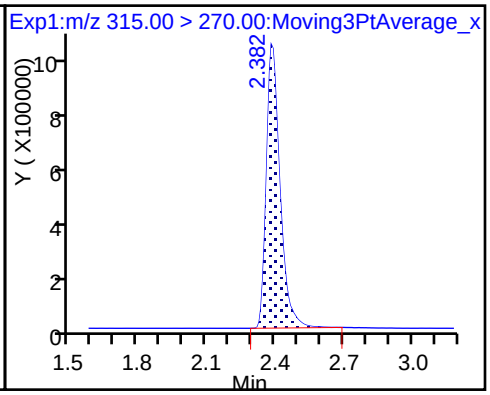
1 Perfluorobutanesulfonic acid



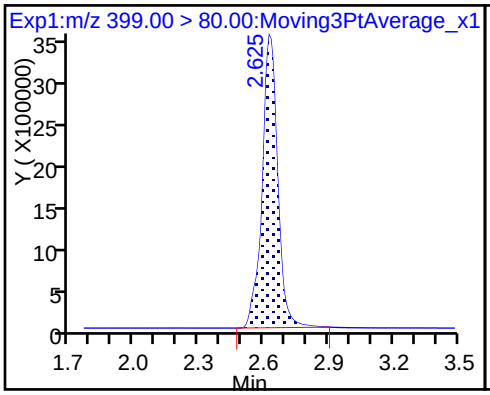
1 Perfluorobutanesulfonic acid



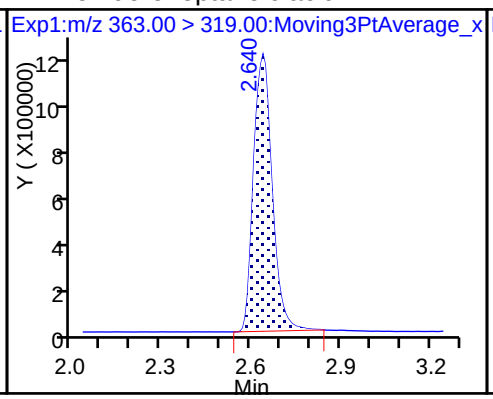
$ 2 13C2 PFHxA



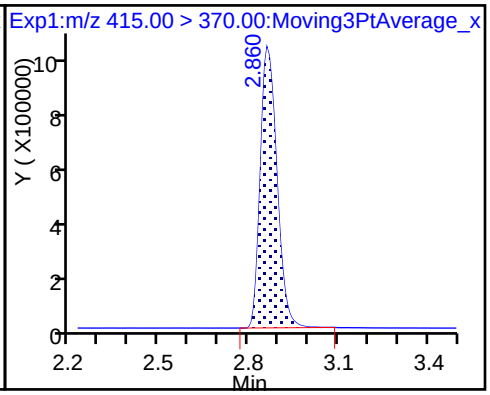
3 Perfluorohexanesulfonic acid



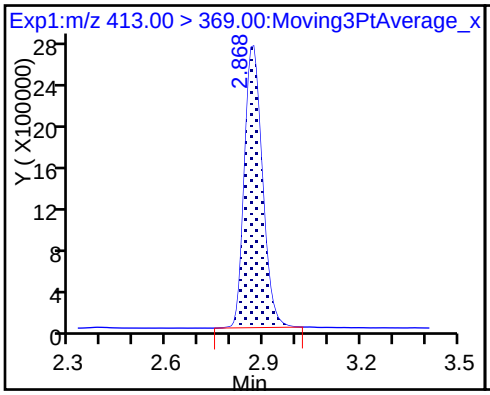
4 Perfluoroheptanoic acid



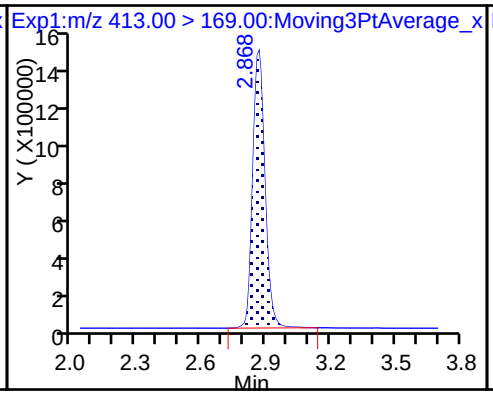
* 6 13C2-PFOA



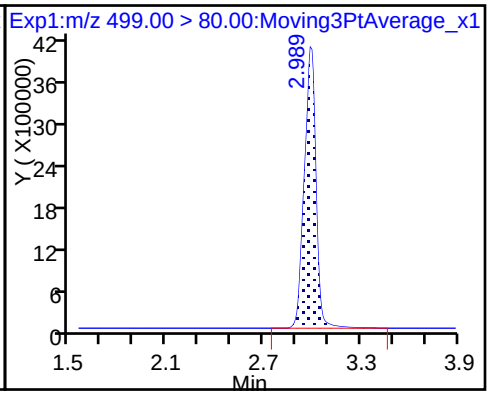
5 Perfluorooctanoic acid



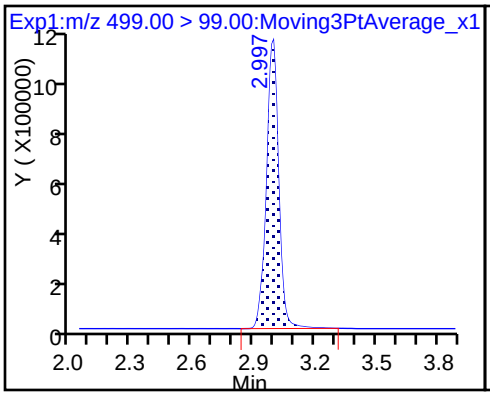
5 Perfluorooctanoic acid



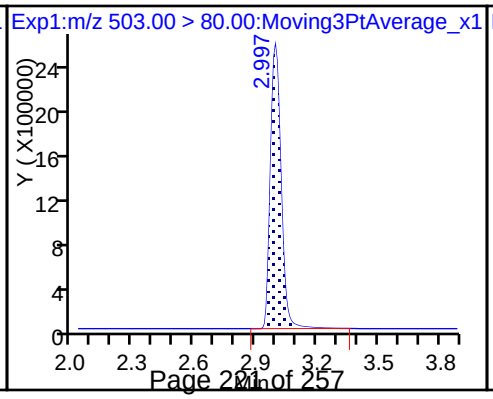
8 Perfluorooctane sulfonic acid



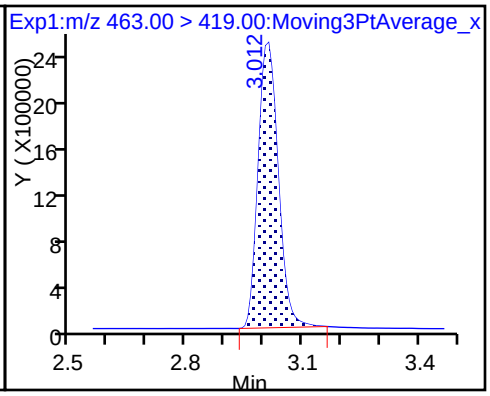
8 Perfluorooctane sulfonic acid



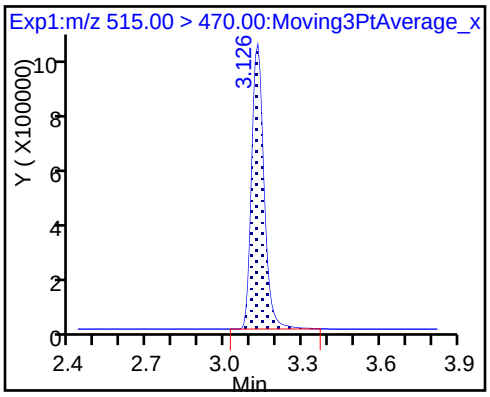
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.126
Y (X100000)
10
8
6
4
2
0
2.4
2.7
3.0
3.3
3.6
3.9
Min

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-169392/1-A

Matrix: Water | Lab File ID: 2017.06.19_537B_029.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 250(mL) | Date Analyzed: 06/19/2017 20:45

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.: 169966 | 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 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)	4.0	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	93		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_029.d
Lims ID: MB 320-169392/1-A
Client ID:
Sample Type: MB
Inject. Date: 19-Jun-2017 20:45:57 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-169392/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:14:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	4086769	9.35		2837	
* 6 13C2-PFOA									
415.00 > 370.00	2.860	2.859	0.001		4212781	10.0		6372	
5 Perfluorooctanoic acid									M
413.00 > 369.00	2.860	2.859	0.001	1.000	20155	0.0546		4.1	M
413.00 > 169.00	2.853	2.859	-0.006	0.997	13156		1.53(0.00-0.00)	10.6	M
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		8942602	28.7		15869	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3702159	9.13		14741	

QC Flag Legend

Review Flags
M - Manually Integrated

Report Date: 20-Jun-2017 14:56:15 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_029.d

Injection Date: 19-Jun-2017 20:45:57 Instrument ID: A8_N

Lims ID: MB 320-169392/1-A

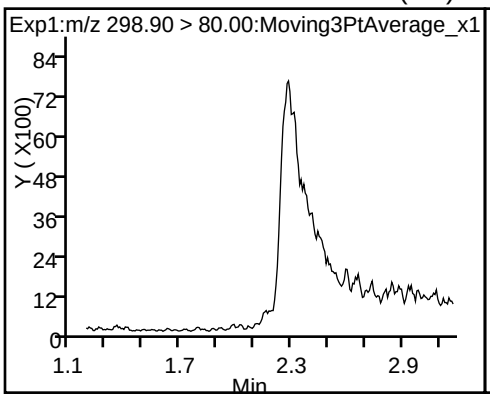
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29

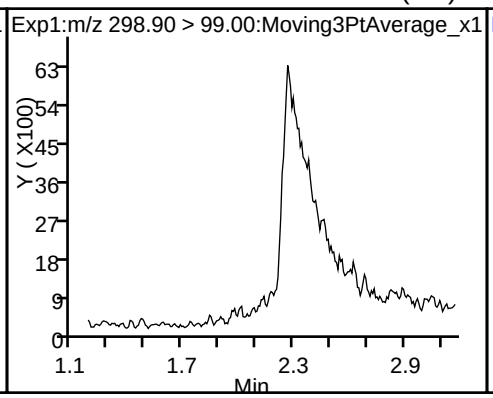
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

