NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG J29329-1

Naval Air Station Whidbey Island
Oak Harbor, Washington

June 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-29329-1
Client Project/Site: Whidbey Island

For:
CH2M Hill Constructors, Inc.
1100 NE Circle Blvd
Corvallis, Oregon 97330

Attn: Tiffany Hill

Authorized for release by:
6/29/2017 1:55:58 PM

Laura Turpen, Project Manager I
(916)374-4414
laura.turpen@testamericainc.com

Table of Contents

Definitions/Glossary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.

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 ID: 320-29329-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE
Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-29329-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 06/22/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.4 C.

Receipt Exceptions

Containers were received for the following sample: WI-AF-1FB56P-0617 (320-29329-4). The COC says this sample is for disposal only. Therefore no methods were logged in for this sample.

PFOA/PFOS

Samples WI-AF-1RW56-0617 (320-29329-1), WI-AF-1FB56-0617 (320-29329-2) and WI-AF-1RW56P-0617 (320-29329-3) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 06/26/2017 and analyzed on 06/28/2017.

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

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1RW56-0617 **Lab Sample ID: 320-29329-1**

No Detections.

Client Sample ID: WI-AF-1FB56-0617 **Lab Sample ID: 320-29329-2**

No Detections.

Client Sample ID: WI-AF-1RW56P-0617 **Lab Sample ID: 320-29329-3**

No Detections.

This Detection Summary does not include radiochemical test results.

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1RW56-0617
Date Collected: 06/21/17 11:05
Date Received: 06/22/17 09:30

Lab Sample ID: 320-29329-1
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.0068	ug/L		06/26/17 08:40	06/28/17 19:26	1
Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0028	ug/L		06/26/17 08:40	06/28/17 19:26	1
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.016	ug/L		06/26/17 08:40	06/28/17 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:26*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:26*	*1*

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1FB56-0617
Date Collected: 06/21/17 11:06
Date Received: 06/22/17 09:30

Lab Sample ID: 320-29329-2
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.015	U	0.039	0.0066	ug/L		06/26/17 08:40	06/28/17 19:40	1
Perfluorooctanoic acid (PFOA)	0.0077	U	0.019	0.0027	ug/L		06/26/17 08:40	06/28/17 19:40	1
Perfluorobutanesulfonic acid (PFBS)	0.035	U	0.087	0.016	ug/L		06/26/17 08:40	06/28/17 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:40*	*1*
13C2 PFDA	*96*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:40*	*1*

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1RW56P-0617
Date Collected: 06/21/17 11:10
Date Received: 06/22/17 09:30

Lab Sample ID: 320-29329-3
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.0067	ug/L		06/26/17 08:40	06/28/17 19:45	1
Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0028	ug/L		06/26/17 08:40	06/28/17 19:45	1
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.016	ug/L		06/26/17 08:40	06/28/17 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:45*	*1*
13C2 PFDA	*98*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:45*	*1*

Surrogate Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	3C2 PFHx (70-130)	3C2 PFDA (70-130)								
320-29329-1	WI-AF-1RW56-0617	79	92								
320-29329-1 MS	WI-AF-1RW56-0617	79	97								
320-29329-1 MSD	WI-AF-1RW56-0617	77	94								
320-29329-2	WI-AF-1FB56-0617	85	96								
320-29329-3	WI-AF-1RW56P-0617	78	98								
LCS 320-170888/2-A	Lab Control Sample	88	96								
MB 320-170888/1-A	Method Blank	84	92								

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-170888/1-A
Matrix: Water
Analysis Batch: 171496

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 170888

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.0068	ug/L		06/26/17 08:40	06/28/17 19:16	1
Perfluorooctanoic acid (PFOA)	0.0080	U	0.020	0.0028	ug/L		06/26/17 08:40	06/28/17 19:16	1
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.090	0.016	ug/L		06/26/17 08:40	06/28/17 19:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:16*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:16*	*1*

Lab Sample ID: LCS 320-170888/2-A
Matrix: Water
Analysis Batch: 171496

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 170888

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.149	M	ug/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	0.0799	0.0726		ug/L		91	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.353	0.349		ug/L		99	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*96*		*70 - 130*

Lab Sample ID: 320-29329-1 MS
Matrix: Water
Analysis Batch: 171496

Client Sample ID: WI-AF-1RW56-0617
Prep Type: Total/NA
Prep Batch: 170888

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.156	0.147	M	ug/L		94	70 - 130
Perfluorooctanoic acid (PFOA)	0.0079	U	0.0780	0.0694		ug/L		89	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.345	0.342		ug/L		99	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C2 PFHxA	*79*		*70 - 130*
13C2 PFDA	*97*		*70 - 130*

Lab Sample ID: 320-29329-1 MSD
Matrix: Water
Analysis Batch: 171496

Client Sample ID: WI-AF-1RW56-0617
Prep Type: Total/NA
Prep Batch: 170888

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.161	0.151	M	ug/L		94	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	0.0079	U	0.0806	0.0766		ug/L		95	70 - 130	10	30
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.356	0.346		ug/L		97	70 - 130	1	30

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

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

Lab Sample ID: 320-29329-1 MSD
Matrix: Water
Analysis Batch: 171496

Client Sample ID: WI-AF-1RW56-0617
Prep Type: Total/NA
Prep Batch: 170888

Surrogate	MSD %Recovery	MSD Qualifier	Limits
13C2 PFHxA	77		70 - 130
13C2 PFDA	94		70 - 130

QC Association Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

LCMS

Prep Batch: 170888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29329-1	WI-AF-1RW56-0617	Total/NA	Water	537	
320-29329-2	WI-AF-1FB56-0617	Total/NA	Water	537	
320-29329-3	WI-AF-1RW56P-0617	Total/NA	Water	537	
MB 320-170888/1-A	Method Blank	Total/NA	Water	537	
LCS 320-170888/2-A	Lab Control Sample	Total/NA	Water	537	
320-29329-1 MS	WI-AF-1RW56-0617	Total/NA	Water	537	
320-29329-1 MSD	WI-AF-1RW56-0617	Total/NA	Water	537	

Analysis Batch: 171496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29329-1	WI-AF-1RW56-0617	Total/NA	Water	537	170888
320-29329-2	WI-AF-1FB56-0617	Total/NA	Water	537	170888
320-29329-3	WI-AF-1RW56P-0617	Total/NA	Water	537	170888
MB 320-170888/1-A	Method Blank	Total/NA	Water	537	170888
LCS 320-170888/2-A	Lab Control Sample	Total/NA	Water	537	170888
320-29329-1 MS	WI-AF-1RW56-0617	Total/NA	Water	537	170888
320-29329-1 MSD	WI-AF-1RW56-0617	Total/NA	Water	537	170888

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1RW56-0617

Lab Sample ID: 320-29329-1

Date Collected: 06/21/17 11:05

Matrix: Water

Date Received: 06/22/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			251.6 mL	1.00 mL	170888	06/26/17 08:40	CCB	TAL SAC
Total/NA	Analysis	537		1			171496	06/28/17 19:26	JRB	TAL SAC

Client Sample ID: WI-AF-1FB56-0617

Lab Sample ID: 320-29329-2

Date Collected: 06/21/17 11:06

Matrix: Water

Date Received: 06/22/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			258.2 mL	1.00 mL	170888	06/26/17 08:40	CCB	TAL SAC
Total/NA	Analysis	537		1			171496	06/28/17 19:40	JRB	TAL SAC

Client Sample ID: WI-AF-1RW56P-0617

Lab Sample ID: 320-29329-3

Date Collected: 06/21/17 11:10

Matrix: Water

Date Received: 06/22/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			252.7 mL	1.00 mL	170888	06/26/17 08:40	CCB	TAL SAC
Total/NA	Analysis	537		1			171496	06/28/17 19:45	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-29-18
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

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

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

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: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-29329-1	WI-AF-1RW56-0617	Water	06/21/17 11:05	06/22/17 09:30
320-29329-2	WI-AF-1FB56-0617	Water	06/21/17 11:06	06/22/17 09:30
320-29329-3	WI-AF-1RW56P-0617	Water	06/21/17 11:10	06/22/17 09:30

TestAmerica Sacramento
880 Riverside Parkway

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Chain of Custody Record

198086

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Katie Tippin	Site Contact: Rachel Clennon	Date: 6/21/2017	COC No: 1
Company Name: Tiffany Hill/CH2M	Tel/Fax: 757-671-6258	Lab Contact: 978-387-8171	Carrier: Fed Ex	1 of 1 COCs
Address: 1100 NE Circle Blvd Ste 300	Analysis Turnaround Time			Sampler:
City/State/Zip: Corvallis, OR 97330	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 541-768-3109	TAT if different from Below 7day			Walk-in Client:
Fax: 541-908-3794	☐ 2 weeks			Lab Sampling:
Project Name: CTO-08	☐ 1 week			
Site: NAS Whidbey Island	☐ 2 days			Job / SDG No.:
P O # 1000671060F0-679580.06.FI.FS	☐ 1 day			

320-29329 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)	USEPA METHOD 537	Sample Specific Notes:
WI-AF-1RW56-0617	6/21/17	11:05	G	AQ	2	N	N	X	
WI-AF-1RW56-0617-MS	6/21/17	11:05	G	AQ	2	N	Y	X	
WI-AF-1RW56-0617-SD	6/21/17	11:05	G	AQ	2	N	Y	X	
WI-AF-1FB56-0617	6/21/17	11:06	G	AQ	2	N	N	X	
WI-AF-1RW56P-0617	6/21/17	11:10	G	AQ	2	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other Trizma

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☒ Disposal by Lab ☐ Archive for ______ Months

Special Instructions/QC Requirements & Comments:
Additional reagent blank labelled WI-AF-1FB56P-0617 → PLEASE DISPOSE

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: 1.4 Corr'd: —		Therm ID No.: AP-1
Relinquished by: [signature]	Company: CH2M	Date/Time: 6/21/2017 1500	Received by: [signature]	Company: TAus	Date/Time: 6/22/17 930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-29329-1

Login Number: 29329
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
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?	N/A	
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	

ANALYTICAL REPORT

Job Number: 320-29329-1

Job Description: Whidbey Island

For:
CH2M Hill Constructors, Inc.
1100 NE Circle Blvd
Corvallis, OR 97330

Attention: Tiffany Hill

Approved for release.
Laura Turpen
Project Manager I
6/29/2017 1:56 PM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
06/29/2017

Table of Contents

Table of Contents

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.

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)

CASE NARRATIVE
Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-29329-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 06/22/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.4 C.

Receipt Exceptions

Containers were received for the following sample: WI-AF-1FB56P-0617 (320-29329-4). The COC says this sample is for disposal only. Therefore no methods were logged in for this sample.

PFOA/PFOS

Samples WI-AF-1RW56-0617 (320-29329-1), WI-AF-1FB56-0617 (320-29329-2) and WI-AF-1RW56P-0617 (320-29329-3) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 06/26/2017 and analyzed on 06/28/2017.

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

Detection Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1RW56-0617 — Lab Sample ID: 320-29329-1

No Detections.

Client Sample ID: WI-AF-1FB56-0617 — Lab Sample ID: 320-29329-2

No Detections.

Client Sample ID: WI-AF-1RW56P-0617 — Lab Sample ID: 320-29329-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: WI-AF-1RW56-0617

Lab Sample ID: 320-29329-1

Date Collected: 06/21/17 11:05

Matrix: Water

Date Received: 06/22/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.0068	ug/L		06/26/17 08:40	06/28/17 19:26	1
Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0028	ug/L		06/26/17 08:40	06/28/17 19:26	1
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.016	ug/L		06/26/17 08:40	06/28/17 19:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*79*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:26*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:26*	*1*

Client Sample ID: WI-AF-1FB56-0617

Lab Sample ID: 320-29329-2

Date Collected: 06/21/17 11:06

Matrix: Water

Date Received: 06/22/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.015	U	0.039	0.0066	ug/L		06/26/17 08:40	06/28/17 19:40	1
Perfluorooctanoic acid (PFOA)	0.0077	U	0.019	0.0027	ug/L		06/26/17 08:40	06/28/17 19:40	1
Perfluorobutanesulfonic acid (PFBS)	0.035	U	0.087	0.016	ug/L		06/26/17 08:40	06/28/17 19:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*85*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:40*	*1*
13C2 PFDA	*96*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:40*	*1*

Client Sample ID: WI-AF-1RW56P-0617

Lab Sample ID: 320-29329-3

Date Collected: 06/21/17 11:10

Matrix: Water

Date Received: 06/22/17 09:30

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.0067	ug/L		06/26/17 08:40	06/28/17 19:45	1
Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0028	ug/L		06/26/17 08:40	06/28/17 19:45	1
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.016	ug/L		06/26/17 08:40	06/28/17 19:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*78*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:45*	*1*
13C2 PFDA	*98*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:45*	*1*

Default Detection Limits

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

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

Prep: 537

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.090	0.016	ug/L	537
Perfluorooctanesulfonic acid (PFOS)	0.040	0.0068	ug/L	537
Perfluorooctanoic acid (PFOA)	0.020	0.0028	ug/L	537

Surrogate Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

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)								
320-29329-1	WI-AF-1RW56-0617	79	92								
320-29329-1 MS	WI-AF-1RW56-0617	79	97								
320-29329-1 MSD	WI-AF-1RW56-0617	77	94								
320-29329-2	WI-AF-1FB56-0617	85	96								
320-29329-3	WI-AF-1RW56P-0617	78	98								
LCS 320-170888/2-A	Lab Control Sample	88	96								
MB 320-170888/1-A	Method Blank	84	92								

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

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

Lab Sample ID: MB 320-170888/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 171496 — **Prep Batch: 170888**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.0068	ug/L		06/26/17 08:40	06/28/17 19:16	1
Perfluorooctanoic acid (PFOA)	0.0080	U	0.020	0.0028	ug/L		06/26/17 08:40	06/28/17 19:16	1
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.090	0.016	ug/L		06/26/17 08:40	06/28/17 19:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:16*	*1*
13C2 PFDA	*92*		*70 - 130*	*06/26/17 08:40*	*06/28/17 19:16*	*1*

Lab Sample ID: LCS 320-170888/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 171496 — **Prep Batch: 170888**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.149	M	ug/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	0.0799	0.0726		ug/L		91	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.353	0.349		ug/L		99	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*96*		*70 - 130*

Lab Sample ID: 320-29329-1 MS — **Client Sample ID: WI-AF-1RW56-0617**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 171496 — **Prep Batch: 170888**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.156	0.147	M	ug/L		94	70 - 130
Perfluorooctanoic acid (PFOA)	0.0079	U	0.0780	0.0694		ug/L		89	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.345	0.342		ug/L		99	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
13C2 PFHxA	*79*		*70 - 130*
13C2 PFDA	*97*		*70 - 130*

Lab Sample ID: 320-29329-1 MSD — **Client Sample ID: WI-AF-1RW56-0617**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 171496 — **Prep Batch: 170888**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.161	0.151	M	ug/L		94	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	0.0079	U	0.0806	0.0766		ug/L		95	70 - 130	10	30
Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.356	0.346		ug/L		97	70 - 130	1	30