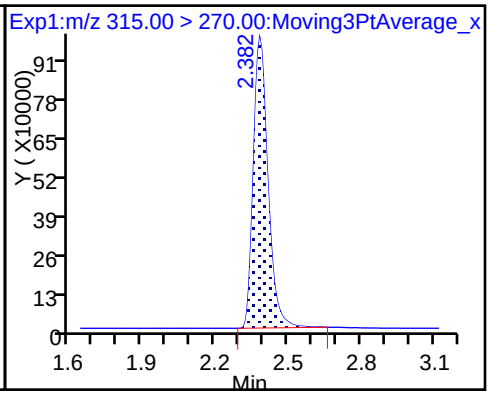
1 Perfluorobutanesulfonic acid (ND)



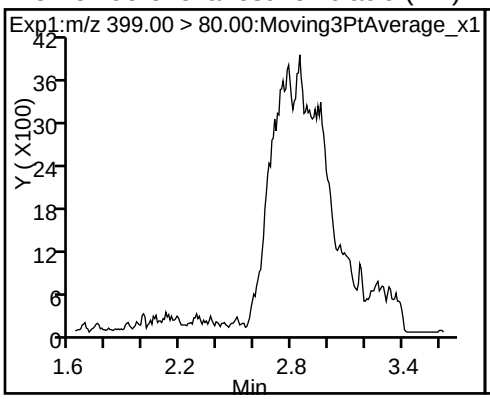
1 Perfluorobutanesulfonic acid (ND)



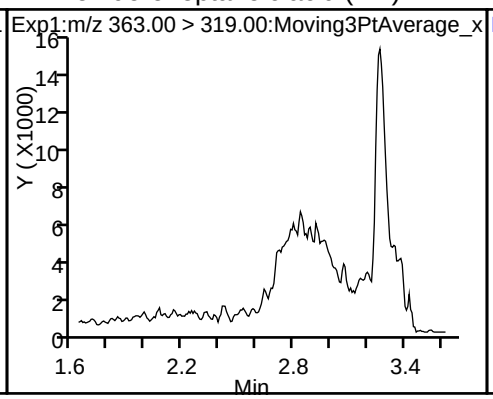
$ 2 13C2 PFHxA



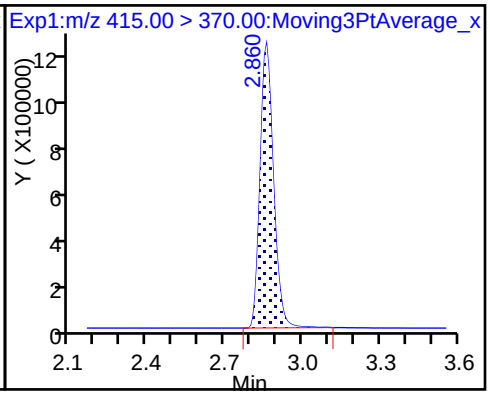
3 Perfluorohexanesulfonic acid (ND)



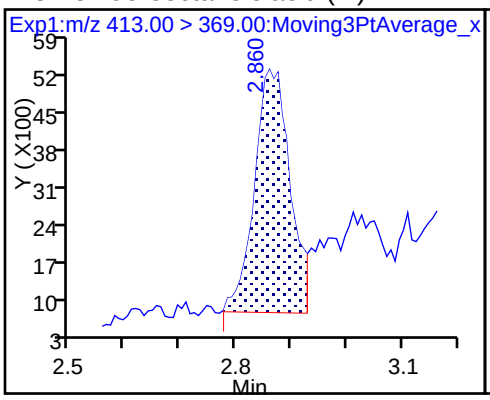
4 Perfluoroheptanoic acid (ND)



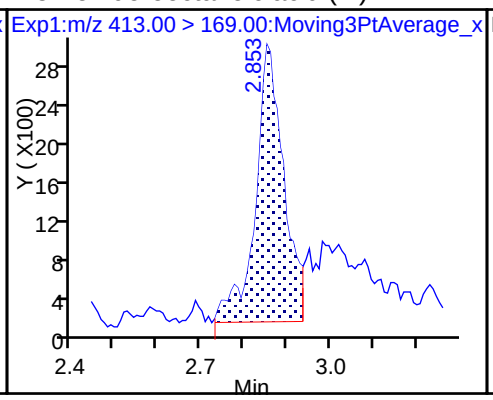
* 6 13C2-PFOA



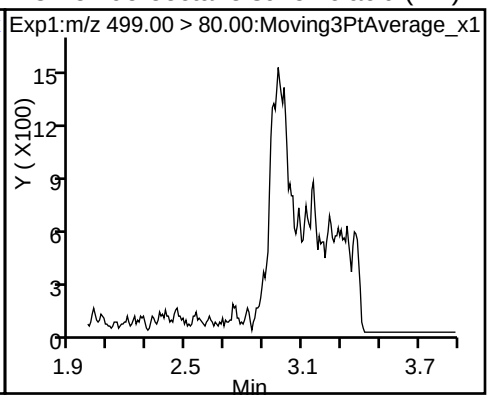
5 Perfluorooctanoic acid (M)



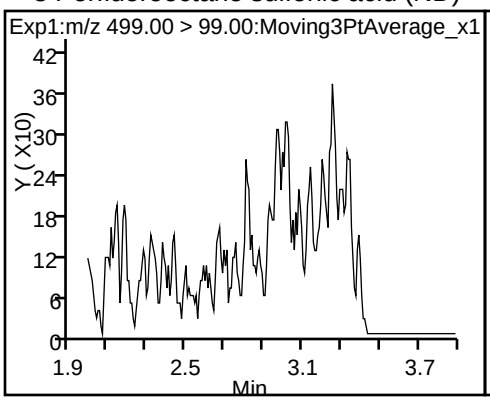
5 Perfluorooctanoic acid (M)



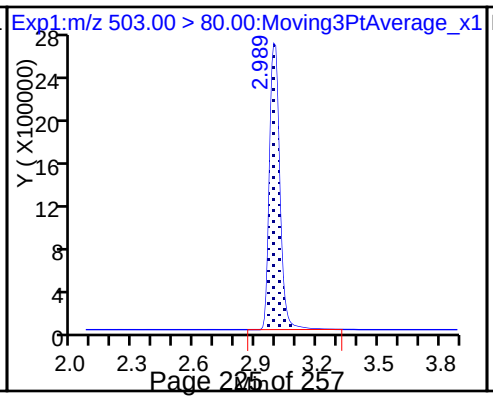
8 Perfluorooctane sulfonic acid (ND)



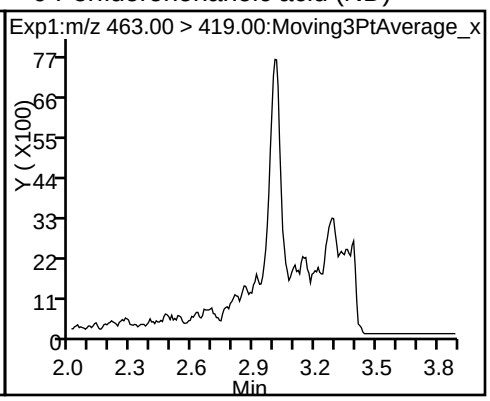
8 Perfluorooctane sulfonic acid (ND)



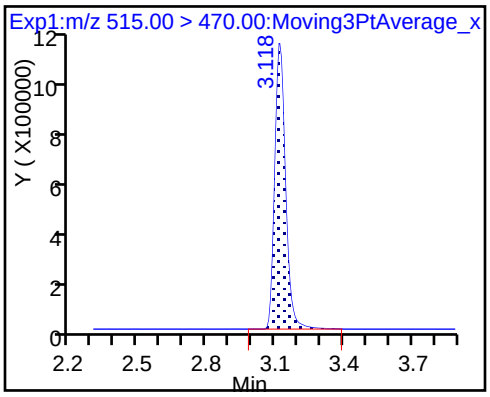
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
12
10
8
6
4
2
0
2.2
2.5
2.8
3.1
3.4
3.7
Min

Report Date: 20-Jun-2017 14:56:15 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_029.d				
Lims ID:	MB 320-169392/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	19-Jun-2017 20:45:57	ALS Bottle#:	23	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	mb 320-169392/1-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:14:35		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.35	93.49
$ 10 13C2 PFDA	10.0	9.13	91.33

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

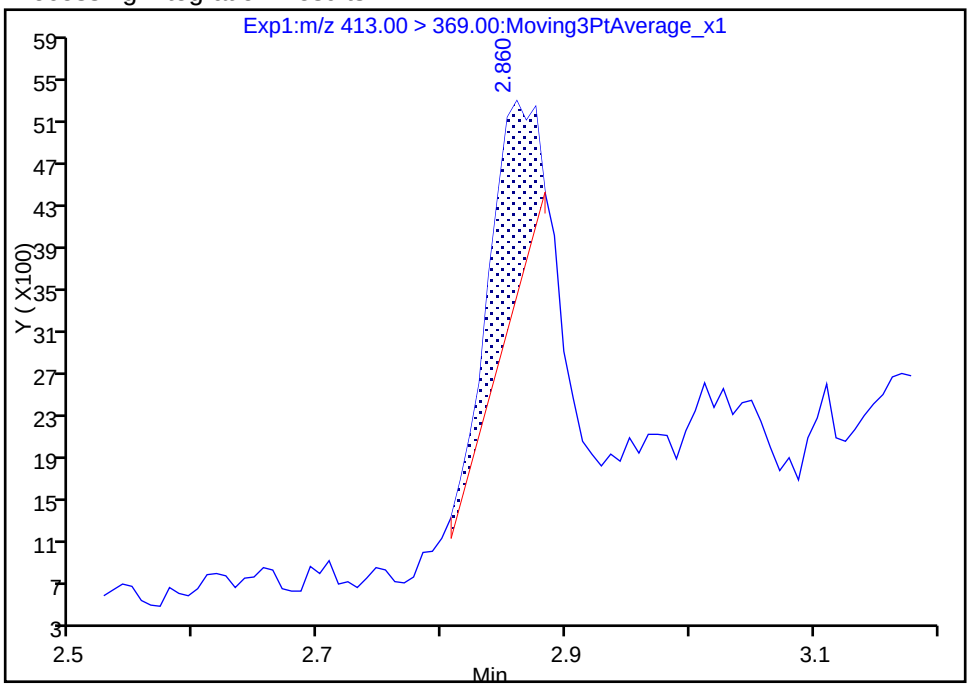
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_029.d
Injection Date: 19-Jun-2017 20:45:57 Instrument ID: A8_N
Lims ID: MB 320-169392/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