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

Lab Sample ID: 320-29329-1 MSD
Matrix: Water
Analysis Batch: 171496

Client Sample ID: WI-AF-1RW56-0617
Prep Type: Total/NA
Prep Batch: 170888

Surrogate	MSD %Recovery	MSD Qualifier	Limits
13C2 PFHxA	77		70 - 130
13C2 PFDA	94		70 - 130

LCMS

Prep Batch: 170888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29329-1	WI-AF-1RW56-0617	Total/NA	Water	537	
320-29329-2	WI-AF-1FB56-0617	Total/NA	Water	537	
320-29329-3	WI-AF-1RW56P-0617	Total/NA	Water	537	
MB 320-170888/1-A	Method Blank	Total/NA	Water	537	
LCS 320-170888/2-A	Lab Control Sample	Total/NA	Water	537	
320-29329-1 MS	WI-AF-1RW56-0617	Total/NA	Water	537	
320-29329-1 MSD	WI-AF-1RW56-0617	Total/NA	Water	537	

Analysis Batch: 171496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-29329-1	WI-AF-1RW56-0617	Total/NA	Water	537	170888
320-29329-2	WI-AF-1FB56-0617	Total/NA	Water	537	170888
320-29329-3	WI-AF-1RW56P-0617	Total/NA	Water	537	170888
MB 320-170888/1-A	Method Blank	Total/NA	Water	537	170888
LCS 320-170888/2-A	Lab Control Sample	Total/NA	Water	537	170888
320-29329-1 MS	WI-AF-1RW56-0617	Total/NA	Water	537	170888
320-29329-1 MSD	WI-AF-1RW56-0617	Total/NA	Water	537	170888

Lab Chronicle

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Client Sample ID: WI-AF-1RW56-0617
Lab Sample ID: 320-29329-1
Date Collected: 06/21/17 11:05
Matrix: Water
Date Received: 06/22/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			170888	06/26/17 08:40	CCB	TAL SAC
Total/NA	Analysis	537		1	171496	06/28/17 19:26	JRB	TAL SAC

Client Sample ID: WI-AF-1FB56-0617
Lab Sample ID: 320-29329-2
Date Collected: 06/21/17 11:06
Matrix: Water
Date Received: 06/22/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			170888	06/26/17 08:40	CCB	TAL SAC
Total/NA	Analysis	537		1	171496	06/28/17 19:40	JRB	TAL SAC

Client Sample ID: WI-AF-1RW56P-0617
Lab Sample ID: 320-29329-3
Date Collected: 06/21/17 11:10
Matrix: Water
Date Received: 06/22/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			170888	06/26/17 08:40	CCB	TAL SAC
Total/NA	Analysis	537		1	171496	06/28/17 19:45	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: CH2M Hill Constructors, Inc. TestAmerica Job ID: 320-29329-1
Project/Site: Whidbey Island

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-18
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-18
Georgia	State Program	4	N/A	01-29-18
Hawaii	State Program	9	N/A	01-29-18
Illinois	NELAP	5	200060	03-17-18
Kansas	NELAP	7	E-10375	10-31-17
L-A-B	DoD ELAP		L2468	01-20-18
Louisiana	NELAP	6	30612	06-30-18
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Hampshire	NELAP	1	2997	04-18-18
New Jersey	NELAP	2	CA005	06-30-18
New York	NELAP	2	11666	04-01-18
Oregon	NELAP	10	4040	01-28-18
Pennsylvania	NELAP	3	68-01272	03-31-18
Texas	NELAP	6	T104704399	05-31-18
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-18
Virginia	NELAP	3	460278	03-14-18
Washington	State Program	10	C581	05-05-18
West Virginia (DW)	State Program	3	9930C	12-31-17
Wyoming	State Program	8	8TMS-L	01-29-17 *

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

Method Summary

Client: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

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: CH2M Hill Constructors, Inc.
Project/Site: Whidbey Island

TestAmerica Job ID: 320-29329-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-29329-1	WI-AF-1RW56-0617	Water	06/21/17 11:05	06/22/17 09:30
320-29329-2	WI-AF-1FB56-0617	Water	06/21/17 11:06	06/22/17 09:30
320-29329-3	WI-AF-1RW56P-0617	Water	06/21/17 11:10	06/22/17 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 171496

Lab Sample ID: LCS 320-170888/2-A Client Sample ID:

Date Analyzed: 06/28/17 19:21 Lab File ID: 2017.06.28_537B_030.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Isomers	raineys	06/29/17 12:44

Lab Sample ID: 320-29329-1 MS Client Sample ID: WI-AF-1RW56-0617 MS

Date Analyzed: 06/28/17 19:30 Lab File ID: 2017.06.28_537B_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.11	Isomers	raineys	06/29/17 12:42

Lab Sample ID: 320-29329-1 MSD Client Sample ID: WI-AF-1RW56-0617 MSD

Date Analyzed: 06/28/17 19:35 Lab File ID: 2017.06.28_537B_033.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.10	Isomers	raineys	06/29/17 12:43

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
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
..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
							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-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-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
.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	0.99 ng/mL
							Perfluorohexanesulfonic acid	3.00607 ng/mL
							Perfluorononanoic acid	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

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-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	99 ng/mL
							Perfluorohexanesulfonic acid	300.607 ng/mL
							Perfluorononanoic acid	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	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	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	2.376 ng/mL
							Perfluorohexanesulfonic acid	7.21457 ng/mL
							Perfluorononanoic acid	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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	185.625 ng/mL
							Perfluorohexanesulfonic acid	563.639 ng/mL
							Perfluorononanoic acid	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	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	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	4.97475 ng/mL
							Perfluorohexanesulfonic acid	15.1055 ng/mL
							Perfluorononanoic acid	9.67815 ng/mL
							Perfluorooctanoic acid (PFOA)	10.0399 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	20.1165 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	185.625 ng/mL
							Perfluorohexanesulfonic acid	563.639 ng/mL
							Perfluorononanoic acid	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	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	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	10.0238 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid	30.4365 ng/mL
							Perfluorononanoic acid	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	185.625 ng/mL
							Perfluorohexanesulfonic acid	563.639 ng/mL
							Perfluorononanoic acid	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	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	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

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
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	14.85 ng/mL
							Perfluorohexanesulfonic acid	45.0911 ng/mL
							Perfluorononanoic acid	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	185.625 ng/mL
							Perfluorohexanesulfonic acid	563.639 ng/mL
							Perfluorononanoic acid	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	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	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

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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	19.6763 ng/mL
							Perfluorohexanesulfonic acid	59.7457 ng/mL
							Perfluorononanoic acid	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	185.625 ng/mL
							Perfluorohexanesulfonic acid	563.639 ng/mL
							Perfluorononanoic acid	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	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
....LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

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-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-MSP_00021	08/09/17	03/23/17	Methanol, Lot 141039	20000 uL	LC537SPIM_00022	200 uL	Perfluorobutane Sulfonate	883.417 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	883.417 ng/mL
							Perfluoroheptanoic acid	99 ng/mL
							Perfluorohexanesulfonic acid	300.607 ng/mL
							Perfluorononanoic acid	192.6 ng/mL
							Perfluorooctanoic acid (PFOA)	199.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	400.329 ng/mL
.LC537SPIM_00022	08/09/17	03/22/17	Methanol, Lot 104453	10000 uL	LC537-PFBS_00007	440 uL	Perfluorobutane Sulfonate	88.3417 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	88.3417 ug/mL
					LC537-PFHpA_00014	100 uL	Perfluoroheptanoic acid	9.9 ug/mL
					LC537-PFHxS_00009	150 uL	Perfluorohexanesulfonic acid	30.0607 ug/mL
					LC537-PFNA_00012	200 uL	Perfluorononanoic acid	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	990 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	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	2004.05 ug/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	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	963 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	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_00042	11/09/17	05/09/17	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00013	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00013	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFBS_00002

R: 4/1/15 SPV

SIGMA-ALDRICH®

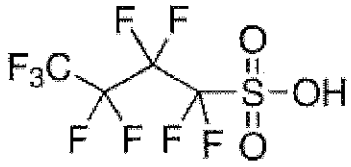
sigma-aldrich.com

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

Certificate of Analysis

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

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



PFBS

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

Jamie Gleason

Jamie Gleason, Manager
Quality Control
Milwaukee, Wisconsin US

Reagent

LC537_PFBS2_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 Indea: 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_PFHxS_00002

Y: 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

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

Purity = 90.94 % w/m.w correction

SKV 4/1/15

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_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

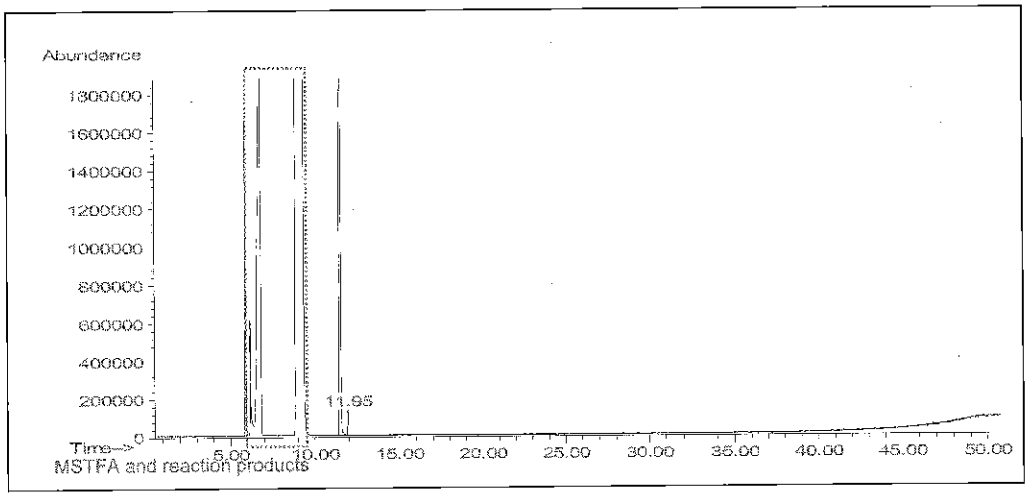
This document was produced electronically and is valid without a signature

GC/MS-Method

Analytical Department

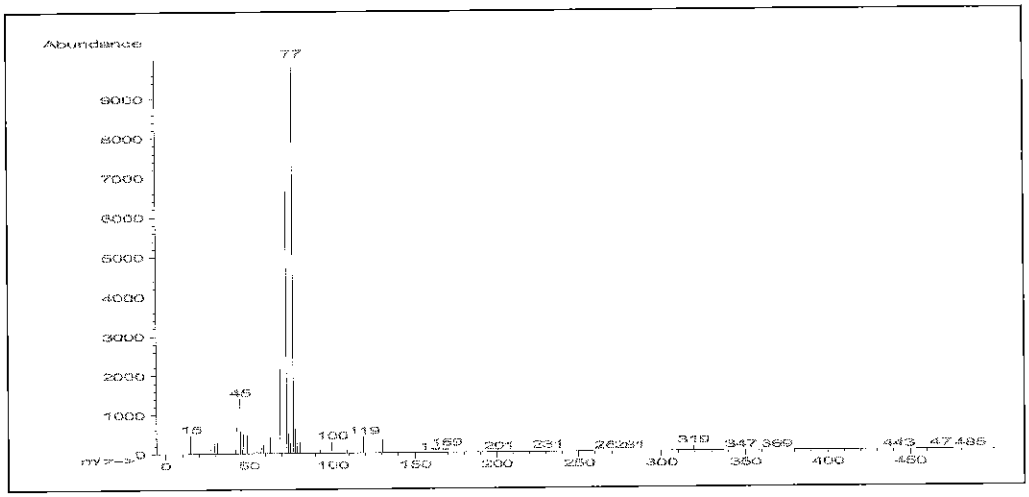
Article:	**Pentadecafluorooctanoic acid OEKANAL**
Article-No.:	**33824**
Batch:	**SZBD308XV**
Column:	XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df
Injector:	Split mode
Injection:	approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)
Inj.-temp.:	280°C
Oven-temp.:	40°C (for 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.

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 = 91.66 %

3. Advice and Remarks

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

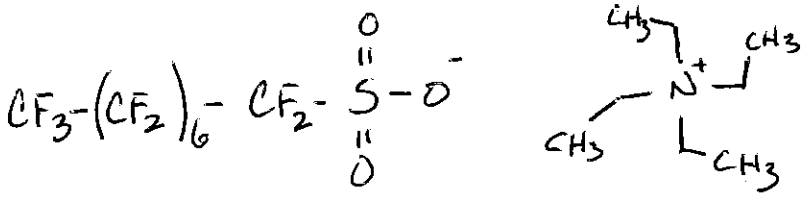
QC RELEASE DATE 13/APR/11

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.

This information is to be used for the purpose of determining animal or other biological origin only and not to be confused with "Country of Origin" for import/export purposes. Data provided on this document are property of Sigma-Aldrich.

This information is considered accurate and reliable as of the date appearing on the document and is presented in good faith.

Sigma-Aldrich shall not be held liable for any damage resulting from handling or from processing the above product(s). This document does not make any warranty, express or implied, of fitness for any particular use of the product(s). Purchaser must determine the suitability of the product(s) for its use under the applicable law and regulations.

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

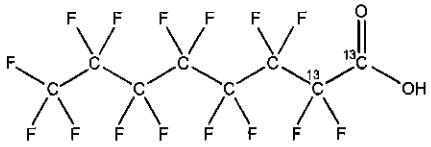
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

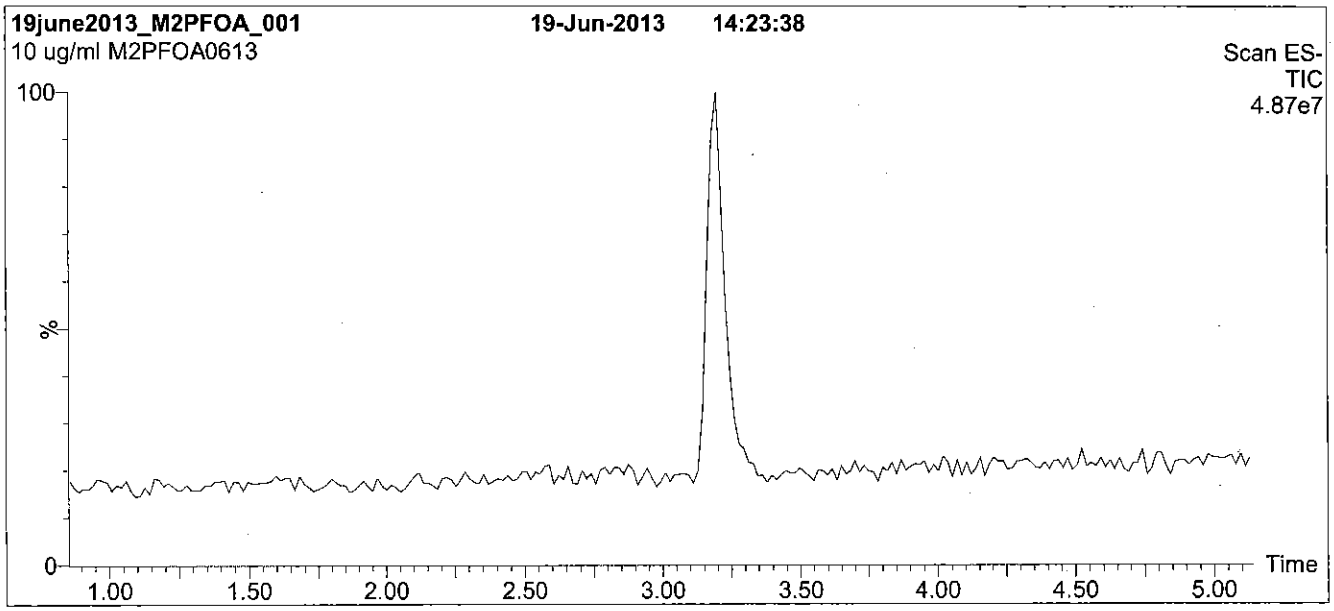
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

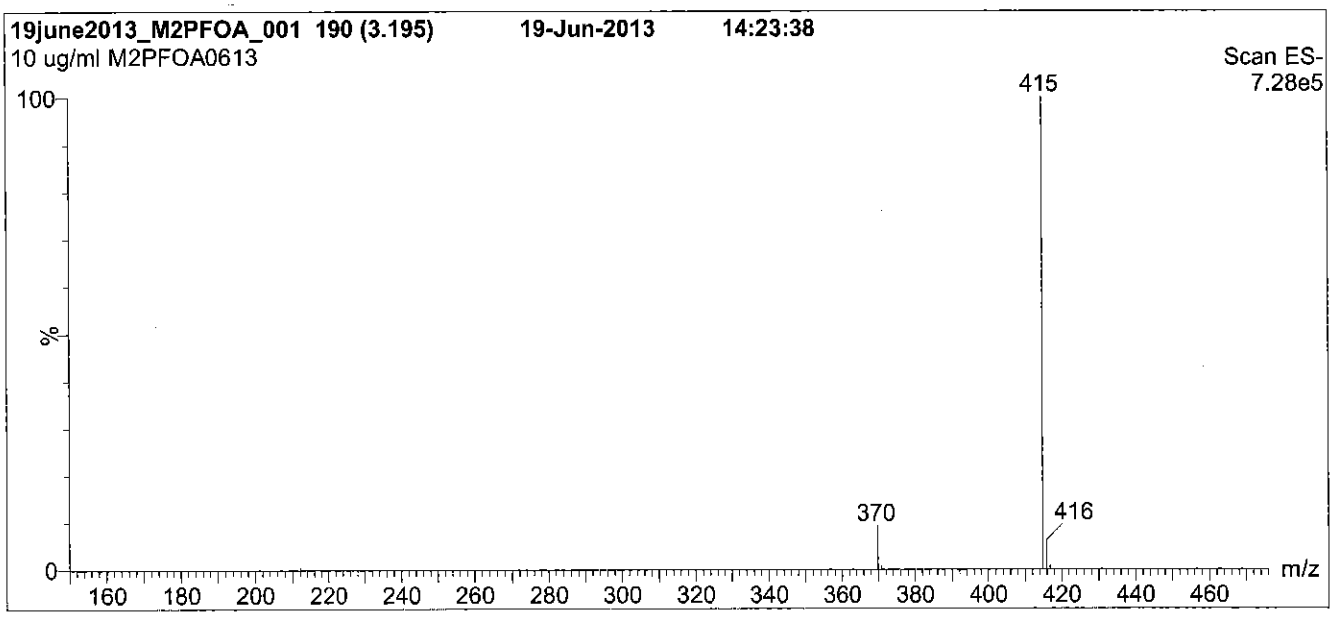
CALA Testing Accreditation No. A1226

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

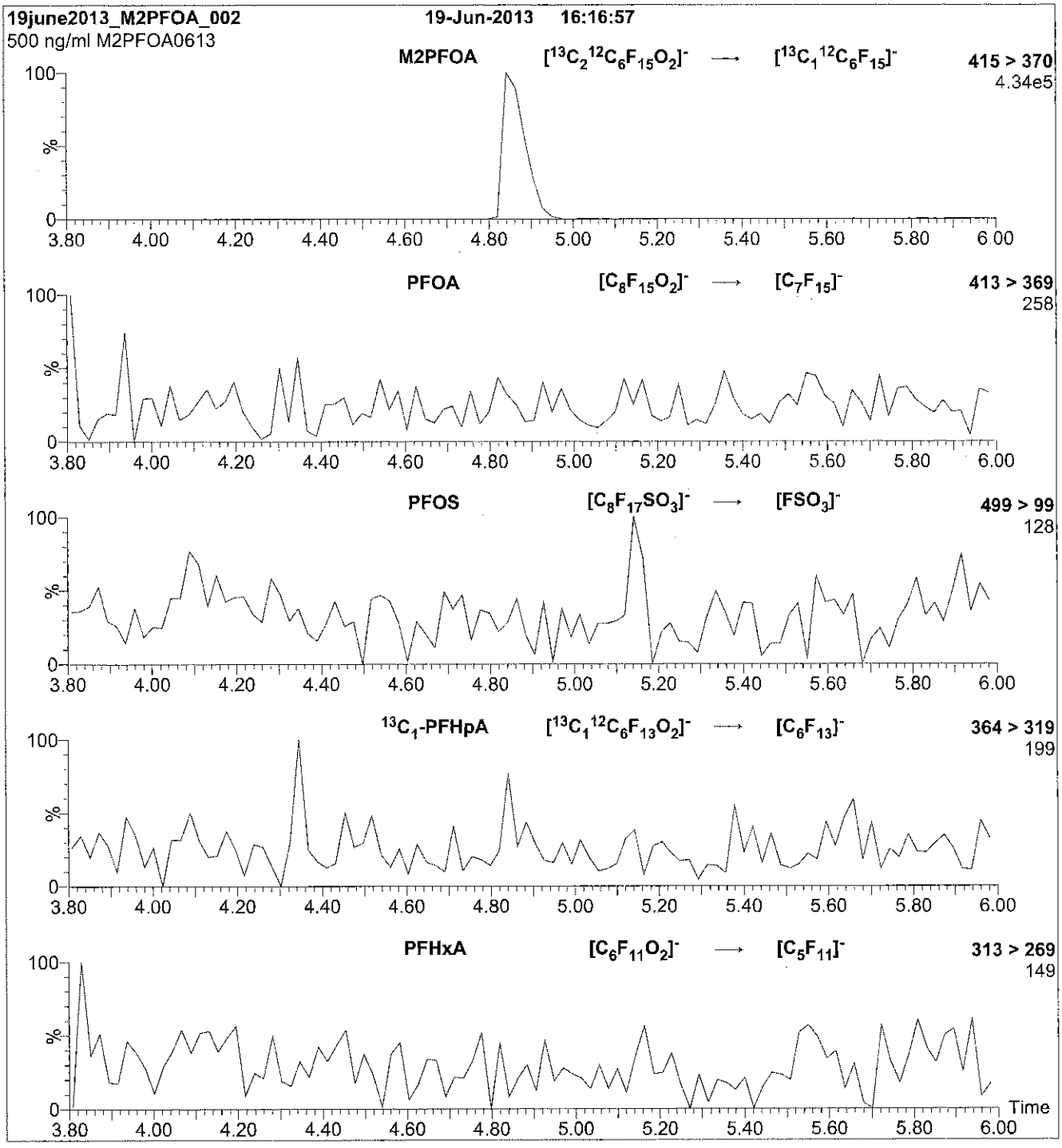
Flow: 300 µl/min

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

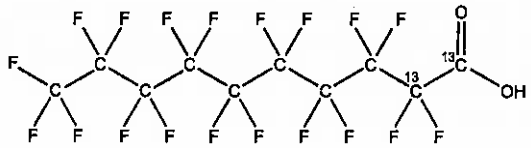
R: SBC 12/21/16

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

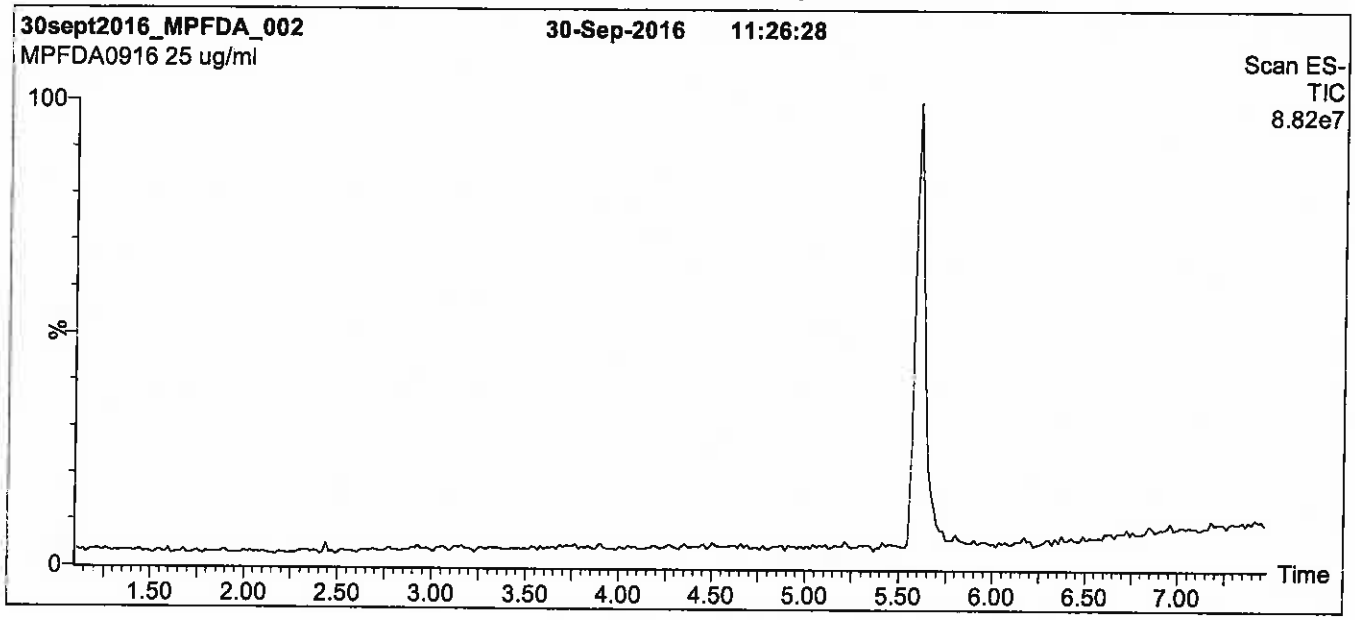
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

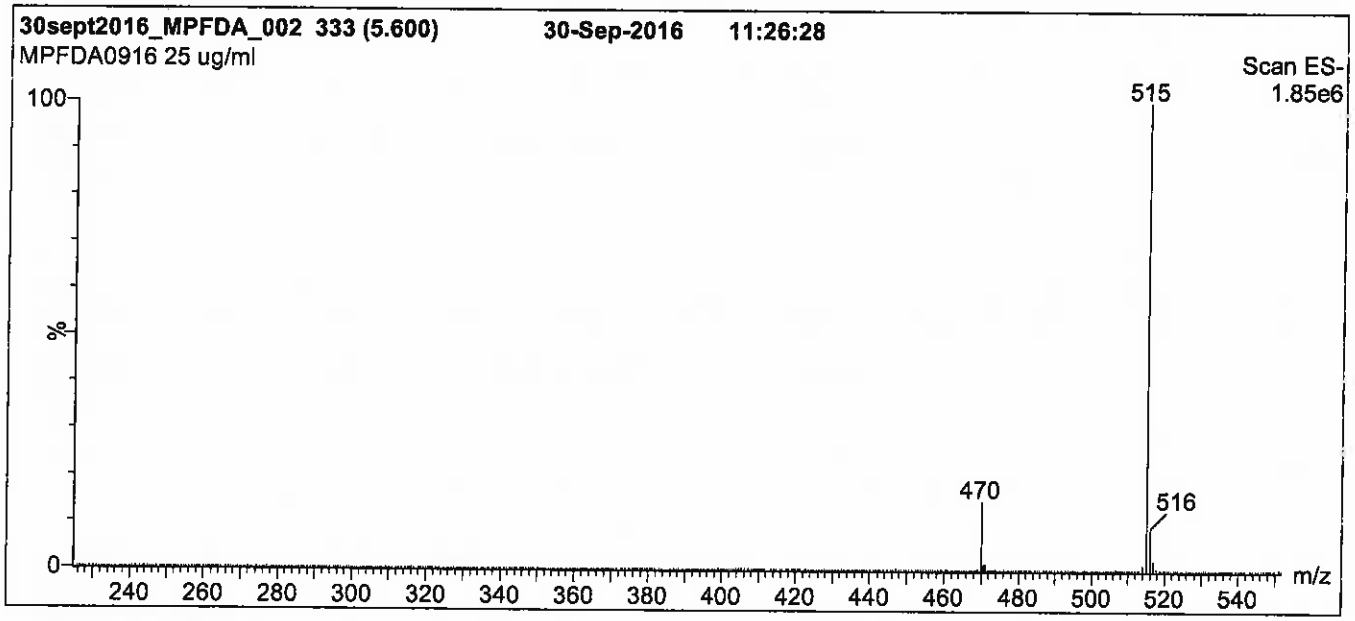
CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