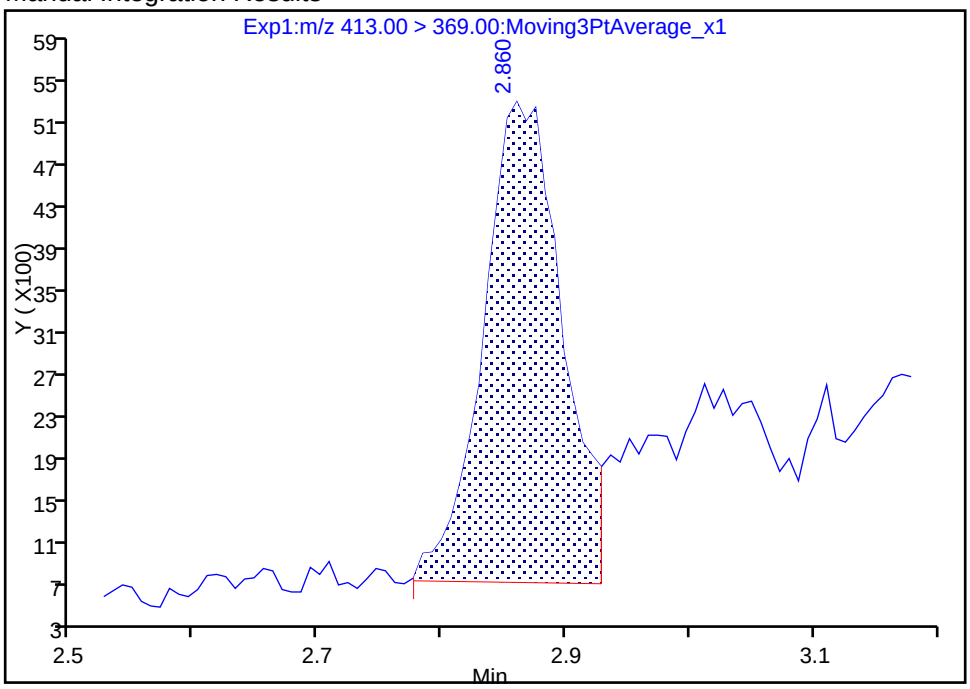
Processing Integration Results

RT: 2.86
Area: 4688
Amount: 0.012706
Amount Units: ng/ml



Manual Integration Results

RT: 2.86
Area: 20155
Amount: 0.054625
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:13:28
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

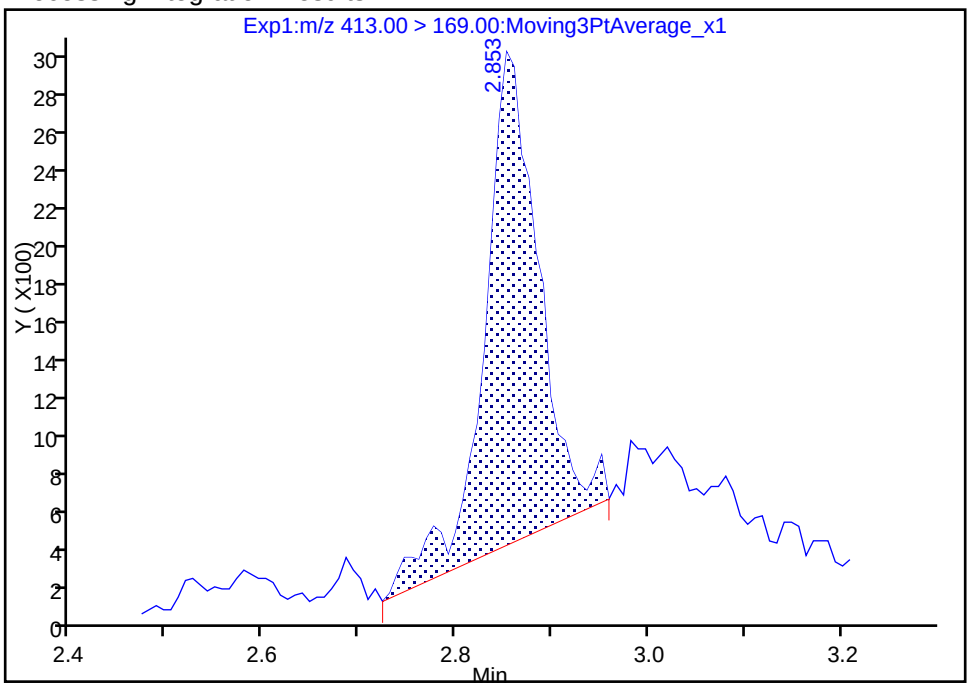
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_029.d
Injection Date: 19-Jun-2017 20:45:57 Instrument ID: A8_N
Lims ID: MB 320-169392/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

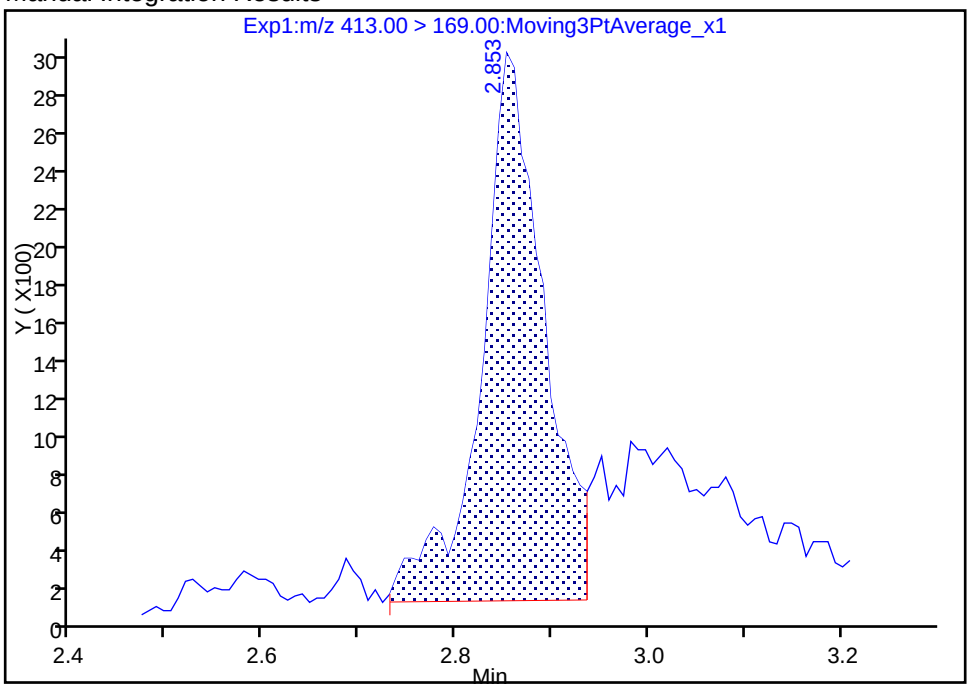
Processing Integration Results

RT: 2.85
Area: 10329
Amount: 0.012706
Amount Units: ng/ml



Manual Integration Results

RT: 2.85
Area: 13156
Amount: 0.054625
Amount Units: ng/ml



Reviewer: barnettj, 20-Jun-2017 14:14:22
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-169392/2-A

Matrix: Water | Lab File ID: 2017.06.19_537B_030.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 250(mL) | Date Analyzed: 06/19/2017 20:50

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.: 169966 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	254		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	122		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	110		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	211		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	63.2		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	574		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	84		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_030.d
Lims ID: LCS 320-169392/2-A
Client ID:
Sample Type: LCS
Inject. Date: 19-Jun-2017 20:50:42 ALS Bottle#: 24 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-169392/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:15:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	39285385	143.5		1761	
298.90 > 99.00	2.177	2.183	-0.006	1.000	32614182		1.20(0.00-0.00)	1981	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.375	2.381	-0.006	1.000	3759008	8.70		3856	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	19490649	52.7		4195	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	5549135	15.8		743	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		4161933	10.0		4525	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.860	2.859	0.001	1.000	11100602	30.5		1770	
413.00 > 169.00	2.853	2.859	-0.006	0.997	6407131		1.73(0.00-0.00)	4785	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.989	-0.007	1.000	20386432	63.4		40678	
499.00 > 99.00	2.982	2.989	-0.007	1.000	4798507		4.25(0.00-0.00)	10623	
* 7 13C4 PFOS									
503.00 > 80.00	2.989	2.991	-0.002		9079660	28.7		16407	
9 Perfluorononanoic acid									
463.00 > 419.00	3.004	3.003	0.001	1.000	9759966	27.5		2512	
$ 10 13C2 PFDA									
515.00 > 470.00	3.118	3.123	-0.005	1.000	3378303	8.44		10137	

Report Date: 20-Jun-2017 14:56:15 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_030.d

Injection Date: 19-Jun-2017 20:50:42 Instrument ID: A8_N

Lims ID: LCS 320-169392/2-A

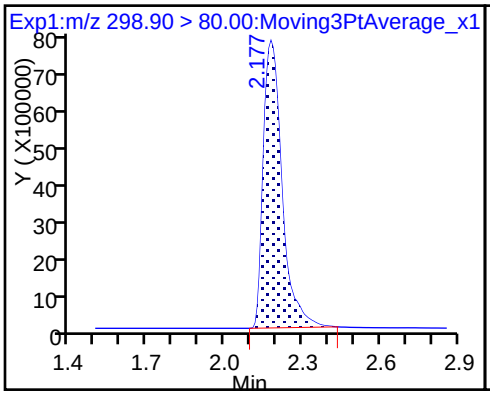
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 30

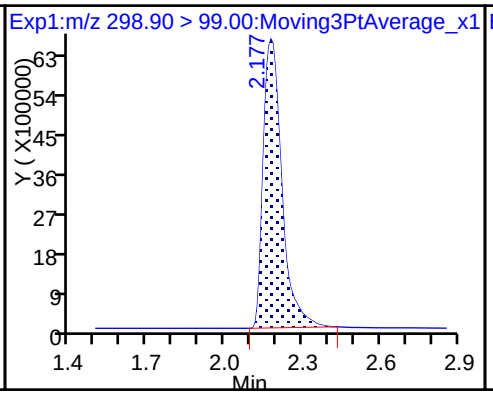
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