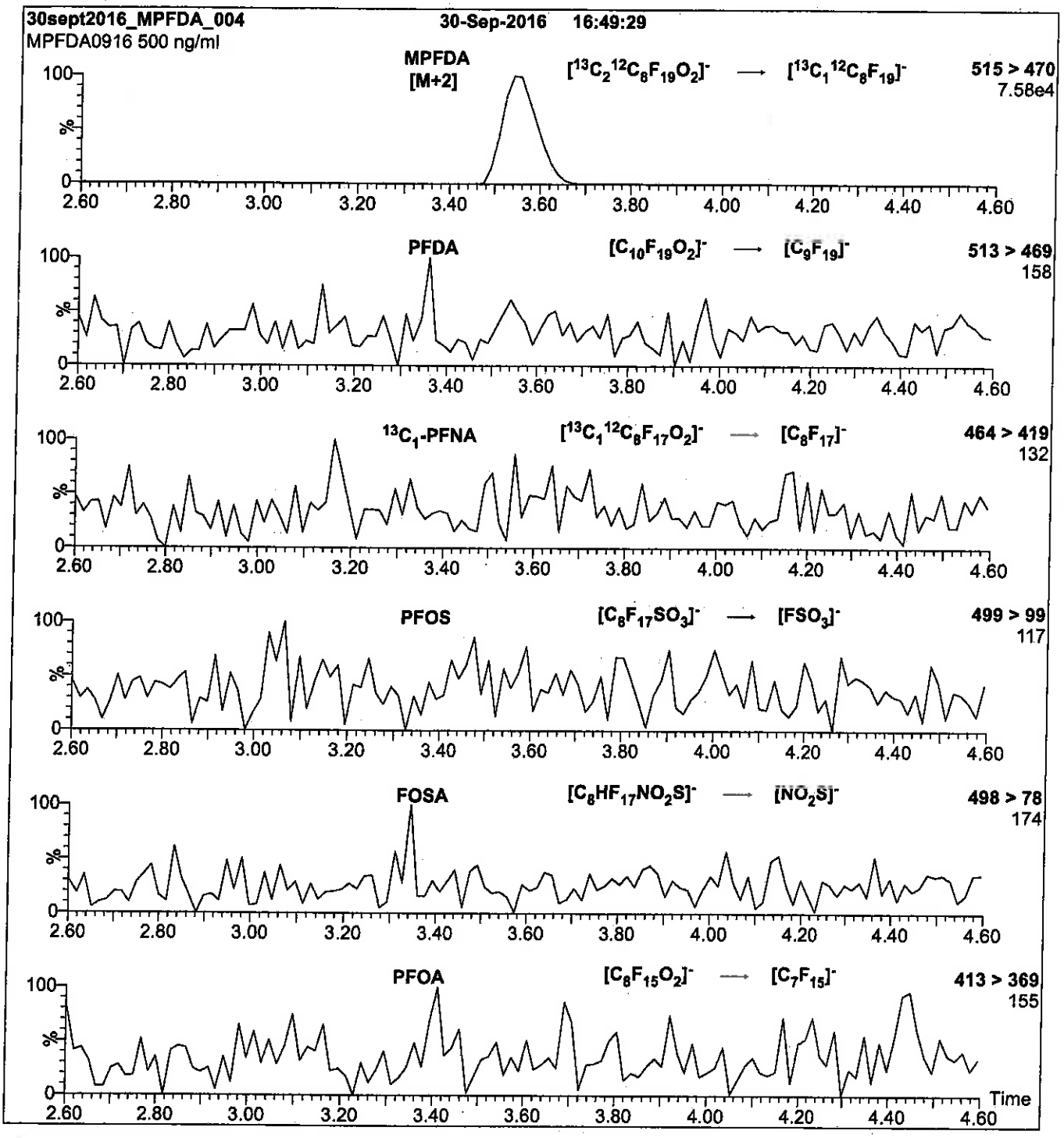
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFHxA_00013

R: SBC 12/21/16

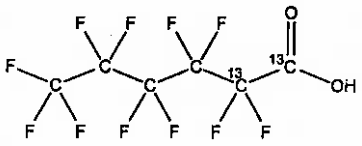
814258

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

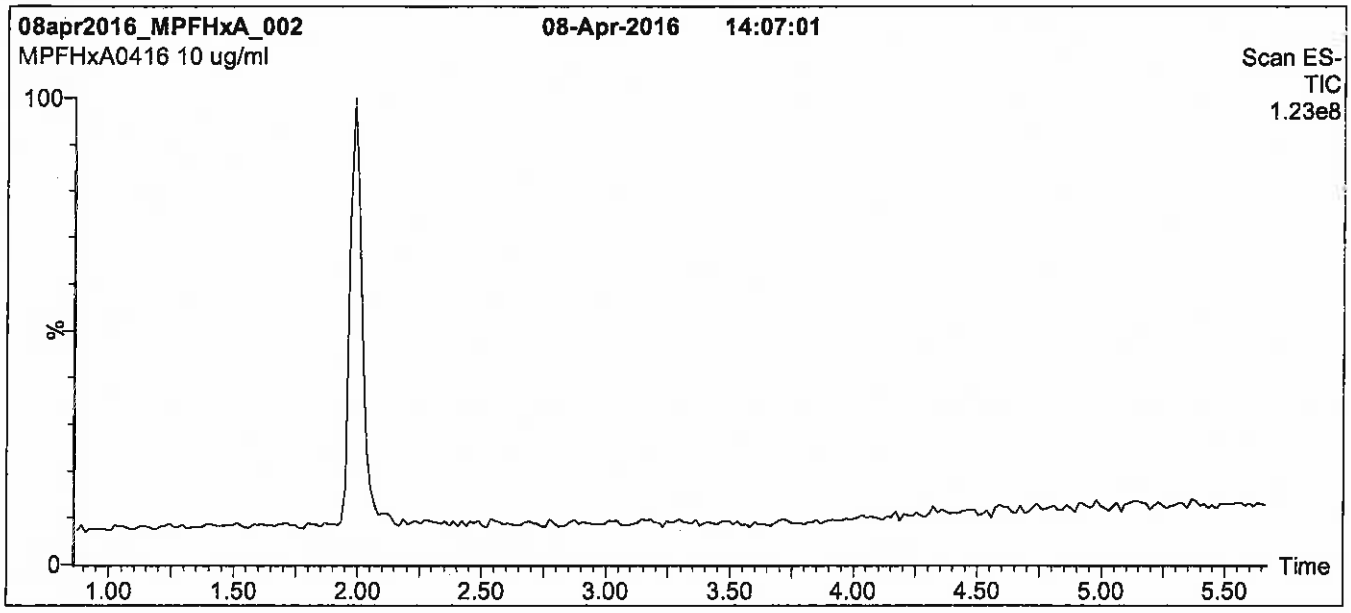
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

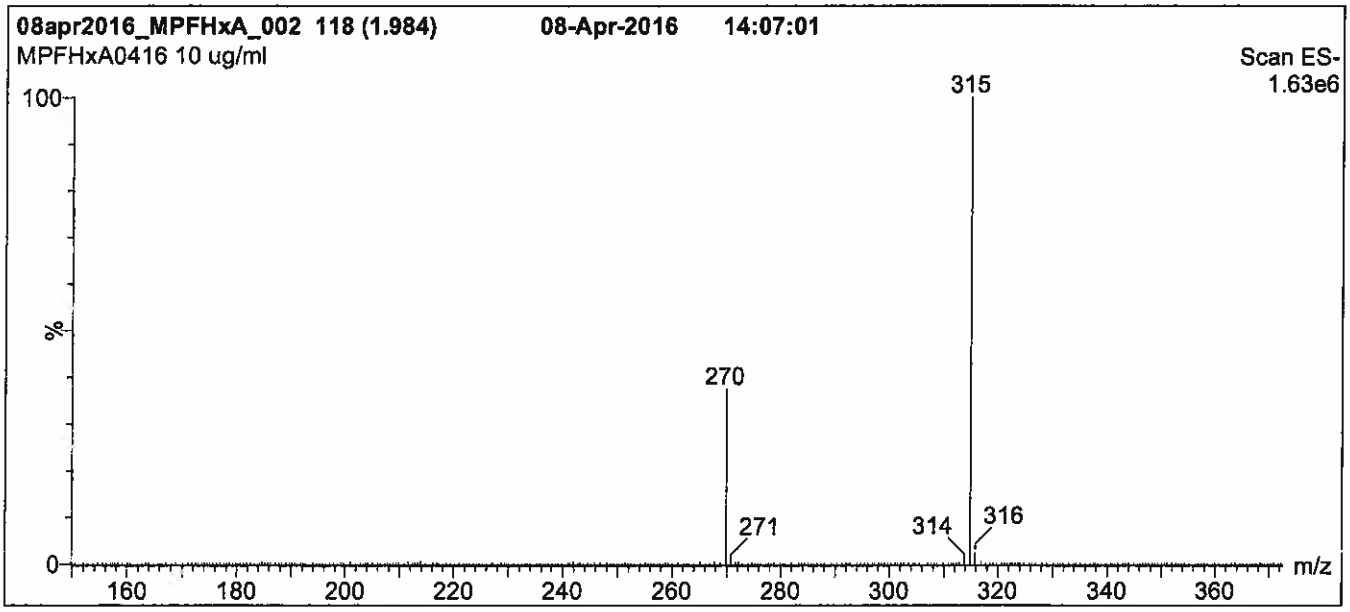
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

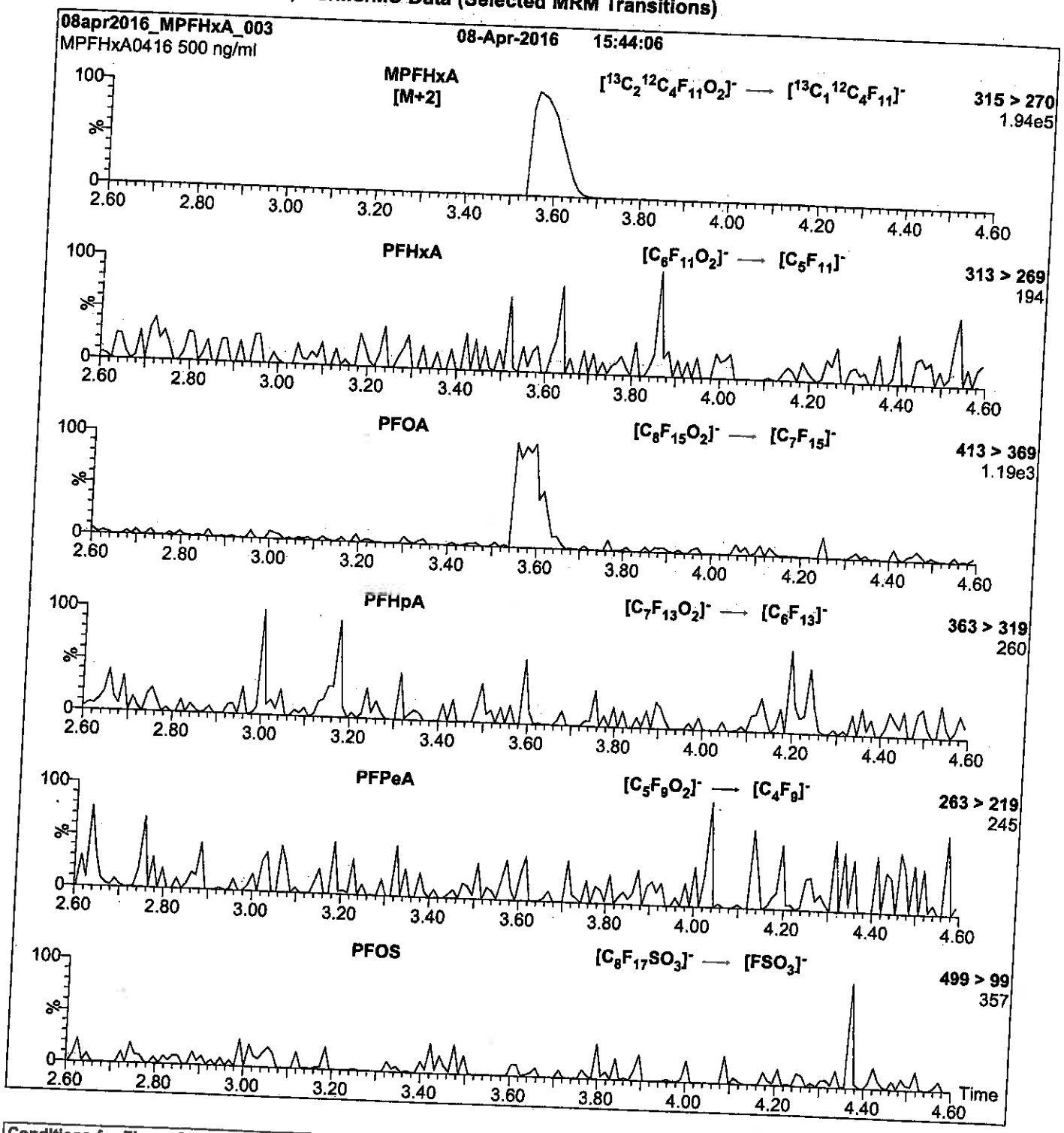
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00019

R: SBC 12/21/16

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

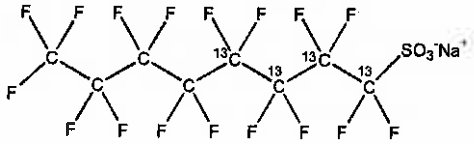
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

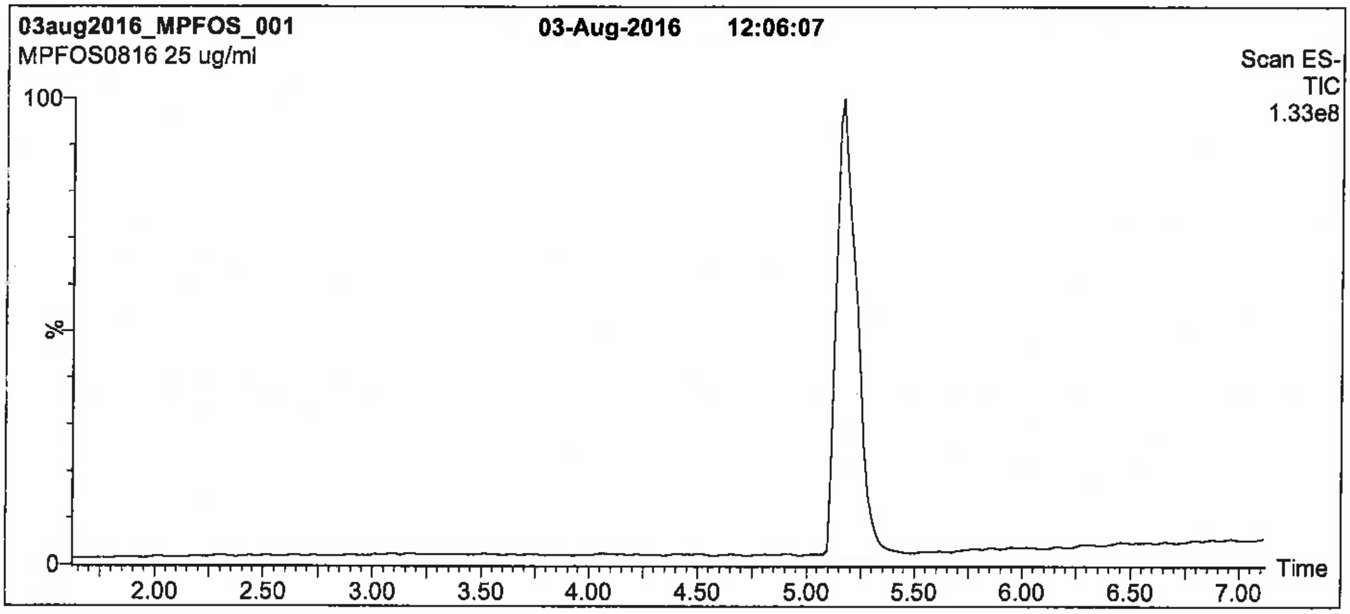
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

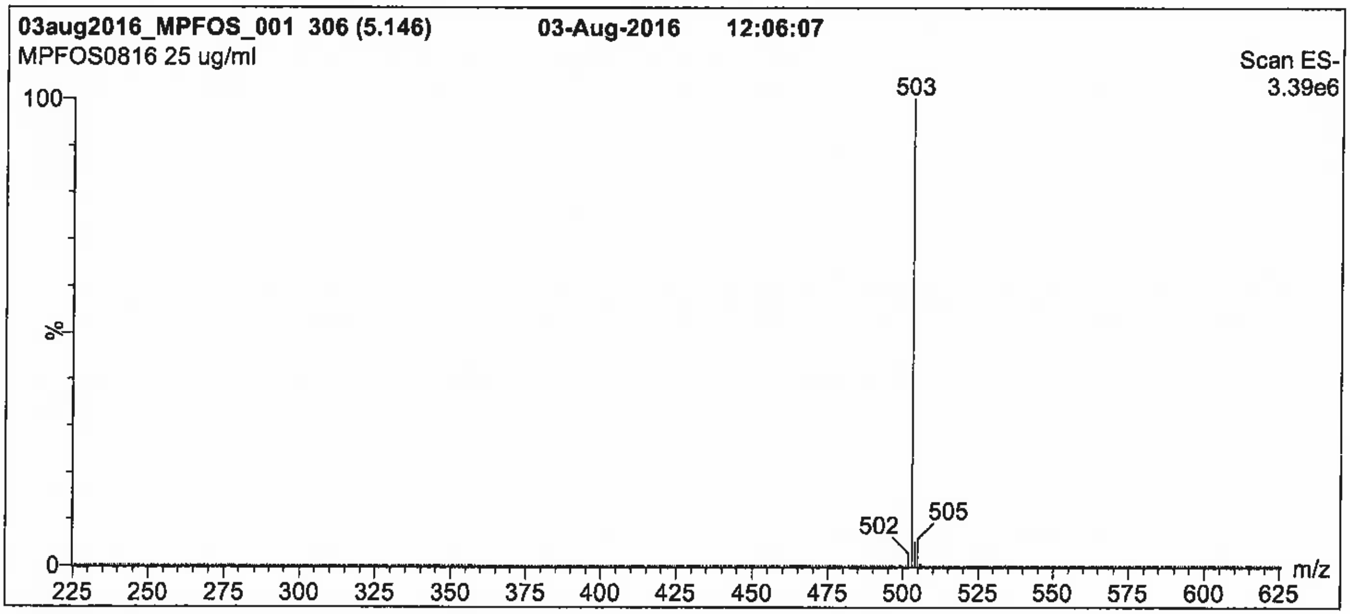
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

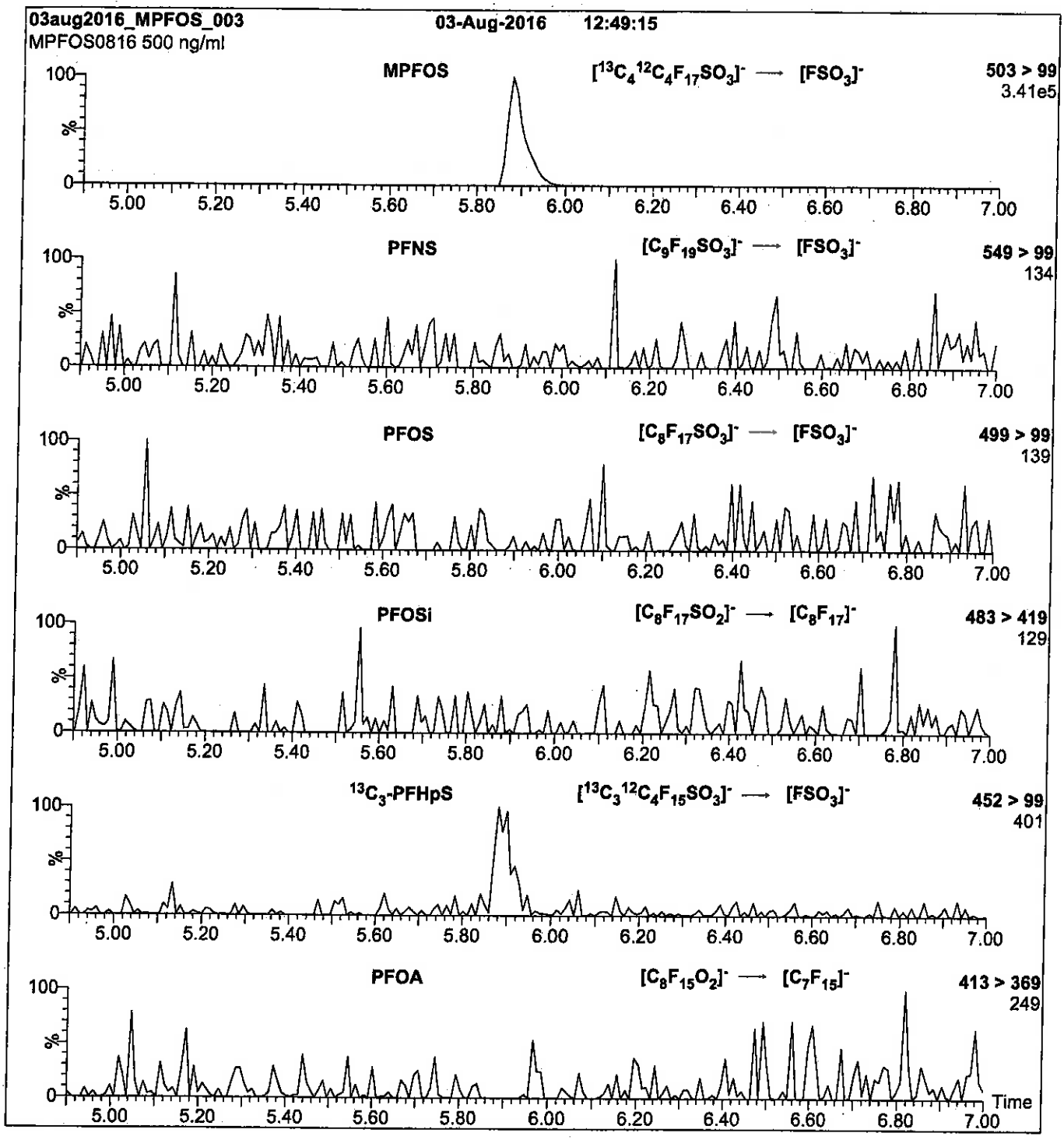
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WI-AF-1RW56-0617	320-29329-1	79	92
WI-AF-1FB56-0617	320-29329-2	85	96
WI-AF-1RW56P-0617	320-29329-3	78	98
	MB 320-170888/1-A	84	92
	LCS 320-170888/2-A	88	96
WI-AF-1RW56-0617 MS	320-29329-1 MS	79	97
WI-AF-1RW56-0617 MSD	320-29329-1 MSD	77	94

	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.: 320-29329-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.06.28_537B_030.d

Lab ID: LCS 320-170888/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.160	0.149	93	70-130	M
Perfluorooctanoic acid (PFOA)	0.0799	0.0726	91	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.353	0.349	99	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.06.28_537B_032.d

Lab ID: 320-29329-1 MS Client ID: WI-AF-1RW56-0617 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.156	0.016 U	0.147	94	70-130	M
Perfluorooctanoic acid (PFOA)	0.0780	0.0079 U	0.0694	89	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.345	0.036 U	0.342	99	70-130	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2017.06.28_537B_033.d

Lab ID: 320-29329-1 MSD Client ID: WI-AF-1RW56-0617 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.161	0.151	94	3	30	70-130	M
Perfluorooctanoic acid (PFOA)	0.0806	0.0766	95	10	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.356	0.346	97	1	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.: 320-29329-1

SDG No.:

Lab File ID: 2017.06.28_537B_029.d Lab Sample ID: MB 320-170888/1-A

Matrix: Water Date Extracted: 06/26/2017 08:40

Instrument ID: A8_N Date Analyzed: 06/28/2017 19:16

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-170888/2-A	2017.06.28_537B_030.d	06/28/2017 19:21
WI-AF-1RW56-0617	320-29329-1	2017.06.28_537B_031.d	06/28/2017 19:26
WI-AF-1RW56-0617 MS	320-29329-1 MS	2017.06.28_537B_032.d	06/28/2017 19:30
WI-AF-1RW56-0617 MSD	320-29329-1 MSD	2017.06.28_537B_033.d	06/28/2017 19:35
WI-AF-1FB56-0617	320-29329-2	2017.06.28_537B_034.d	06/28/2017 19:40
WI-AF-1RW56P-0617	320-29329-3	2017.06.28_537B_035.d	06/28/2017 19:45

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 06/28/2017 16:11

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 06/28/2017 16:35

Calibration ID: 32056

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		1994745	1.88	5921908	2.12		
UPPER LIMIT		2992118	2.38	8882862	2.62		
LOWER LIMIT		997373	1.38	2960954	1.62		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-171480/11		1582044	1.88	4789035	2.12		
ICV 320-171480/13		1851564	1.87	5746016	2.12		
CCV 320-171496/1 CCVIS		2130233	1.87	6980804	2.11		
MB 320-170888/1-A		1825622	1.87	5097233	2.10		
LCS 320-170888/2-A		1744334	1.87	5143611	2.11		
320-29329-1	WI-AF-1RW56-0617	1866729	1.87	5338608	2.11		
320-29329-1 MS	WI-AF-1RW56-0617 MS	1762793	1.87	5130802	2.11		
320-29329-1 MSD	WI-AF-1RW56-0617 MSD	1778771	1.87	5194346	2.10		
320-29329-2	WI-AF-1FB56-0617	1710962	1.87	5026012	2.10		
320-29329-3	WI-AF-1RW56P-0617	1956982	1.87	5337504	2.10		
CCV 320-171496/12 CCVIS		2244655	1.87	7068377	2.11		

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.: 320-29329-1

SDG No.:

Sample No.: CCV 320-171496/1 Date Analyzed: 06/28/2017 18:57

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

Lab File ID (Standard): 2017.06.28_537B_025 Heated Purge: (Y/N) N

Calibration ID: 32056

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2130233	1.87	6980804	2.11		
UPPER LIMIT		2982326	2.37	9773126	2.61		
LOWER LIMIT		1491163	1.37	4886563	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-170888/1-A		1825622	1.87	5097233	2.10		
LCS 320-170888/2-A		1744334	1.87	5143611	2.11		
320-29329-1	WI-AF-1RW56-0617	1866729	1.87	5338608	2.11		
320-29329-1 MS	WI-AF-1RW56-0617 MS	1762793	1.87	5130802	2.11		
320-29329-1 MSD	WI-AF-1RW56-0617 MSD	1778771	1.87	5194346	2.10		
320-29329-2	WI-AF-1FB56-0617	1710962	1.87	5026012	2.10		
320-29329-3	WI-AF-1RW56P-0617	1956982	1.87	5337504	2.10		

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.: 320-29329-1

SDG No.:

Sample No.: CCV 320-171496/12 Date Analyzed: 06/28/2017 19:49

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

Lab File ID (Standard): 2017.06.28_537B_036 Heated Purge: (Y/N) N

Calibration ID: 32056

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2244655	1.87	7068377	2.11		
UPPER LIMIT		3142517	2.37	9895728	2.61		
LOWER LIMIT		1571259	1.37	4947864	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-170888/1-A		1825622	1.87	5097233	2.10		
LCS 320-170888/2-A		1744334	1.87	5143611	2.11		
320-29329-1	WI-AF-1RW56-0617	1866729	1.87	5338608	2.11		
320-29329-1 MS	WI-AF-1RW56-0617 MS	1762793	1.87	5130802	2.11		
320-29329-1 MSD	WI-AF-1RW56-0617 MSD	1778771	1.87	5194346	2.10		
320-29329-2	WI-AF-1FB56-0617	1710962	1.87	5026012	2.10		
320-29329-3	WI-AF-1RW56P-0617	1956982	1.87	5337504	2.10		

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.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1RW56-0617 | Lab Sample ID: 320-29329-1

Matrix: Water | Lab File ID: 2017.06.28_537B_031.d

Analysis Method: 537 | Date Collected: 06/21/2017 11:05

Extraction Method: 537 | Date Extracted: 06/26/2017 08:40

Sample wt/vol: 251.6(mL) | Date Analyzed: 06/28/2017 19:26

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

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

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

Analysis Batch No.: 171496 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.016	0.0068
335-67-1	Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0079	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_031.d
Lims ID: 320-29329-A-1-A
Client ID: WI-AF-1RW56-0617
Sample Type: Client
Inject. Date: 28-Jun-2017 19:26:02 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 12:43:10 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: raineys Date: 29-Jun-2017 12:44:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	1770246	7.88		4588	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1866729	10.0		4645	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.119	-0.010		5338608	28.7		3372	
$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.291	-0.007	1.000	1127641	9.18		3986	

Report Date: 29-Jun-2017 12:44:38 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_031.d

Injection Date: 28-Jun-2017 19:26:02 Instrument ID: A8_N

Lims ID: 320-29329-A-1-A Lab Sample ID: 320-29329-1

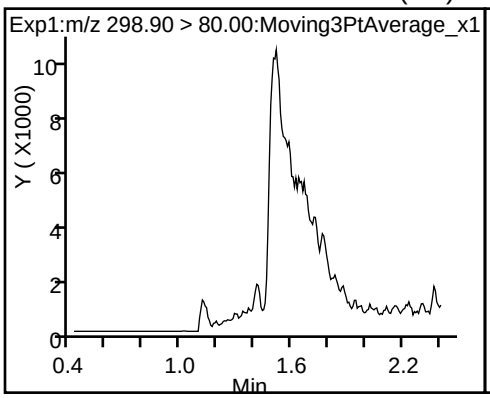
Client ID: WI-AF-1RW56-0617

Operator ID: SACINSTLCMS01 ALS Bottle#: 25 Worklist Smp#: 7

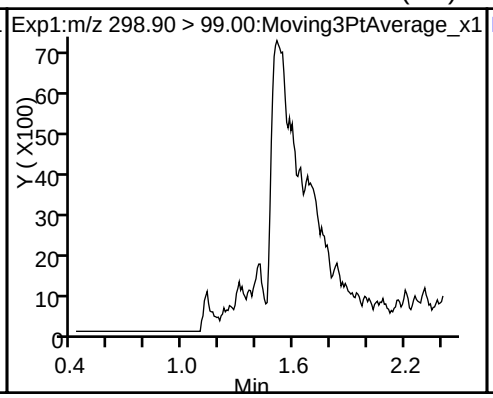
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

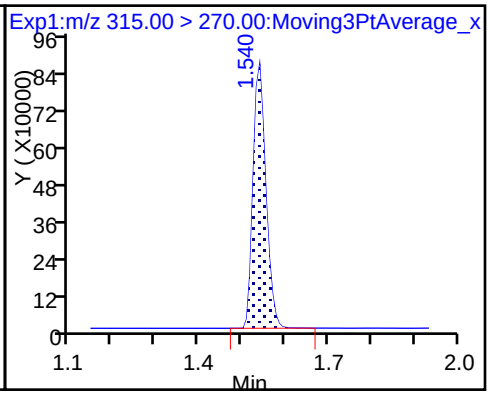
1 Perfluorobutanesulfonic acid (ND)



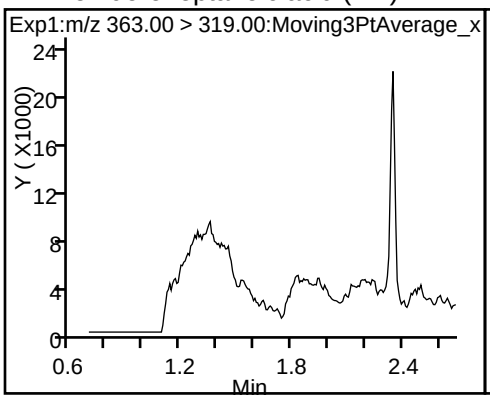
1 Perfluorobutanesulfonic acid (ND)