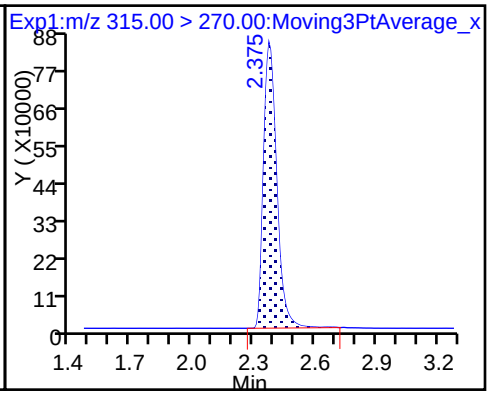
1 Perfluorobutanesulfonic acid



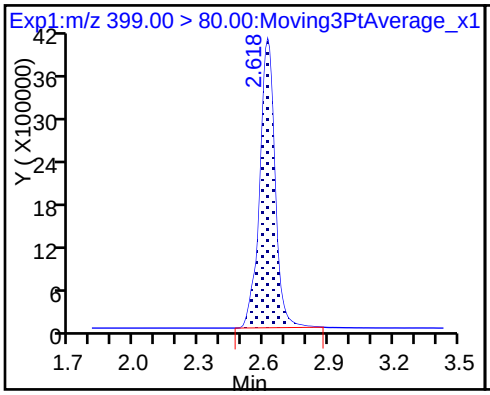
1 Perfluorobutanesulfonic acid



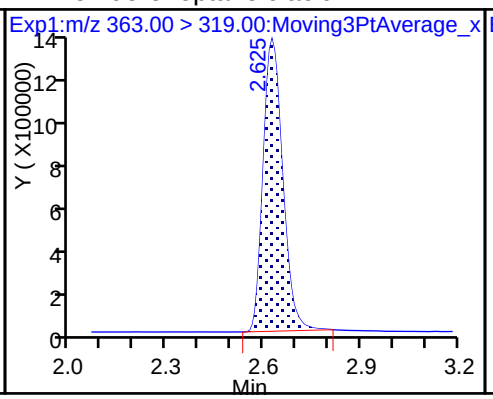
$ 2 13C2 PFHxA



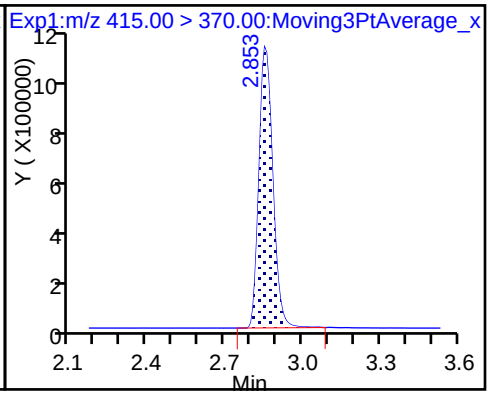
3 Perfluorohexanesulfonic acid



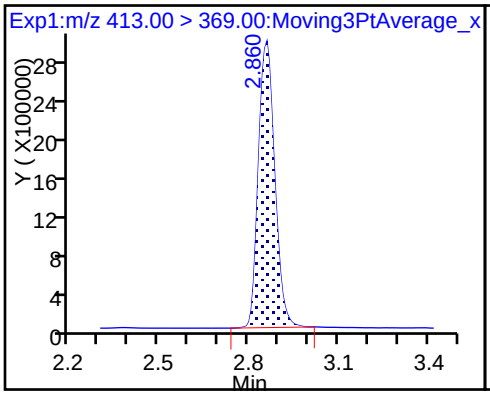
4 Perfluoroheptanoic acid



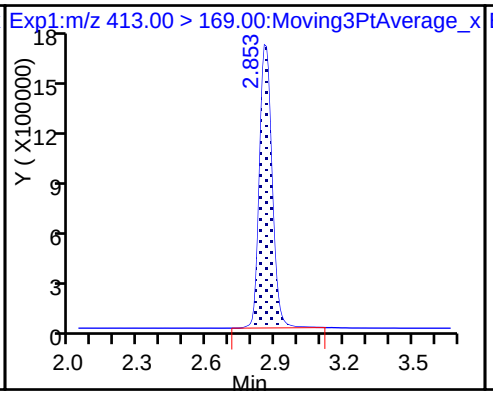
* 6 13C2-PFOA



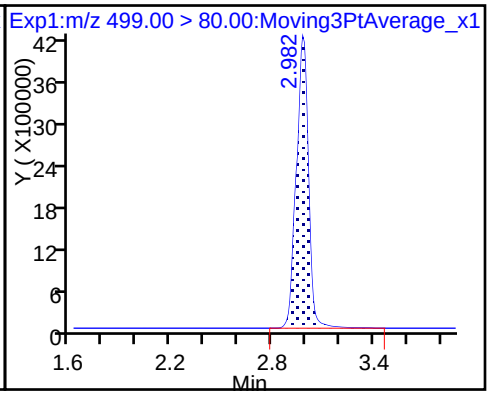
5 Perfluorooctanoic acid



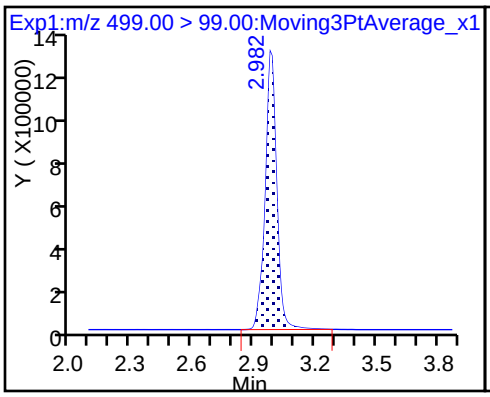
5 Perfluorooctanoic acid



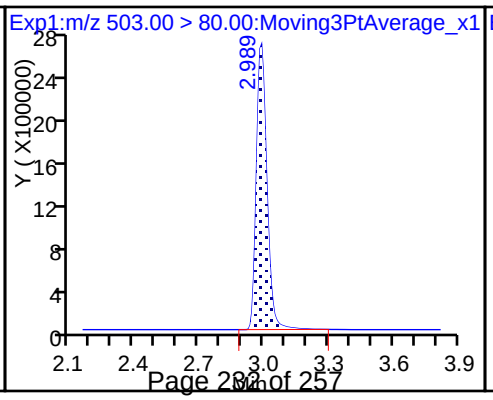
8 Perfluorooctane sulfonic acid



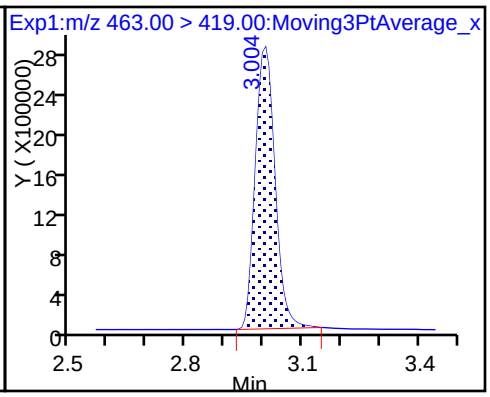
8 Perfluorooctane sulfonic acid



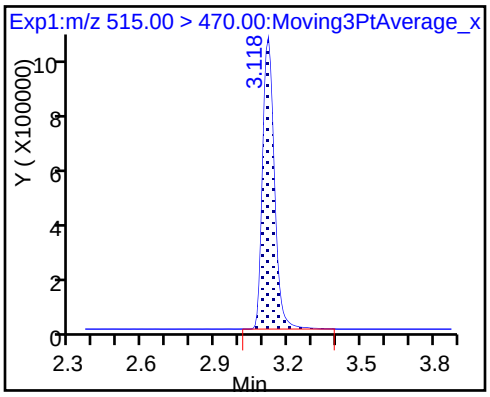
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.118
Y (X100000)
10
8
6
4
2
0
2.3
2.6
2.9
3.2
3.5
3.8
Min

Report Date: 20-Jun-2017 14:56:15 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_030.d				
Lims ID:	LCS 320-169392/2-A				
Client ID:					
Sample Type:	LCS				
Inject. Date:	19-Jun-2017 20:50:42	ALS Bottle#:	24	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcs 320-169392/2-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:15:08		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.70	87.04
$ 10 13C2 PFDA	10.0	8.44	84.36

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-28765-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 320-169392/3-A

Matrix: Water | Lab File ID: 2017.06.19_537B_031.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 06/15/2017 09:42

Sample wt/vol: 250(mL) | Date Analyzed: 06/19/2017 20:55

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.: 169966 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	288		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	143		20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	127		24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	233		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	73.3		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	626		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_031.d
Lims ID: LCSD 320-169392/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 19-Jun-2017 20:55:26 ALS Bottle#: 25 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-169392/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 20-Jun-2017 14:55:58 Calib Date: 19-Jun-2017 18:04:42
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d

Column 1 : Det: EXP1
Process Host: XAWRK019

First Level Reviewer: barnettj Date: 20-Jun-2017 14:31:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.177	2.183	-0.006	1.000	41009198	156.6		1982	
298.90 > 99.00	2.177	2.183	-0.006	1.000	33637758		1.22(0.00-0.00)	1955	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.382	2.381	0.001	1.000	3892076	9.57		2903	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.618	2.625	-0.007	1.000	20592778	58.2		4504	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.625	2.630	-0.005	1.000	6056031	18.3		868	
* 6 13C2-PFOA									
415.00 > 370.00	2.853	2.859	-0.006		3917765	10.0		4675	
5 Perfluorooctanoic acid									
413.00 > 369.00	2.853	2.859	-0.006	1.000	12292306	35.8		1868	
413.00 > 169.00	2.860	2.859	0.001	1.003	7086960		1.73(0.00-0.00)	6384	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.982	2.989	-0.007	1.000	22145606	72.0		18774	
499.00 > 99.00	2.982	2.989	-0.007	1.000	5197428		4.26(0.00-0.00)	9584	
* 7 13C4 PFOS									
503.00 > 80.00	2.982	2.991	-0.009		8688818	28.7		19452	
9 Perfluorononanoic acid									
463.00 > 419.00	2.997	3.003	-0.006	1.000	10577214	31.6		2493	
$ 10 13C2 PFDA									
515.00 > 470.00	3.111	3.123	-0.012	1.000	3572029	9.48		12869	

Report Date: 20-Jun-2017 14:56:16 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_031.d

Injection Date: 19-Jun-2017 20:55:26 Instrument ID: A8_N

Lims ID: LCSD 320-169392/3-A

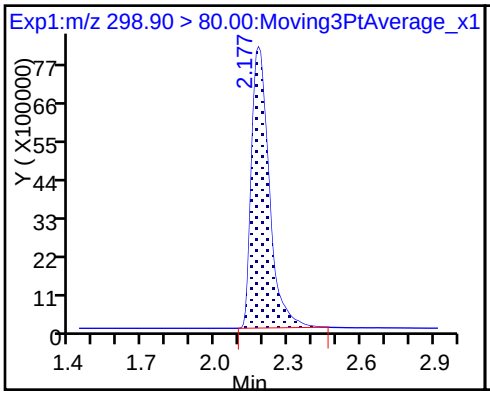
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 31

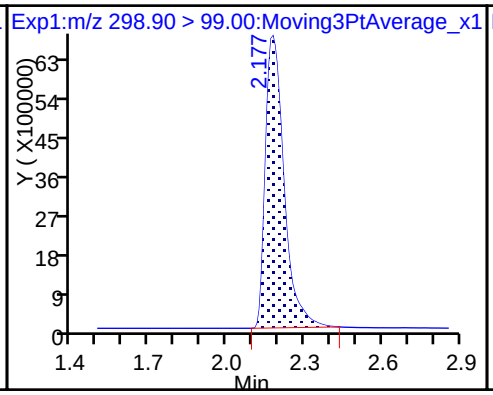
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

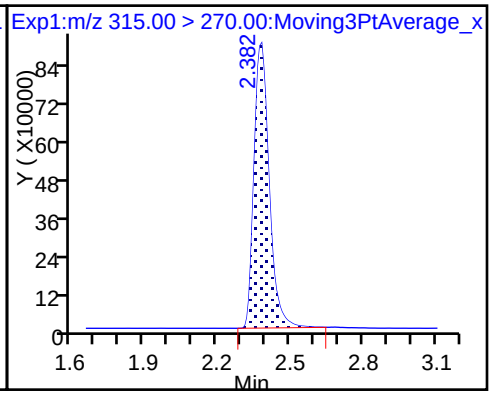
1 Perfluorobutanesulfonic acid



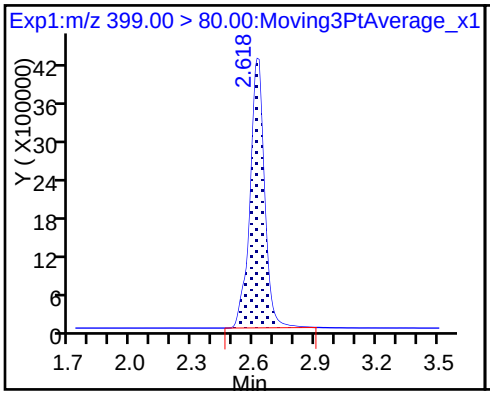
1 Perfluorobutanesulfonic acid



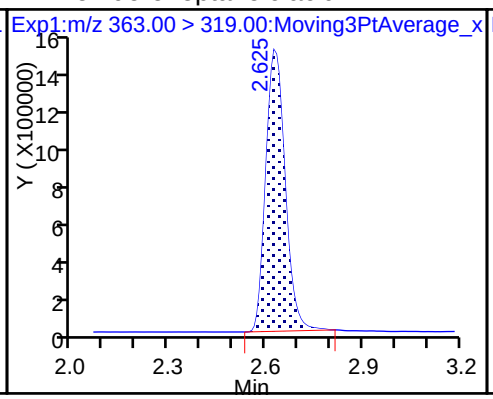
$ 2 13C2 PFHxA



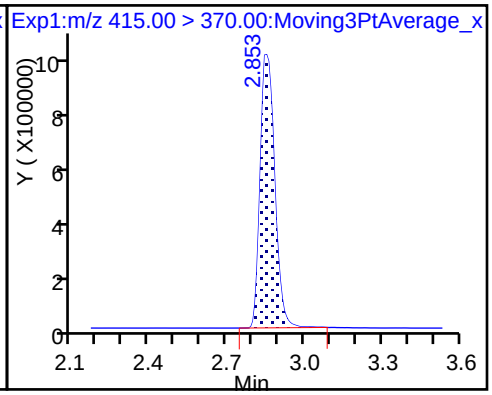
3 Perfluorohexanesulfonic acid



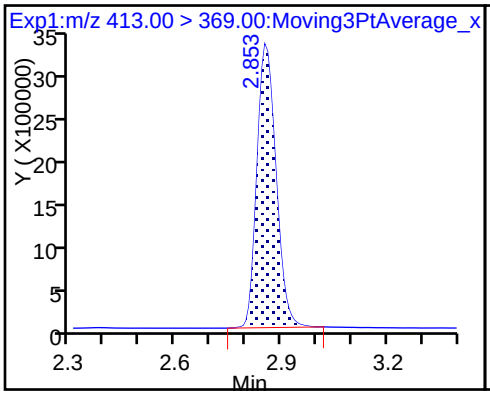
4 Perfluoroheptanoic acid



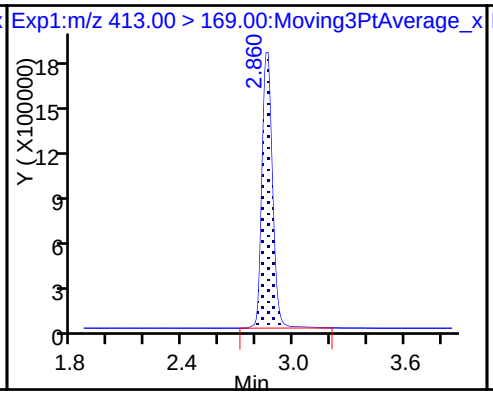
* 6 13C2-PFOA



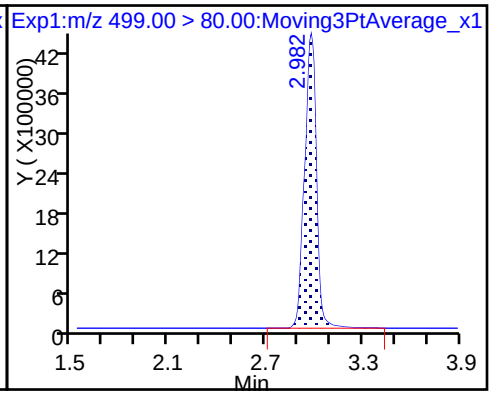
5 Perfluorooctanoic acid



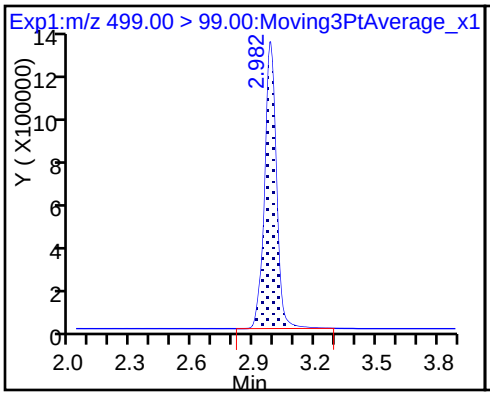
5 Perfluorooctanoic acid



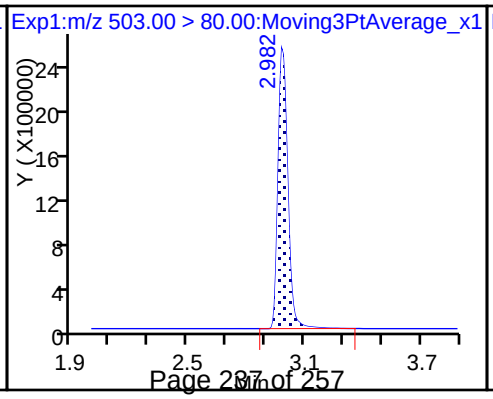
8 Perfluorooctane sulfonic acid



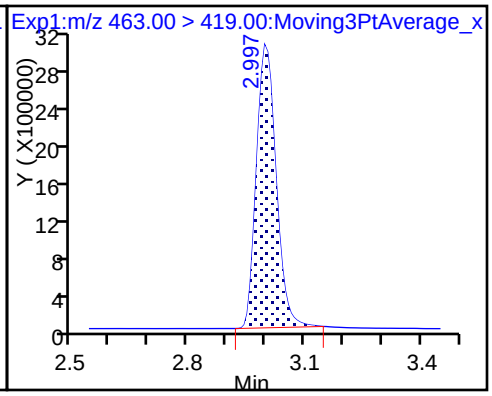
8 Perfluorooctane sulfonic acid



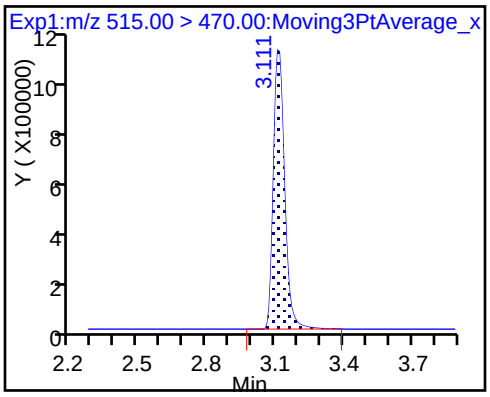
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
3.111
Y (X100000)
12
10
8
6
4
2
0
2.2
2.5
2.8
3.1
3.4
3.7
Min

Report Date: 20-Jun-2017 14:56:16 Chrom Revision: 2.2 15-Jun-2017 15:51:40

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\2017.06.19_537B_031.d				
Lims ID:	LCSD 320-169392/3-A				
Client ID:					
Sample Type:	LCSD				
Inject. Date:	19-Jun-2017 20:55:26	ALS Bottle#:	25	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	lcsd 320-169392/3-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	20-Jun-2017 14:55:58	Calib Date:	19-Jun-2017 18:04:42		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170619-44448.b\2017.06.19_537A_ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK019				
First Level Reviewer: barnettj		Date:	20-Jun-2017 14:31:12		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	9.57	95.74
$ 10 13C2 PFDA	10.0	9.48	94.75

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Instrument ID: A8_N Start Date: 06/19/2017 17:40

Analysis Batch Number: 169955 End Date: 06/19/2017 18:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-169955/4		06/19/2017 17:40	1	2017.06.19_537A ICAL 004.d	GeminiC18 3x100 3(mm)
IC 320-169955/5		06/19/2017 17:45	1	2017.06.19_537A ICAL 005.d	GeminiC18 3x100 3(mm)
IC 320-169955/6		06/19/2017 17:50	1	2017.06.19_537A ICAL 006.d	GeminiC18 3x100 3(mm)
IC 320-169955/7 ICISAV		06/19/2017 17:55	1	2017.06.19_537A ICAL 007.d	GeminiC18 3x100 3(mm)
IC 320-169955/8		06/19/2017 17:59	1	2017.06.19_537A ICAL 008.d	GeminiC18 3x100 3(mm)
IC 320-169955/9		06/19/2017 18:04	1	2017.06.19_537A ICAL 009.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 18:09	1		GeminiC18 3x100 3(mm)
CCVL 320-169955/11		06/19/2017 18:14	1	2017.06.19_537A ICAL 011.d	GeminiC18 3x100 3(mm)
ICV 320-169955/13		06/19/2017 18:23	1	2017.06.19_537A ICAL 013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Instrument ID: A8_N Start Date: 06/19/2017 20:26