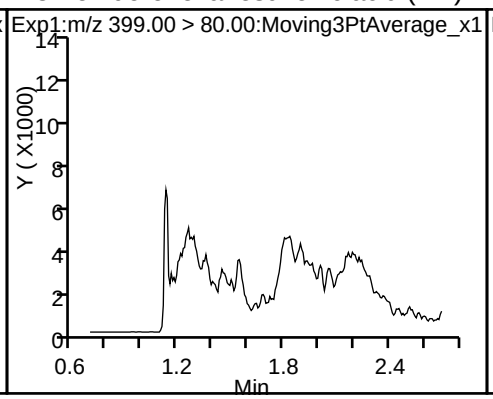
$ 2 13C2 PFHxA



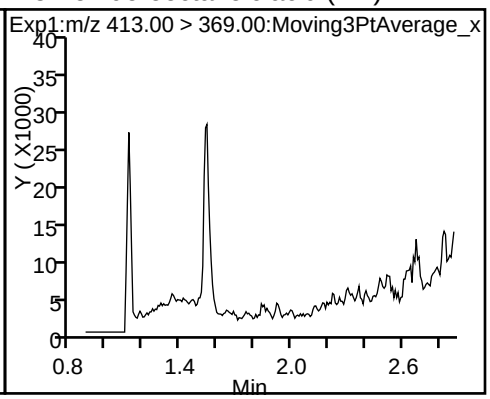
4 Perfluoroheptanoic acid (ND)



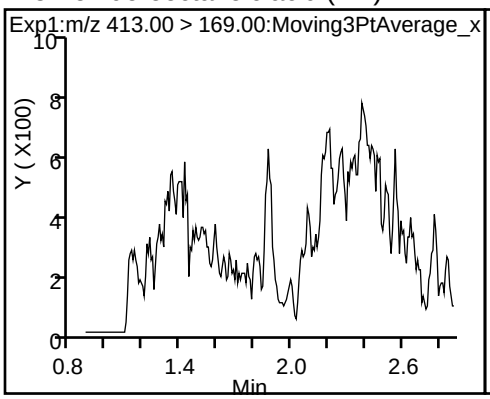
3 Perfluorohexanesulfonic acid (ND)



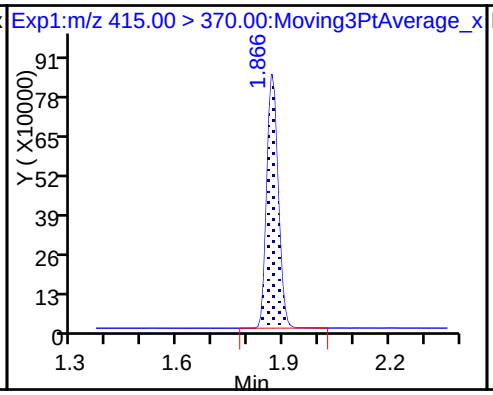
5 Perfluorooctanoic acid (ND)



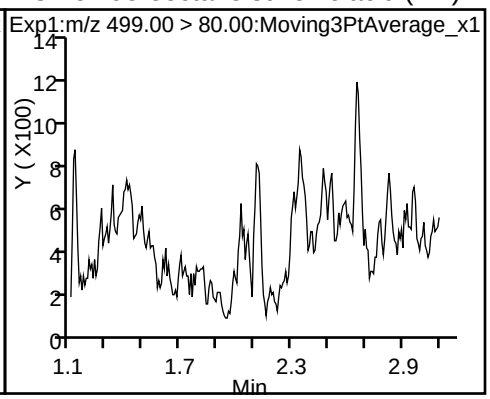
5 Perfluorooctanoic acid (ND)



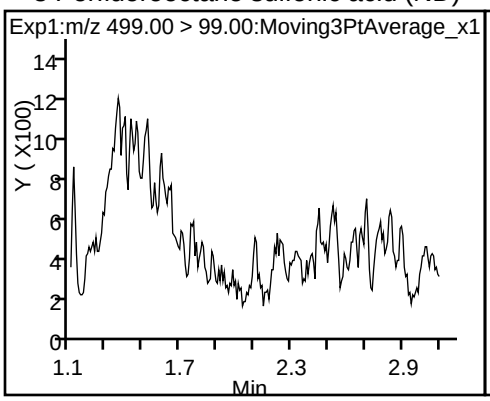
* 6 13C2-PFOA



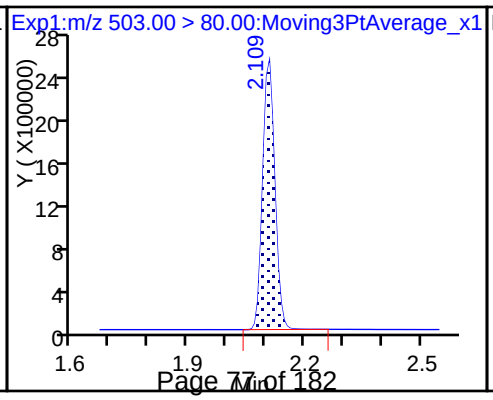
8 Perfluorooctane sulfonic acid (ND)



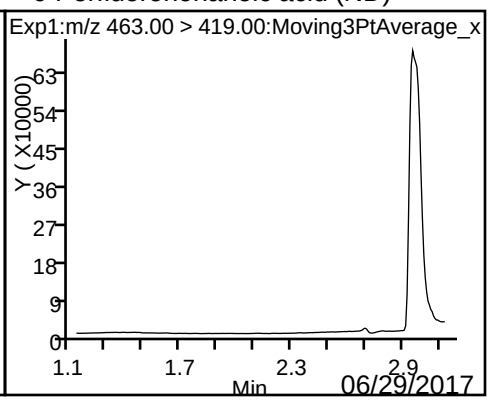
8 Perfluorooctane sulfonic acid (ND)



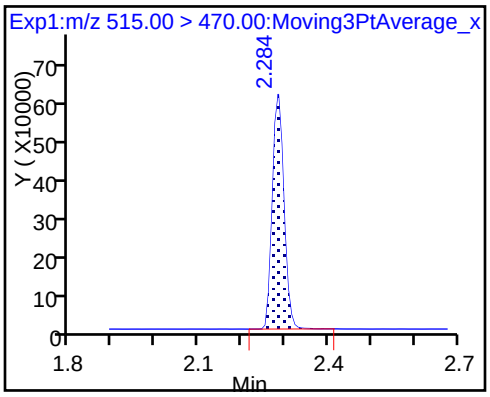
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_031.d
Lims ID: 320-29329-A-1-A
Client ID: WI-AF-1RW56-0617
Sample Type: Client
Inject. Date: 28-Jun-2017 19:26:02 ALS Bottle#: 25 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 12:43:10 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: raineys Date: 29-Jun-2017 12:44:37

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.88	78.81
$ 10 13C2 PFDA	10.0	9.18	91.76

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1FB56-0617 | Lab Sample ID: 320-29329-2

Matrix: Water | Lab File ID: 2017.06.28_537B_034.d

Analysis Method: 537 | Date Collected: 06/21/2017 11:06

Extraction Method: 537 | Date Extracted: 06/26/2017 08:40

Sample wt/vol: 258.2(mL) | Date Analyzed: 06/28/2017 19:40

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

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

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

Analysis Batch No.: 171496 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.015	U	0.039	0.015	0.0066
335-67-1	Perfluorooctanoic acid (PFOA)	0.0077	U	0.019	0.0077	0.0027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.035	U	0.087	0.035	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	85		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_034.d
Lims ID: 320-29329-A-2-A
Client ID: WI-AF-1FB56-0617
Sample Type: Client
Inject. Date: 28-Jun-2017 19:40:16 ALS Bottle#: 28 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:09 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.548	-0.015	1.000	1740449	8.45		6002	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1710962	10.0		4897	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.119	-0.017		5026012	28.7		3746	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.291	-0.015	1.000	1084028	9.62		4504	

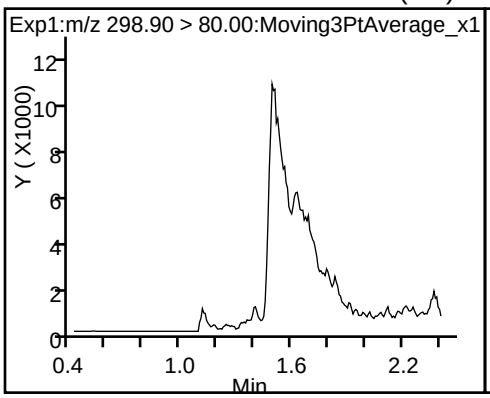
Report Date: 29-Jun-2017 10:01:20 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

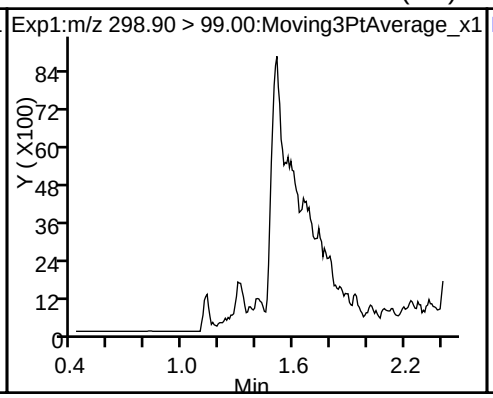
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_034.d

Injection Date:	28-Jun-2017 19:40:16	Instrument ID:	A8_N		
Lims ID:	320-29329-A-2-A	Lab Sample ID:	320-29329-2		
Client ID:	WI-AF-1FB56-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

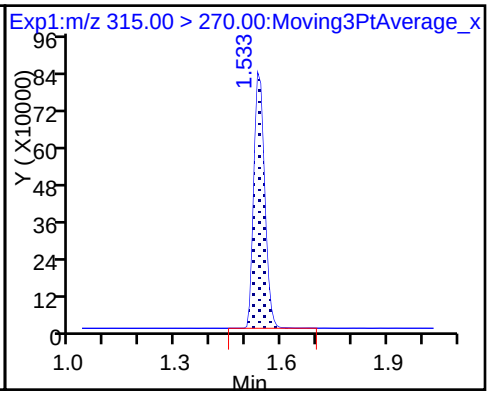
1 Perfluorobutanesulfonic acid (ND)



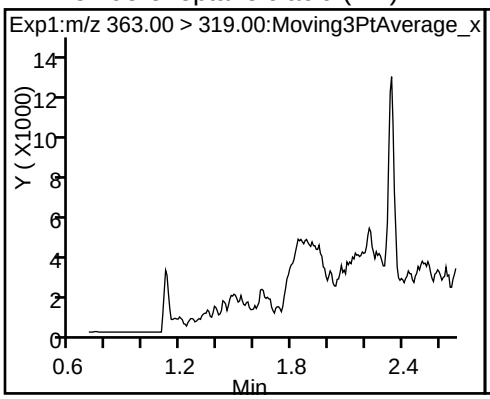
1 Perfluorobutanesulfonic acid (ND)



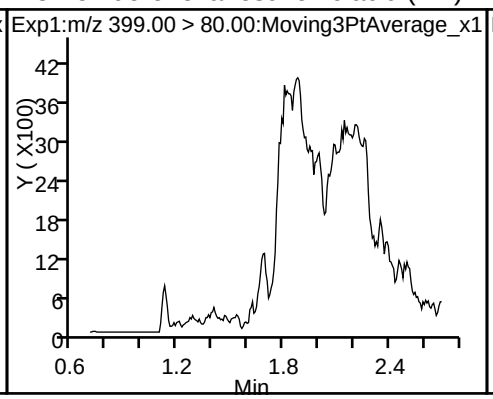
$ 2 13C2 PFHxA



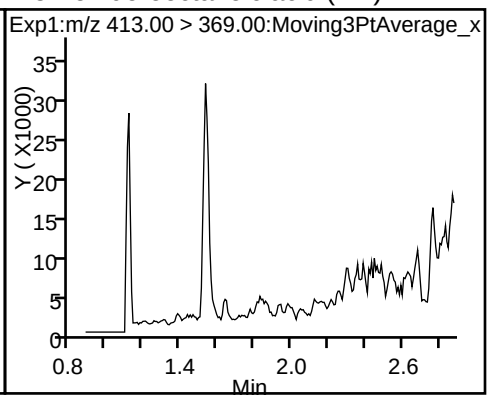
4 Perfluoroheptanoic acid (ND)



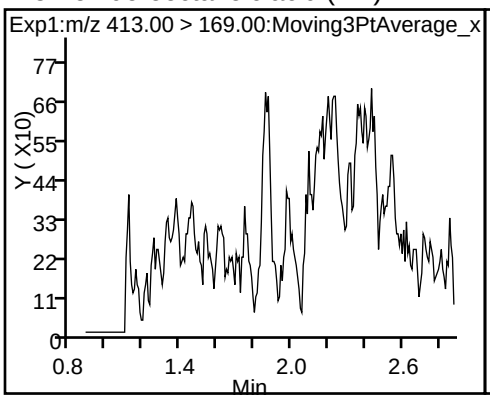
3 Perfluorohexanesulfonic acid (ND)



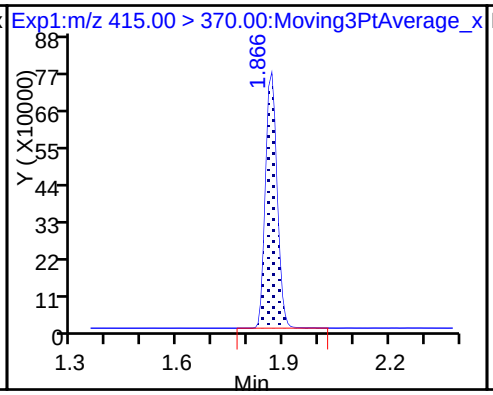
5 Perfluorooctanoic acid (ND)



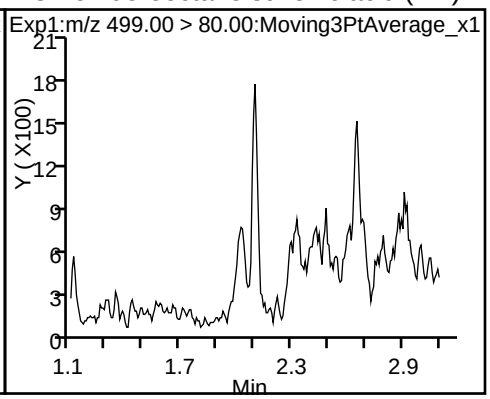
5 Perfluorooctanoic acid (ND)