Analysis Batch Number: 169966 End Date: 06/19/2017 21:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-169966/25 CCVIS		06/19/2017 20:26	1	2017.06.19_537B_025.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:31	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:36	1		GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 20:41	1		GeminiC18 3x100 3(mm)
MB 320-169392/1-A		06/19/2017 20:45	1	2017.06.19_537B_029.d	GeminiC18 3x100 3(mm)
LCS 320-169392/2-A		06/19/2017 20:50	1	2017.06.19_537B_030.d	GeminiC18 3x100 3(mm)
LCSD 320-169392/3-A		06/19/2017 20:55	1	2017.06.19_537B_031.d	GeminiC18 3x100 3(mm)
320-28765-1		06/19/2017 21:00	1	2017.06.19_537B_032.d	GeminiC18 3x100 3(mm)
320-28765-2		06/19/2017 21:04	1	2017.06.19_537B_033.d	GeminiC18 3x100 3(mm)
320-28765-3		06/19/2017 21:09	1	2017.06.19_537B_034.d	GeminiC18 3x100 3(mm)
320-28765-4		06/19/2017 21:14	1	2017.06.19_537B_035.d	GeminiC18 3x100 3(mm)
320-28765-5		06/19/2017 21:19	1	2017.06.19_537B_036.d	GeminiC18 3x100 3(mm)
CCV 320-169966/37 CCVIS		06/19/2017 21:23	1	2017.06.19_537B_037.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Instrument ID: A8_N Start Date: 06/19/2017 21:23

Analysis Batch Number: 169968 End Date: 06/19/2017 22:01

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-169968/37 CCVIS		06/19/2017 21:23	1	2017.06.19_537B_037.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/19/2017 21:28	1		GeminiC18 3x100 3(mm)
320-28765-6		06/19/2017 21:33	1	2017.06.19_537B_039.d	GeminiC18 3x100 3(mm)
320-28765-7		06/19/2017 21:38	1	2017.06.19_537B_040.d	GeminiC18 3x100 3(mm)
320-28765-8		06/19/2017 21:42	1	2017.06.19_537B_041.d	GeminiC18 3x100 3(mm)
320-28765-9		06/19/2017 21:47	1	2017.06.19_537B_042.d	GeminiC18 3x100 3(mm)
320-28765-10		06/19/2017 21:52	1	2017.06.19_537B_043.d	GeminiC18 3x100 3(mm)
320-28765-11		06/19/2017 21:57	1	2017.06.19_537B_044.d	GeminiC18 3x100 3(mm)
CCV 320-169968/45 CCVIS		06/19/2017 22:01	1	2017.06.19_537B_045.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Batch Number: 169392 Batch Start Date: 06/15/17 09:42 Batch Analyst: Sharifi, Nooshin

Batch Method: 537 Batch End Date: 06/16/17 21:58

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-HSP 00018
MB 320-169392/1		537, 537				250 mL	1.0 mL	7 SU	
LCS 320-169392/2		537, 537				250 mL	1.0 mL	7 SU	100 uL
LCSD 320-169392/3		537, 537				250 mL	1.0 mL	7 SU	100 uL
320-28765-A-1	NAWC-060117-RW-29	537, 537	T	288.17 g	27.46 g	260.7 mL	1.0 mL	7 SU	
320-28765-A-2	NAWC-060117-FRB-29	537, 537	T	292.52 g	27.02 g	265.5 mL	1.0 mL	7 SU	
320-28765-A-3	NAWC-060117-RW-154	537, 537	T	292.81 g	28.41 g	264.4 mL	1.0 mL	7 SU	
320-28765-A-4	NAWC-060117-FRB-154	537, 537	T	283.66 g	26.86 g	256.8 mL	1.0 mL	7 SU	
320-28765-A-5	NAWC-060117-RW-269	537, 537	T	291.49 g	27.48 g	264 mL	1.0 mL	7 SU	
320-28765-A-6	NAWC-060117-FRB-269	537, 537	T	292.45 g	26.97 g	265.5 mL	1.0 mL	7 SU	
320-28765-A-7	NAWC-060117-RW-38	537, 537	T	293.30 g	27.02 g	266.3 mL	1.0 mL	7 SU	
320-28765-A-8	NAWC-060117-FRB-38	537, 537	T	287.51 g	26.89 g	260.6 mL	1.0 mL	7 SU	
320-28765-A-9	NAWC-060117-RW-39	537, 537	T	290.18 g	27.58 g	262.6 mL	1.0 mL	7 SU	
320-28765-A-10	NAWC-060117-FRB-39	537, 537	T	291.59 g	26.99 g	264.6 mL	1.0 mL	7 SU	
320-28765-A-11	NAWC-060117-DUP01	537, 537	T	289.47 g	27.30 g	262.2 mL	1.0 mL	7 SU	

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00041	LC537-SU 00038	AnalysisComment			
MB 320-169392/1		537, 537		100 uL	100 uL	CH ND			
LCS 320-169392/2		537, 537		100 uL	100 uL	CH ND			
LCSD 320-169392/3		537, 537		100 uL	100 uL	CH ND			
320-28765-A-1	NAWC-060117-RW-29	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-2	NAWC-060117-FRB-29	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-3	NAWC-060117-RW-154	537, 537	T	100 uL	100 uL	CH ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-28765-1

SDG No.:

Batch Number: 169392 Batch Start Date: 06/15/17 09:42 Batch Analyst: Sharifi, Nooshin

Batch Method: 537 Batch End Date: 06/16/17 21:58

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-IS 00041	LC537-SU 00038	AnalysisComment			
320-28765-A-4	NAWC-060117-FRB-154	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-5	NAWC-060117-RW-269	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-6	NAWC-060117-FRB-269	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-7	NAWC-060117-RW-38	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-8	NAWC-060117-FRB-38	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-9	NAWC-060117-RW-39	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-10	NAWC-060117-FRB-39	537, 537	T	100 uL	100 uL	CH ND			
320-28765-A-11	NAWC-060117-DUP01	537, 537	T	100 uL	100 uL	CH ND			

Batch Notes	
Batch Comment	IS:924420
Manifold ID	1
Methanol ID	952645
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - TA Reagent Drop	NSH
Analyst ID - TA Reagent Drop Witness	HJA
SPE Cartridge ID	6346595-04
Trizma ID	SLBR4303V
Reagent Water ID	6-9-17

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 CCV/Data Review Checklist

A8

Job No: 28765 Instrument ID & Date: 6-20-17 ICAL Batch: 169955
Extraction Batch: 169392 Worklist #: 44449 TALS Batch: 169966, 169968

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

1st Level Reviewer / Date: JRB 6-20-17 2nd Level Reviewer / Date: [signature] 6/21/17

NCM # and Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 6-19-17 Worklist#: 44448

ICAL Batch: 169955, 169956 Calibration ID number: 31800, 31801

Review Items	— Level 1 — Yes	No	N/A	Level 2
Initial Calibration				
1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?	✓			✓
2. Responses increase with increasing concentration?	✓			✓
3. Fit used (circle): (Average) Linear (1/x²)Linear Quadratic (6 points minimum)				
4. Meets fit criteria? Intercept ≤ ½ RL RSD ≤ 30% for Average $R^2 \geq 0.990$ for Linear $R^2 \geq 0.990$ for Quadratic NOTE: "Force through Zero" must be used and weighted if needed	✓			✓
5. If quadratic fit used the curve does not "bend over".			✓	
6. Feed calibration points into the calculated curve. Are points ≤MRL within ±50% of true value? Are points >MRL within ±30% of true value?	✓			✓
7. Any carryover from the high calibration point must be ≤ 1/3 RL	✓			✓
8. Asymmetry check meets criteria for the first two eluting peaks?.(0.8 - 1.5).	✓			✓
9. Is the asymmetry check scanned and linked in TALS to the calibration point?	✓			✓
10. Is ICV (2nd source) ± 30% of true value?	✓			✓
11. Is ICV (2nd source) internal standards ±50% of average area of the ICAL?	✓			✓
12. ICal locked in Chrom and uploaded to TALS?	✓			
13. ICal locked in TALS and scanned?				✓

1st Level Reviewer / Date: JRB 6-20-17 2nd Level Reviewer / Date: MWolf 6/20/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 19JUN2017_537A Worklist Number: 44449
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170620-44449.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 169962	LC 537 CS ICAL Raw Batch: 169963
# 1 CCV L5	# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB	# 2 RB
# 3 320-28973-A-5-A	# 3 320-28973-A-5-A	
# 4 MB 320-169193/1-A	# 4 MB 320-169193/1-A	# 4 MB 320-169193/1-A
# 5 LCS 320-169193/2-A	# 5 LCS 320-169193/2-A	# 5 LCS 320-169193/2-A
# 6 320-29024-A-1-A		# 6 320-29024-A-1-A
# 7 320-29024-A-2-A		# 7 320-29024-A-2-A
# 8 320-29024-A-3-A		# 8 320-29024-A-3-A
# 9 320-29024-A-4-A		# 9 320-29024-A-4-A
#10 320-29024-A-4-B MS		#10 320-29024-A-4-B MS
#11 320-29024-A-4-C MSD		#11 320-29024-A-4-C MSD
#12 320-29024-A-5-A		#12 320-29024-A-5-A
#13 CCV L3	#13 CCV L3	#13 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 169964	LC 537 CS ICAL Raw Batch: 169965
#13 CCV L3	#13 CCV L3	#13 CCV L3
#14 RB	#14 RB	#14 RB
#15 320-29024-A-6-A		#15 320-29024-A-6-A
#16 320-29024-A-7-A		#16 320-29024-A-7-A
#17 320-28708-A-1-A	#17 320-28708-A-1-A	
#18 320-28708-A-2-A	#18 320-28708-A-2-A	
#19 320-28708-A-3-A	#19 320-28708-A-3-A	
#20 320-28708-A-3-B MS	#20 320-28708-A-3-B MS	
#21 320-28708-A-3-C MSD	#21 320-28708-A-3-C MSD	
#22 320-28708-A-4-A	#22 320-28708-A-4-A	
#23 320-28708-A-5-A	#23 320-28708-A-5-A	
#24 320-28708-A-6-A	#24 320-28708-A-6-A	
#25 CCV L5	#25 CCV L5	#25 CCV L5

QC Batch: 3	LC 537 ICAL Raw Batch: 169966	LC 537 CS ICAL Raw Batch: 169967
#25 CCV L5	#25 CCV L5	#25 CCV L5
#26 RB	#26 RB	#26 RB
#27 320-28708-A-7-A	#27 320-28708-A-7-A	
#28 320-28708-A-8-A	#28 320-28708-A-8-A	
#29 MB 320-169392/1-A	#29 MB 320-169392/1-A	
#30 LCS 320-169392/2-A	#30 LCS 320-169392/2-A	
#31 LCSD 320-169392/3-A	#31 LCSD 320-169392/3-A	
#32 320-28765-A-1-A	#32 320-28765-A-1-A	
#33 320-28765-A-2-A	#33 320-28765-A-2-A	
#34 320-28765-A-3-A	#34 320-28765-A-3-A	
#35 320-28765-A-4-A	#35 320-28765-A-4-A	
#36 320-28765-A-5-A	#36 320-28765-A-5-A	
#37 CCV L3	#37 CCV L3	

QC Batch: 4	LC 537 ICAL Raw Batch: 169968
#37 CCV L3	#37 CCV L3
#38 RB	#38 RB

QC Batch: 4	LC 537 ICAL Raw Batch: 169968
#39 320-28765-A-6-A	#39 320-28765-A-6-A
#40 320-28765-A-7-A	#40 320-28765-A-7-A
#41 320-28765-A-8-A	#41 320-28765-A-8-A
#42 320-28765-A-9-A	#42 320-28765-A-9-A
#43 320-28765-A-10-A	#43 320-28765-A-10-A
#44 320-28765-A-11-A	#44 320-28765-A-11-A
#45 CCV L5	#45 CCV L5

QC Batch: 5	LC 537 ICAL Raw Batch: 169969
#45 CCV L5	#45 CCV L5
#46 RB	#46 RB
#47 MB 320-169578/1-A	#47 MB 320-169578/1-A
#48 LLCS 320-169578/2-A	#48 LLCS 320-169578/2-A
#49 LLCSD 320-169578/3-A	#49 LLCSD 320-169578/3-A
#50 320-28985-A-11-A	#50 320-28985-A-11-A
#51 320-28985-A-11-C LMS	#51 320-28985-A-11-C LMS
#52 320-28985-A-12-A	#52 320-28985-A-12-A
#53 320-28985-A-21-A	#53 320-28985-A-21-A
#54 320-28985-A-22-A	#54 320-28985-A-22-A
#55 320-28985-A-24-A	#55 320-28985-A-24-A
#56 320-28985-A-25-A	#56 320-28985-A-25-A
#57 CCV L3	#57 CCV L3
#58 RB	#58 RB

17

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169392
Analyst: Sharifi, Nooshin
Batch Open: 6/15/2017 9:42:00AM
Method Code: 320-537_Prep-320
Batch End: 06/16/17 21:58

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-169392/1 N/A	N/A		250 mL 1.0 mL	7			N/A	N/A	N/A	CH ND	MB 320-169392/1-A
2	LCS-320-169392/2 N/A	N/A		250 mL 1.0 mL	7			N/A	N/A	N/A	CH ND	LCS 320-169392/2-A
3	LCSD-320-169392/3 N/A	N/A		250 mL 1.0 mL	7			N/A	N/A	N/A	CH ND	LCSD 320-169392/3-A
	320-28765-A-1 (537_DOD5)	N/A (320-28765-1)	288.17 g 27.46 g	260.7 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-1-A
	320-28765-A-2 (537_DOD5)	N/A (320-28765-1)	292.52 g 27.02 g	265.5 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-2-A
6	320-28765-A-3 (537_DOD5)	N/A (320-28765-1)	292.81 g 28.41 g	264.4 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-3-A
7	320-28765-A-4 (537_DOD5)	N/A (320-28765-1)	283.66 g 26.86 g	256.8 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-4-A
8	320-28765-A-5 (537_DOD5)	N/A (320-28765-1)	291.49 g 27.48 g	264 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-5-A
9	320-28765-A-6 (537_DOD5)	N/A (320-28765-1)	292.45 g 26.97 g	265.5 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-6-A
10	320-28765-A-7 (537_DOD5)	N/A (320-28765-1)	293.30 g 27.02 g	266.3 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-7-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169392 Analyst: Sharifi, Nooshin Batch Open: 6/15/2017 9:42:00AM

Method Code: 320-537_Prep-320 Batch End:

11	320-28765-A-8 (537_DOD5)	N/A (320-28765-1)	287.51 g 26.89 g	260.6 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-8-A
12	320-28765-A-9 (537_DOD5)	N/A (320-28765-1)	290.18 g 27.58 g	262.6 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-9-A
13	320-28765-A-10 (537_DOD5)	N/A (320-28765-1)	291.59 g 26.99 g	264.6 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-10-A
14	320-28765-A-11 (537_DOD5)	N/A (320-28765-1)	289.47 g 27.30 g	262.2 mL 1.0 mL	7			6/8/17	16_Days	4	CH ND	320-28765-A-11-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169392 Analyst: Sharifi, Nooshin Batch Open: 6/15/2017 9:42:00AM

Method Code: 320-537_Prep-320 Batch End:

Batch Notes

Manifold ID	1
Trizma ID	SLBR4303V
SPE Cartridge ID	6346595-04
Methanol ID	952645
Reagent Water ID	6-9-17
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	NSH
Analyst ID - TA Reagent Drop Witness	HJA
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	HJA
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Batch Comment	IS: 924420

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169392 Analyst: Sharifi, Nooshin Batch Open: 6/15/2017 9:42:00AM

Method Code: 320-537_Prep-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-169392/1	LC537-SU_00038	100 uL	1.0 mL	NSH 6/15/17	HJA 6-15-17
LCS 320-169392/2	LC537-HSP_00018	100 uL	1.0 mL		
LCS 320-169392/2	LC537-SU_00038	100 uL	1.0 mL		
LCSD 320-169392/3	LC537-HSP_00018	100 uL	1.0 mL		
LCSD 320-169392/3	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-1	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-2	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-3	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-4	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-5	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-6	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-7	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-8	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-9	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-10	LC537-SU_00038	100 uL	1.0 mL		
320-28765-A-11	LC537-SU_00038	100 uL	1.0 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-169392 Analyst: Sharifi, Nooshin Batch Open: 6/15/2017 9:42:00AM

Method Code: 320-537_Prep-320 Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 169392 Test: 537 - DOD5

Earliest Holding Time: 6/15/17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted		✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: TN Date: 06/16/17

2nd Level Reviewer: [signature] Date: 6/16/17

Comments:

Shipping and Receiving Documents

TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605-1500
phone 916.373.5600 fax 303.467.7248

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☑ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Andy Frebowitz	Site Contact: Mary Kay Bond	Date: 6/1/2017	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			Samplers: Andy Frebowitz, Mary Kay Bond
King of Prussia, PA 19406	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(610) 382-1174 Phone	TAT if different from Below 21 days			Walk-in Client:
(610) 491-9645 FAX	☐ 2 weeks			Lab Sampling:
Project Name: Warminster	☐ 1 week			
Site: Warminster	☐ 2 days			Job / SDG No.:
P O # 1132358 (through EarthToxics)	☐ 1 day			

320-28765 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	EPA 537 UCMR3	Sample Specific Notes:
NAWC-060117-RW-29	6/1/17	0810	G	DW		N		Y	
NAWC-060117-FRB-29	6/1/17	0805	G	BLK		N		Y	Field Reagent Blank
NAWC-060117-RW-154	6/1/17	0840	G	DW		N		Y	
NAWC-060117-FRB-154	6/1/17	0835	G	BLK		N		Y	Field Reagent Blank
NAWC-060117-RW-269	6/1/17	0925	G	DW		N		Y	
NAWC-060117-FRB-269	6/1/17	0920	G	BLK		N		Y	Field Reagent Blank
NAWC-060117-RW-38	6/1/17	1000	G	DW		N		Y	
NAWC-060117-FRB-38	6/1/17	0955	G	BLK		N		Y	Field Reagent Blank
NAWC-060117-RW-39	6/1/17	0950	G	DW		N		Y	
NAWC-060117-FRB-39	6/1/17	0945	G	BLK		N		Y	Field Reagent Blank
NAWC-060117-DUP01	6/1/17	0700	G	DW		N		Y	Duplicate
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 Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: FedEx Air Bill 8109 8153 9428

Fed Ex: 6612 1992 5798

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: 2.4 Corr'd: —		Therm ID No.: AK-1
Relinquished by: Mary Kay Bond	Company: TT	Date/Time: 6/1/17	Received by:	Company: TAWS	Date/Time: 6/2/17 945
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.10, dated 11/7/2016

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-28765-1

Login Number: 28765
List Number: 1
Creator: Turpen, Troy

List Source: TestAmerica Sacramento

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

"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","20","ng/L","J","6.5","DL","","TRG","","","38","LOQ","YES","-99","","260.7","1.0","15",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","18","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","260.7","1.0","7.7",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","6.9","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","260.7","1.0","12",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U M","15","DL","","TRG","","","86","LOQ","YES","-99","","260.7","1.0","35",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.6","ng/L","J","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","260.7","1.0","3.8",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","260.7","1.0","19",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","STL00993","13C2 PFHxA","33","ng/L","","-99","DL","","SURR","85","","-99","LOQ","YES","38.4","","260.7","1.0","0",""
"NAWC-060117-RW-29","537","RES","320-28765-1","TALSAC","STL00996","13C2 PFDA","36","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","38.4","","260.7","1.0","0",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.4","DL","","TRG","","","38","LOQ","YES","-99","","264.6","1.0","15",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.6","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES","-99","","264.6","1.0","7.6",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES","-99","","264.6","1.0","11",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","264.6","1.0","34",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","264.6","1.0","3.8",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","264.6","1.0","19",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","STL00993","13C2 PFHxA","34","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","37.8","","264.6","1.0","0",""
"NAWC-060117-FRB-39","537","RES","320-28765-10","TALSAC","STL00996","13C2 PFDA","34","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","37.8","","264.6","1.0","0",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","24","ng/L","J","6.5","DL","","TRG","","","38","LOQ","YES","-99","","262.2","1.0","15",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","23","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","262.2","1.0","7.6",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","13","ng/L","J","5.2","DL","","TRG","","","29","LOQ","YES","-99","","262.2","1.0","11",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","34","ng/L","U M","15","DL","","TRG","","","86","LOQ","YES","-99","","262.2","1.0","34",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","6.5","ng/L","J","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","262.2","1.0","3.8",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","262.2","1.0","19",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","STL00993","13C2 PFHxA","34","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","38.1","","262.2","1.0","0",""
"NAWC-060117-DUP01","537","RES","320-28765-11","TALSAC","STL00996","13C2 PFDA","36","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","38.1","","262.2","1.0","0",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.4","DL","","TRG","","","38","LOQ","YES","-99","","265.5","1.0","15",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.5","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES","-99","","265.5","1.0","7.5",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES","-99","","265.5","1.0","11",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","265.5","1.0","34",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","265.5","1.0","3.8",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","265.5","1.0","19",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","37.7","","265.5","1.0","0",""
"NAWC-060117-FRB-29","537","RES","320-28765-2","TALSAC","STL00996","13C2
PFDA","34","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","37.7","","265.5","1.0","0",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","6.4","DL","","TRG","","","38","LOQ","YES","-99","","264.4","1.0","15",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","22","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","264.4","1.0","7.6",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES","-99","","264.4","1.0","11",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U M","15","DL","","TRG","","","85","LOQ","YES","-99","","264.4","1.0","34",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.7","ng/L","J","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","264.4","1.0","3.8",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","264.4","1.0","19",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","STL00993","13C2
PFHxA","31","ng/L","","-99","DL","","SURR","83","","-99","LOQ","YES","37.8","","264.4","1.0","0",""
"NAWC-060117-RW-154","537","RES","320-28765-3","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","37.8","","264.4","1.0","0",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","16","ng/L","U","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.8","1.0","16",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.8","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","256.8","1.0","7.8",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.8","1.0","12",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.8","1.0","35",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.9","ng/L","U","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","256.8","1.0","3.9",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.8","1.0","19",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","38.9","","256.8","1.0","0",""
"NAWC-060117-FRB-154","537","RES","320-28765-4","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","38.9","","256.8","1.0","0",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","24","ng/L","J","6.4","DL","","TRG","","","38","LOQ","YES","-99","","264","1.0","15",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23","ng/L","","2.7","DL","","TRG","","","19","LOQ","YES","-99","","264","1.0","7.6",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","13","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","264","1.0","11",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U M","15","DL","","TRG","","","85","LOQ","YES","-99","","264","1.0","34",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","6.5","ng/L","J","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","264","1.0","3.8",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","264","1.0","19",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","37.9","","264","1.0","0",""
"NAWC-060117-RW-269","537","RES","320-28765-5","TALSAC","STL00996","13C2
PFDA","34","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","37.9","","264","1.0","0",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.4","DL","","TRG","","","38","LOQ","YES","-99","","265.5","1.0","15",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.5","ng/L","U","2.6","DL","","TRG","","","19","LOQ","YES","-99","","265.5","1.0","7.5",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES","-99","","265.5","1.0","11",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES","-99","","265.5","1.0","34",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","265.5","1.0","3.8",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","265.5","1.0","19",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","STL00993","13C2
PFHxA","37","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","37.7","","265.5","1.0","0",""
"NAWC-060117-FRB-269","537","RES","320-28765-6","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","98","","-99","LOQ","YES","37.7","","265.5","1.0","0",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","24","ng/L","J M","6.4","DL","","TRG","","","38","LOQ","YES","-99","","266.3","1.0","15",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","21","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","266.3","1.0","7.5",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","7.4","ng/L","J","5.2","DL","","TRG","","","28","LOQ","YES","-99","","266.3","1.0","11",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U M","15","DL","","TRG","","","84","LOQ","YES","-99","","266.3","1.0","34",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.0","ng/L","J","1.8","DL","","TRG","","","9.4","LOQ","YES","-99","","266.3","1.0","3.8",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES","-99","","266.3","1.0","19",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","STL00993","13C2
PFHxA","29","ng/L","","-99","DL","","SURR","76","","-99","LOQ","YES","37.6","","266.3","1.0","0",""
"NAWC-060117-RW-38","537","RES","320-28765-7","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","37.6","","266.3","1.0","0",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.5","DL","","TRG","","","38","LOQ","YES","-99","","260.6","1.0","15",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.7","ng/L","U","2.7","DL","","TRG","","","19","LOQ","YES","-99","","260.6","1.0","7.7",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","12","ng/L","U","5.3","DL","","TRG","","","29","LOQ","YES","-99","","260.6","1.0","12",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","35","ng/L","U","15","DL","","TRG","","","86","LOQ","YES","-99","","260.6","1.0","35",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.6","LOQ","YES","-99","","260.6","1.0","3.8",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.7","DL","","TRG","","","23","LOQ","YES","-99","","260.6","1.0","19",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","38.4","","260.6","1.0","0",""
"NAWC-060117-FRB-38","537","RES","320-28765-8","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","38.4","","260.6","1.0","0",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS)","15","ng/L","J","6.5","DL","","TRG","","","38","LOQ","YES","-99","","262.6","1.0","15",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","12","ng/L","J","2.7","DL","","TRG","","","19","LOQ","YES","-99","","262.6","1.0","7.6",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","29","LOQ","YES","-99","","262.6","1.0","11",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U M","15","DL","","TRG","","","86","LOQ","YES","-99","","262.6","1.0","34",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.3","ng/L","J","1.8","DL","","TRG","","","9.5","LOQ","YES","-99","","262.6","1.0","3.8",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","","TRG","","","23","LOQ","YES","-99","","262.6","1.0","19",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","STL00993","13C2
PFHxA","33","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","38.1","","262.6","1.0","0",""
"NAWC-060117-RW-39","537","RES","320-28765-9","TALSAC","STL00996","13C2
PFDA","35","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","38.1","","262.6","1.0","0",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","254","ng/L","","6.8","DL","","SPK","84","","40","LOQ","YES","300","","250","1.0","16",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","122","ng/L","","2.8","DL","","SPK","81","","20","LOQ","YES","150","","250","1.0","8.0",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","211","ng/L","","5.5","DL","","SPK","94","","30","LOQ","YES","225","","250","1.0","12",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","574","ng/L","","16","DL","","SPK","87","","90","LOQ","YES","663","","250","1.0","36",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","63.2","ng/L","","1.9","DL","","SPK","85","","10","LOQ","YES","74.3","","250","1.0","4.0",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","110","ng/L","","8.0","DL","","SPK","76","","24","LOQ","YES","144","","250","1.0","20",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","STL00993","13C2
PFHxA","34.8","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","40.0","","250","1.0","0",""
"LCS 320-169392/2-A","537","RES","LCS 320-169392/2-A","TALSAC","STL00996","13C2
PFDA","33.7","ng/L","","-99","DL","","SURR","84","","-99","LOQ","YES","40.0","","250","1.0","0",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","288","ng/L","","6.8","DL","","SPK","96","13","40","LOQ","YES","300","LCS 320-169392/2-
A","250","1.0","16",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","143","ng/L","","2.8","DL","","SPK","96","16","20","LOQ","YES","150","LCS 320-169392/2-
A","250","1.0","8.0",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","233","ng/L","","5.5","DL","","SPK","103","10","30","LOQ","YES","225","LCS 320-169392/2-
A","250","1.0","12",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","626","ng/L","","16","DL","","SPK","95","9","90","LOQ","YES","663","LCS 320-169392/2-
A","250","1.0","36",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","73.3","ng/L","","1.9","DL","","SPK","99","15","10","LOQ","YES","74.3","LCS 320-169392/2-
A","250","1.0","4.0",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","127","ng/L","","8.0","DL","","SPK","88","14","24","LOQ","YES","144","LCS 320-169392/2-
A","250","1.0","20",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","STL00993","13C2
PFHxA","38.3","ng/L","","-99","DL","","SURR","96","","-99","LOQ","YES","40.0","LCS 320-169392/2-
A","250","1.0","0",""
"LCSD 320-169392/3-A","537","RES","LCSD 320-169392/3-A","TALSAC","STL00996","13C2
PFDA","37.9","ng/L","","-99","DL","","SURR","95","","-99","LOQ","YES","40.0","LCS 320-169392/2-

A","250","1.0","0",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250","1.0","16",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.0","ng/L","U M","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250","1.0","8.0",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250","1.0","12",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.0","36",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250","1.0","4.0",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250","1.0","20",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","STL00993","13C2 PFHxA","37.4","ng/L","","-99","DL","","SURR","93","","-99","LOQ","YES","40.0","","250","1.0","0",""
"MB 320-169392/1-A","537","RES","MB 320-169392/1-A","TALSAC","STL00996","13C2 PFDA","36.5","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","40.0","","250","1.0","0",""
"Unknown","Unknown","NAWC-060117-RW-29","06/01/2017 08:10","AQ","320-28765-1","NM","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:00","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169966","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-FRB-39","06/01/2017 09:45","AQ","320-28765-10","FB","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:52","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169968","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-DUP01","06/01/2017 07:00","AQ","320-28765-11","FD","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:57","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169968","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-FRB-29","06/01/2017 08:05","AQ","320-28765-2","FB","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169966","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-RW-154","06/01/2017 08:40","AQ","320-28765-3","NM","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169966","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-FRB-154","06/01/2017 08:35","AQ","320-28765-4","FB","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169966","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-RW-269","06/01/2017 09:25","AQ","320-28765-5","NM","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:19","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169966","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-FRB-269","06/01/2017 09:20","AQ","320-28765-6","FB","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169968","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-RW-38","06/01/2017 10:00","AQ","320-28765-7","NM","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017 21:38","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-169968","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-FRB-38","06/01/2017 09:55","AQ","320-28765-

8","FB","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017
21:42","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-
169968","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","NAWC-060117-RW-39","06/01/2017 09:50","AQ","320-28765-
9","NM","","2.40","537","METHOD","RES","06/15/2017 09:42","06/19/2017
21:47","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-
169968","320-28765-1","06/02/2017 09:45","06/05/2017 12:15",""
"Unknown","Unknown","LCS 320-169392/2-A","","AQ","LCS 320-169392/2-
A","LCS","","-99","537","METHOD","RES","06/15/2017 09:42","06/19/2017
20:50","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-
169966","320-28765-1","06/15/2017 09:42","06/05/2017 12:15",""
"Unknown","Unknown","LCSD 320-169392/3-A","","AQ","LCSD 320-169392/3-
A","LCSD","","-99","537","METHOD","RES","06/15/2017 09:42","06/19/2017
20:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-
169966","320-28765-1","06/15/2017 09:42","06/05/2017 12:15",""
"Unknown","Unknown","MB 320-169392/1-A","","AQ","MB 320-169392/1-
A","MB","","-99","537","METHOD","RES","06/15/2017 09:42","06/19/2017
20:45","TALSAC","COA","WET","NA","1","NA","NA","","100","320-169392","320-169392","NA","320-
169966","320-28765-1","06/15/2017 09:42","06/05/2017 12:15",""

C:\All_Projects\112G08005\WE04\FS.DR.03\NAWC_201901.mxd MKB 1/24/2019

N

WARRINGTON

WARWICK

NORTHAMPTON

IVYLAND

WARMINSTER

HAGS

NASJRB
Willow Grove

HORSHAM

HATBORO

UPPER SOUTHAMPTON

UPPER MORELAND

LEGEND

- PFOA & PFOS BELOW DETECTION LIMITS
- SUM OF PFOA & PFOS CONCENTRATIONS AT OR BELOW 40 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS BETWEEN 40 PPT AND 70 PPT
- SUM OF PFOA & PFOS CONCENTRATIONS ABOVE 70 PPT
- PUBLIC WATER CONNECTION (SOME NOT BY NAVY)
- SAMPLING AREA
- FORMER NAWC WARMINSTER
- TOWNSHIP BOUNDARY

3,000 1,500 0 3,000 6,000
Feet

NAVFAC

PFC SAMPLE RESULTS MAP
FORMER NAWC WAMINSTER
MONTGOMERY COUNTY, PENNSYLVANIA

SCALE	AS NOTED
FILE	NAWC
REV	0
DATE	01/24/19
FIGURE NUMBER	FIGURE 1