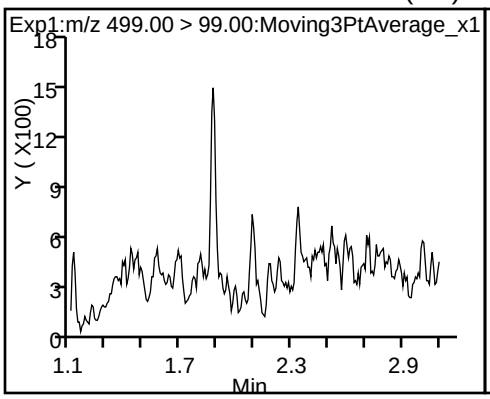
* 6 13C2-PFOA



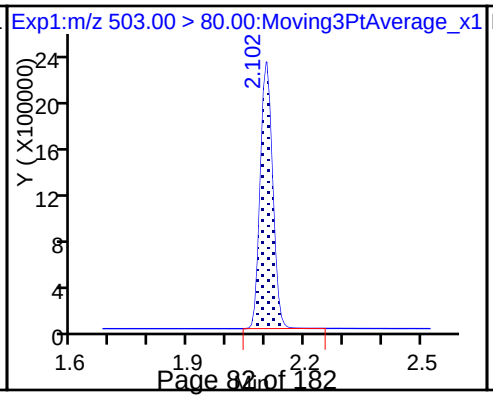
8 Perfluorooctane sulfonic acid (ND)



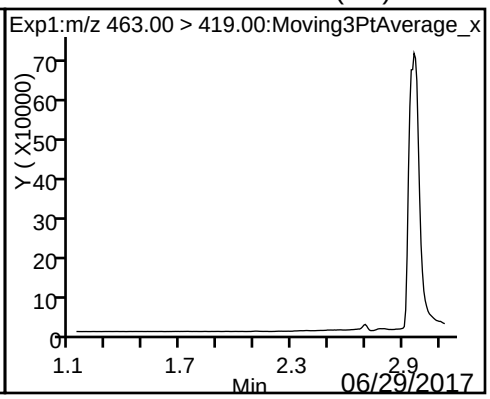
8 Perfluorooctane sulfonic acid (ND)



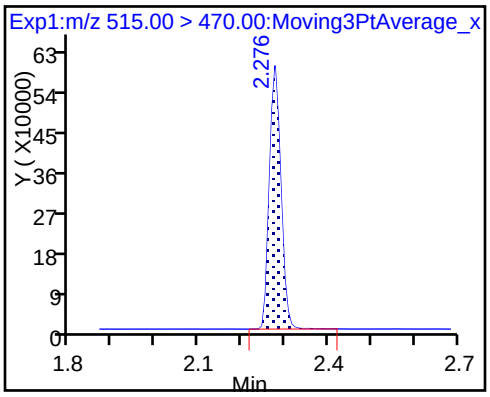
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_034.d
Lims ID: 320-29329-A-2-A
Client ID: WI-AF-1FB56-0617
Sample Type: Client
Inject. Date: 28-Jun-2017 19:40:16 ALS Bottle#: 28 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:09 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.45	84.54
$ 10 13C2 PFDA	10.0	9.62	96.24

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1RW56P-0617 | Lab Sample ID: 320-29329-3

Matrix: Water | Lab File ID: 2017.06.28_537B_035.d

Analysis Method: 537 | Date Collected: 06/21/2017 11:10

Extraction Method: 537 | Date Extracted: 06/26/2017 08:40

Sample wt/vol: 252.7(mL) | Date Analyzed: 06/28/2017 19:45

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

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

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

Analysis Batch No.: 171496 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.016	0.0067
335-67-1	Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0079	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	98		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_035.d
Lims ID: 320-29329-A-3-A
Client ID: WI-AF-1RW56P-0617
Sample Type: Client
Inject. Date: 28-Jun-2017 19:45:01 ALS Bottle#: 29 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:09 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	1837876	7.80		5095	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1956982	10.0		4924	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.119	-0.017		5337504	28.7		3354	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.291	-0.015	1.000	1268028	9.84		4669	

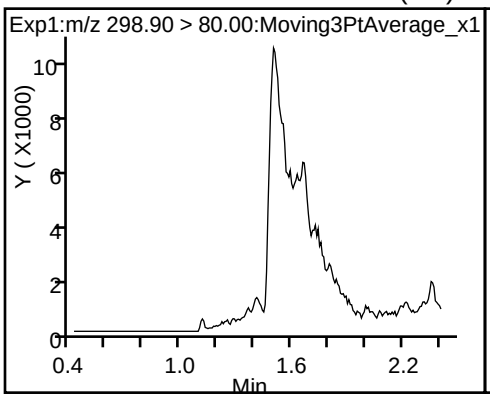
Report Date: 29-Jun-2017 10:01:21 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

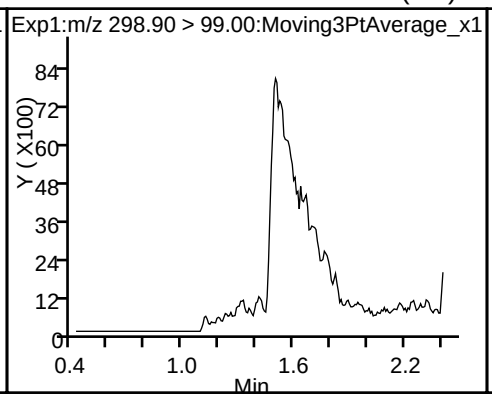
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_035.d

Injection Date:	28-Jun-2017 19:45:01	Instrument ID:	A8_N		
Lims ID:	320-29329-A-3-A	Lab Sample ID:	320-29329-3		
Client ID:	WI-AF-1RW56P-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

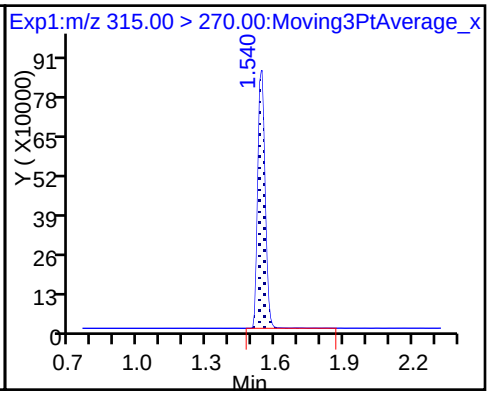
1 Perfluorobutanesulfonic acid (ND)



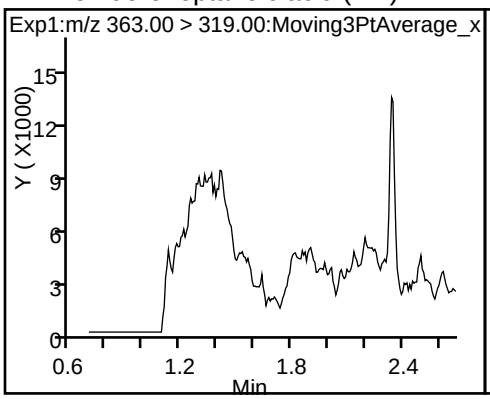
1 Perfluorobutanesulfonic acid (ND)



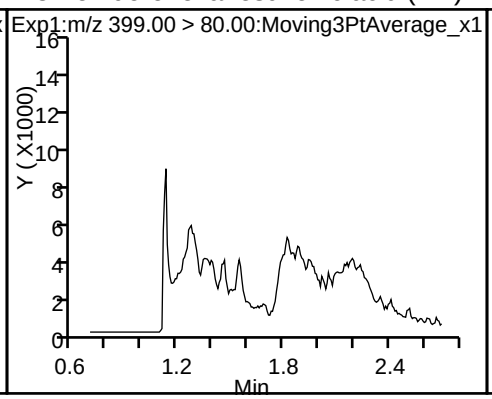
$ 2 13C2 PFHxA



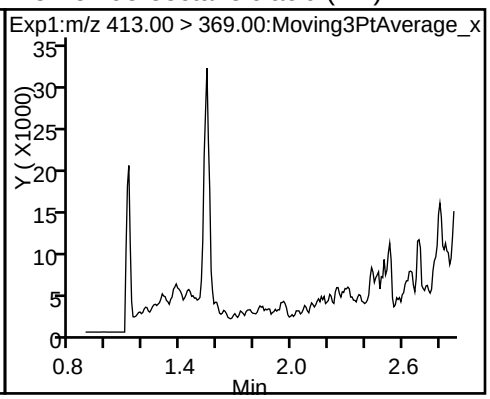
4 Perfluoroheptanoic acid (ND)



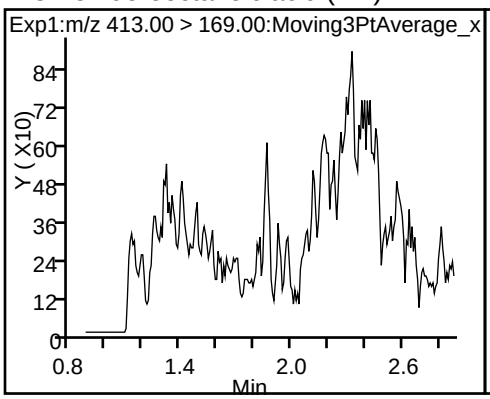
3 Perfluorohexanesulfonic acid (ND)



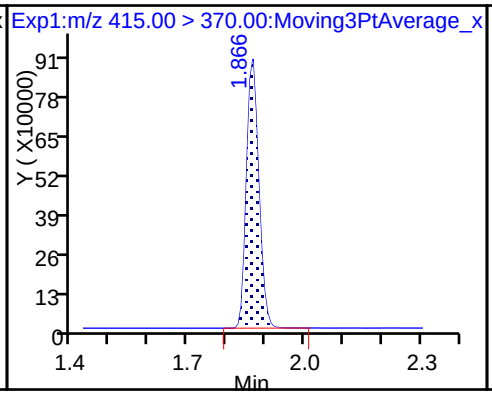
5 Perfluorooctanoic acid (ND)



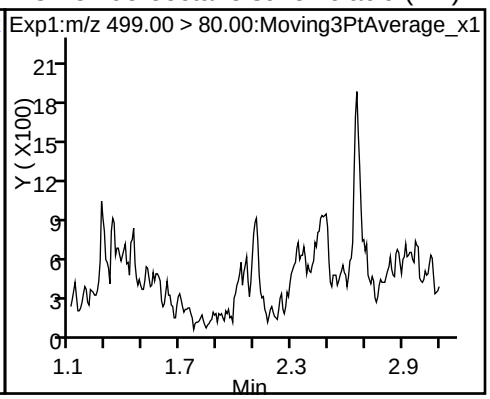
5 Perfluorooctanoic acid (ND)



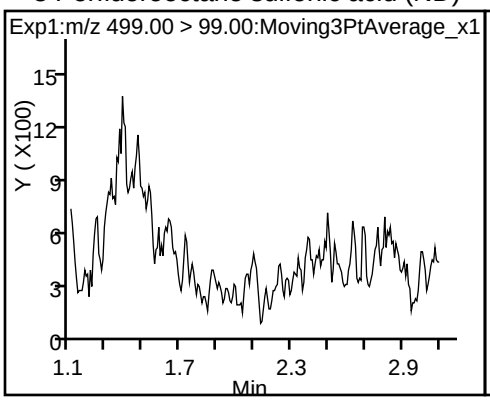
* 6 13C2-PFOA



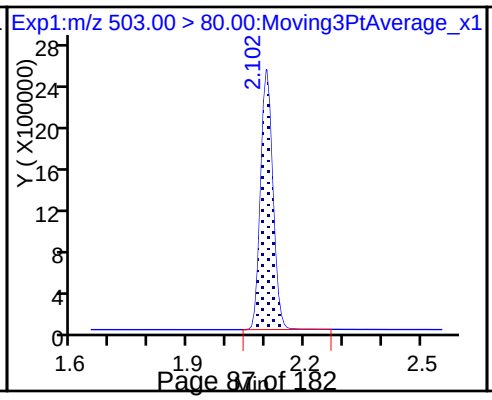
8 Perfluorooctane sulfonic acid (ND)



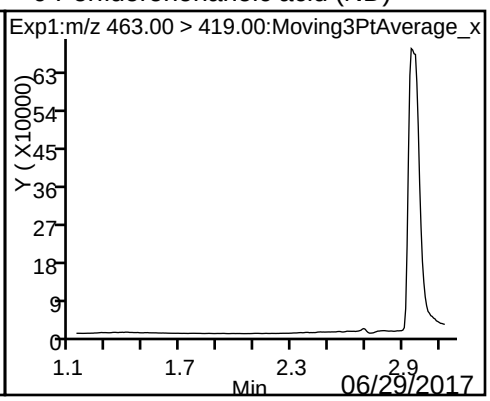
8 Perfluorooctane sulfonic acid (ND)



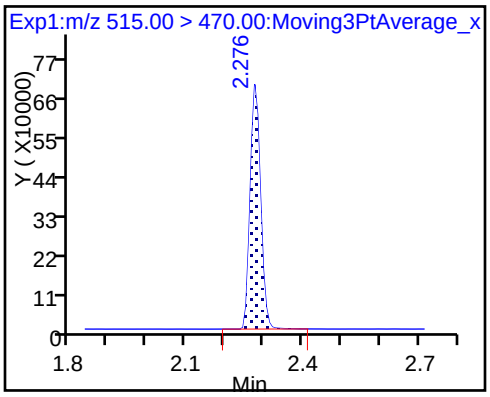
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
77
66
55
44
33
22
11
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_035.d				
Lims ID:	320-29329-A-3-A				
Client ID:	WI-AF-1RW56P-0617				
Sample Type:	Client				
Inject. Date:	28-Jun-2017 19:45:01	ALS Bottle#:	29	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-29329-a-3-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	29-Jun-2017 10:01:09	Calib Date:	28-Jun-2017 16:35:04		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK033				

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.80	78.05
$ 10 13C2 PFDA	10.0	9.84	98.43

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

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1 Analy Batch No.: 171480

SDG No.:

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

Calibration Start Date: 06/28/2017 16:11 Calibration End Date: 06/28/2017 16:35 Calibration ID: 32056

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-171480/4	2017.06.28_537_CURVE_004.d
Level 2	IC 320-171480/5	2017.06.28_537_CURVE_005.d
Level 3	IC 320-171480/6	2017.06.28_537_CURVE_006.d
Level 4	IC 320-171480/7	2017.06.28_537_CURVE_007.d
Level 5	IC 320-171480/8	2017.06.28_537_CURVE_008.d
Level 6	IC 320-171480/9	2017.06.28_537_CURVE_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.0542 0.7747	1.1911	1.1019	0.9631	0.8595	QuaF		1.1739	-0.002299						0.9990		0.9600
Perfluoroheptanoic acid	0.9802 0.9208	1.0349	0.9965	1.0023	0.9814	Ave		0.9860				3.8		30.0			
Perfluorohexanesulfonic acid	1.4453 1.4041	1.5145	1.5704	1.4814	1.4492	Ave		1.4774				4.0		30.0			
Perfluorooctanoic acid (PFOA)	0.7781 0.8844	0.9090	0.8846	0.8950	0.9189	Ave		0.8783				5.8		30.0			
Perfluorooctanesulfonic acid (PFOS)	1.0077 1.0654	1.0142	1.0631	1.0030	1.0482	Ave		1.0336				2.8		30.0			
Perfluorononanoic acid	0.6497 0.6570	0.7320	0.7099	0.6959	0.6634	Ave		0.6847				4.8		30.0			
13C2 PFHxA	1.1301 1.2157	1.2214	1.2083	1.2062	1.2378	Ave		1.2033				3.1		30.0			
13C2 PFDA	0.6178 0.6956	0.6701	0.6547	0.6457	0.6660	Ave		0.6583				4.0		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.: 320-29329-1 Analy Batch No.: 171480

SDG No.:

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

Calibration Start Date: 06/28/2017 16:11 Calibration End Date: 06/28/2017 16:35 Calibration ID: 32056

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-171480/4	2017.06.28_537_CURVE_004.d
Level 2	IC 320-171480/5	2017.06.28_537_CURVE_005.d
Level 3	IC 320-171480/6	2017.06.28_537_CURVE_006.d
Level 4	IC 320-171480/7	2017.06.28_537_CURVE_007.d
Level 5	IC 320-171480/8	2017.06.28_537_CURVE_008.d
Level 6	IC 320-171480/9	2017.06.28_537_CURVE_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	QuaF	1790966 30127104	4119763	11524329	15979460	27434944	8.83 176	21.2	44.4	89.4	133
Perfluoroheptanoic acid	13PFOA	Ave	189804 3839119	382424	1150592	1723856	3354002	0.990 19.7	2.38	4.97	10.0	14.9
Perfluorohexanesulfonic acid	PFOS	Ave	835502 18580566	1782416	5588395	8363563	15739710	3.01 59.7	7.21	15.1	30.4	45.1
Perfluorooctanoic acid (PFOA)	13PFOA	Ave	304104 7442161	677915	2061378	3106405	6337635	2.00 39.7	4.80	10.0	20.2	30.0
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	775815 18774908	1589627	5038246	7541349	15161771	4.00 79.6	9.61	20.1	40.5	60.0
Perfluorononanoic acid	13PFOA	Ave	244768 5329596	526209	1594605	2328532	4410928	1.93 38.3	4.62	9.68	19.5	28.9
13C2 PFHxA	13PFOA	Ave	2210545 2576119	1899539	2804666	2069475	2848725	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PFOA	Ave	1208487 1473923	1042170	1519617	1107876	1532613	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD
QuaF = Quadratic ISTD forced zero

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

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1 Analy Batch No.: 171480

SDG No.:

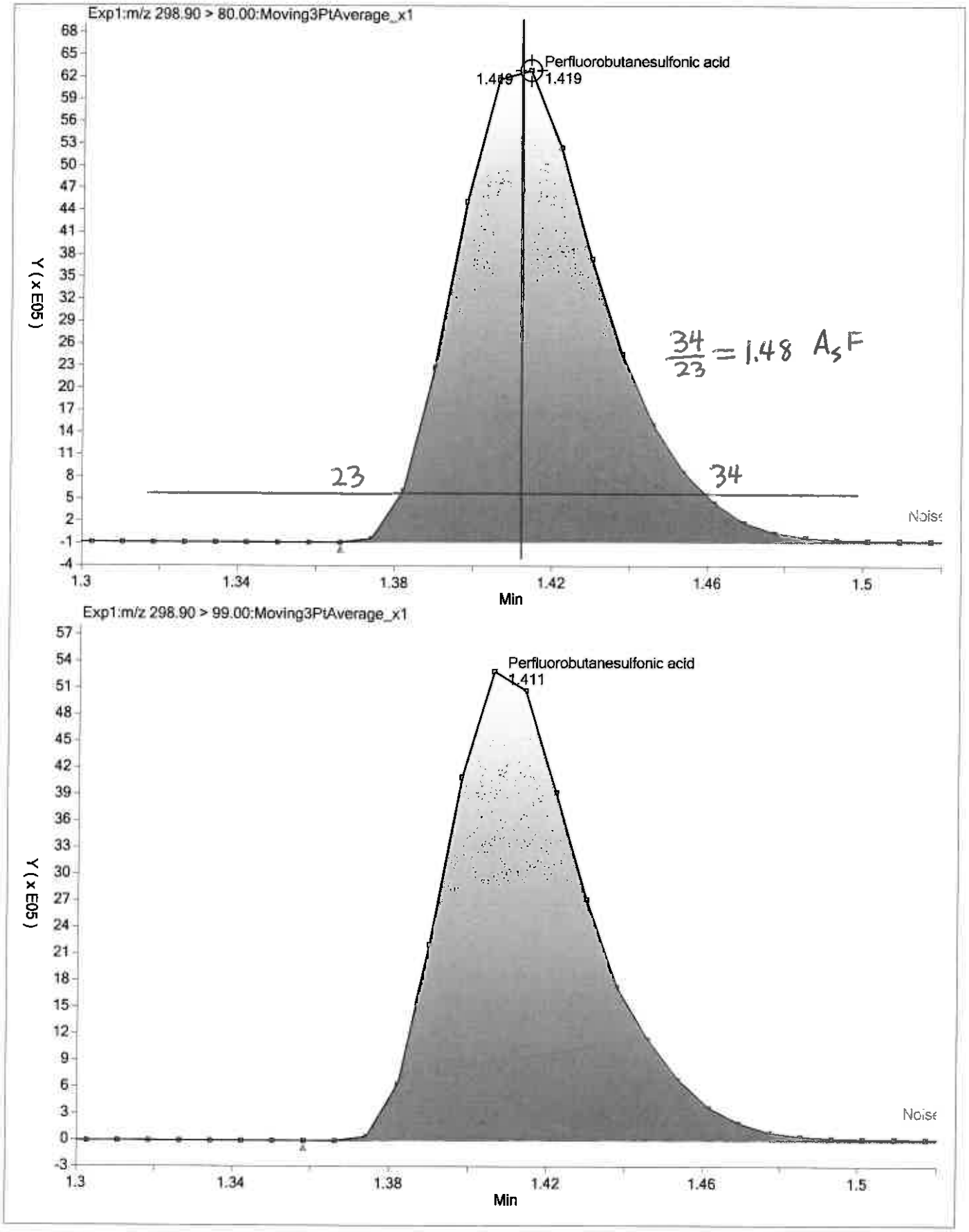
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

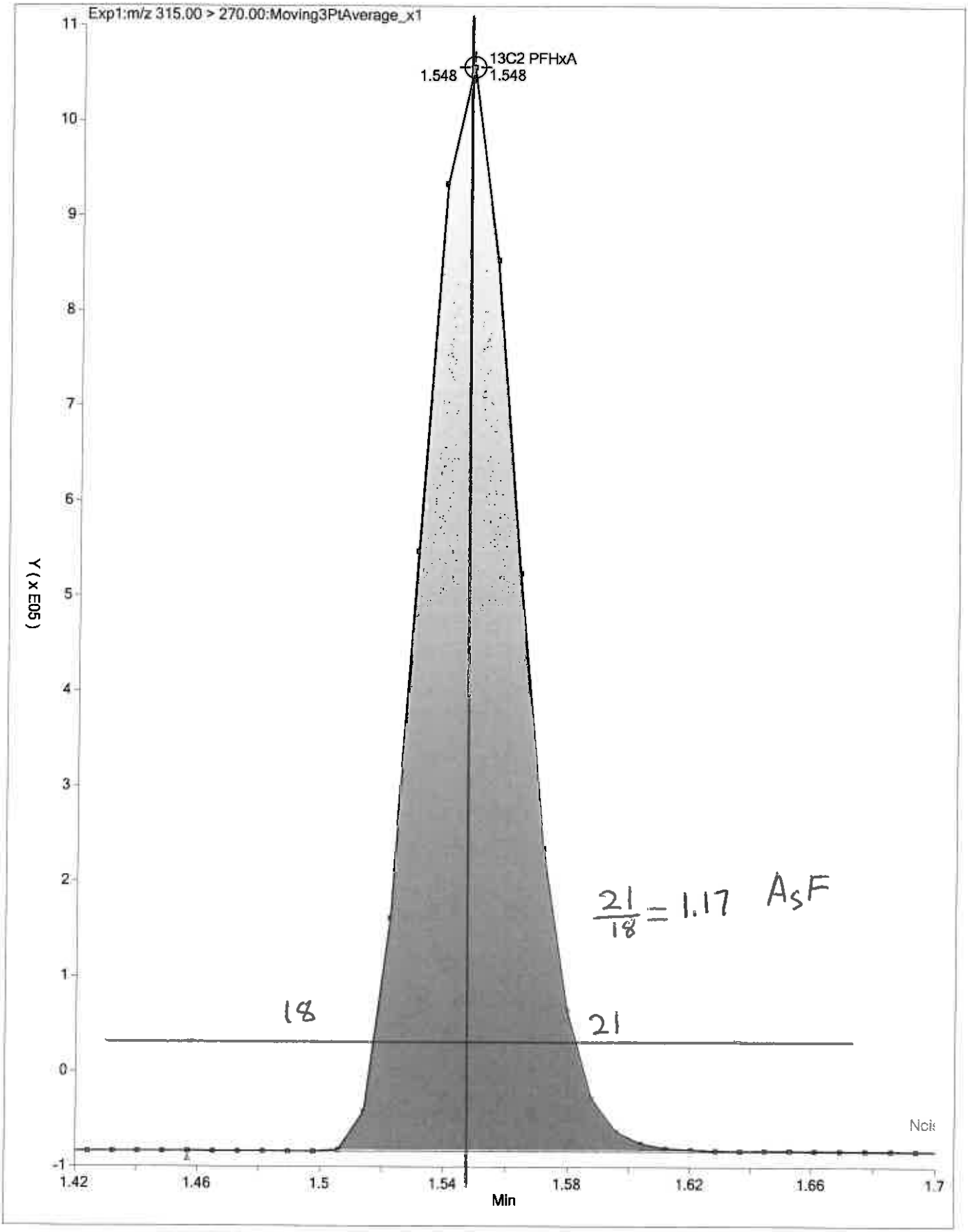
Calibration Start Date: 06/28/2017 16:11 Calibration End Date: 06/28/2017 16:35 Calibration ID: 32056

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-171480/4	2017.06.28_537_CURVE_004.d
Level 2	IC 320-171480/5	2017.06.28_537_CURVE_005.d
Level 3	IC 320-171480/6	2017.06.28_537_CURVE_006.d
Level 4	IC 320-171480/7	2017.06.28_537_CURVE_007.d
Level 5	IC 320-171480/8	2017.06.28_537_CURVE_008.d
Level 6	IC 320-171480/9	2017.06.28_537_CURVE_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	-8.8	6.1	3.1	-0.7	-1.7	1.2	50	50	50	50	50	50
Perfluoroheptanoic acid	-0.6	5.0	1.1	1.7	-0.5	-6.6	50	50	50	50	50	50
Perfluorohexanesulfonic acid	-2.2	2.5	6.3	0.3	-1.9	-5.0	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-11.4	3.5	0.7	1.9	4.6	0.7	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-2.5	-1.9	2.9	-3.0	1.4	3.1	50	50	50	50	50	50
Perfluorononanoic acid	-5.1	6.9	3.7	1.6	-3.1	-4.0	50	50	50	50	50	50
13C2 PFHxA	-6.1	1.5	0.4	0.2	2.9	1.0	30	30	30	30	30	30
13C2 PFDA	-6.1	1.8	-0.5	-1.9	1.2	5.7	30	30	30	30	30	30


Exp1:m/z 298.90 > 80.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.419
1.419
Y (x E05)
Min
23
34
$\frac{34}{23} = 1.48$ $A_s F$
Noise
Exp1:m/z 298.90 > 99.00:Moving3PtAverage_x1
Perfluorobutanesulfonic acid
1.411
Y (x E05)
Min
Noise


Exp1:m/z 315.00 > 270.00:Moving3PtAverage_x1
13C2 PFHxA
1.548
1.548
Y (x E05)
Min
1.42
1.46
1.5
1.54
1.58
1.62
1.66
1.7
18
21
21/18 = 1.17 AsF

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 28-Jun-2017 16:11:22 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 16:55:27 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 16:43:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	1790966	8.06		545	
298.90 > 99.00	1.411	1.415	-0.004	1.000	1409413		1.27(0.00-0.00)	649	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	2210545	9.39		5756	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.697	0.002	1.000	189804	0.9841		35.4	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	835502	2.94		332	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	304104	1.77		16.2	
413.00 > 169.00	1.882	1.882	0.0	1.000	188306		1.61(0.00-0.00)	293	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1955989	10.0		4940	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	775815	3.90		640	
499.00 > 99.00	2.117	2.117	0.0	0.996	168832		4.60(0.00-0.00)	217	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.119	-0.002		5515470	28.7		3323	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.131	0.001	1.000	244768	1.83		21.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1208487	9.39		3415	

Reagents:

LC537-L1_00018 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 16:55:27 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_004.d

Injection Date: 28-Jun-2017 16:11:22 Instrument ID: A8_N

Lims ID: IC L1

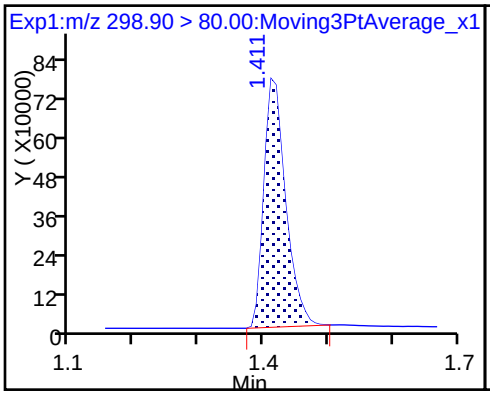
Client ID:

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

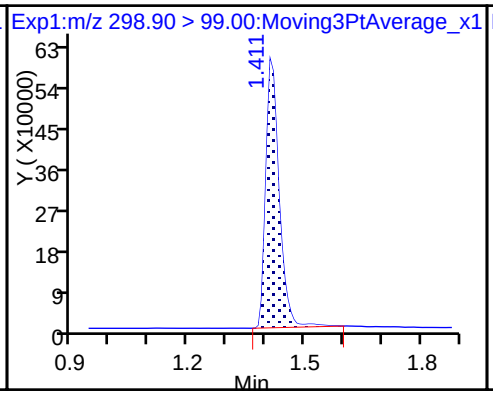
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

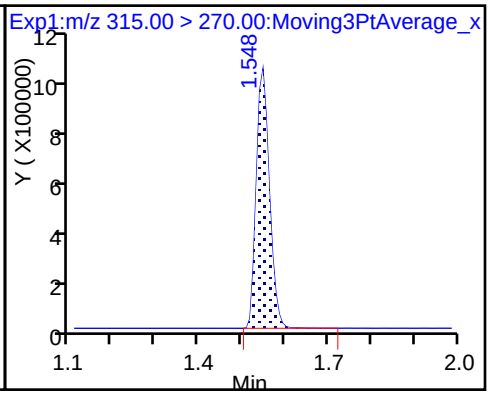
1 Perfluorobutanesulfonic acid



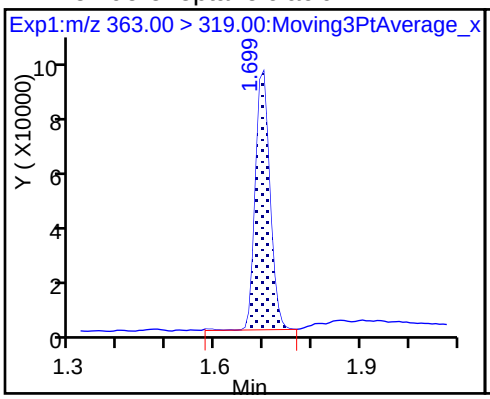
1 Perfluorobutanesulfonic acid



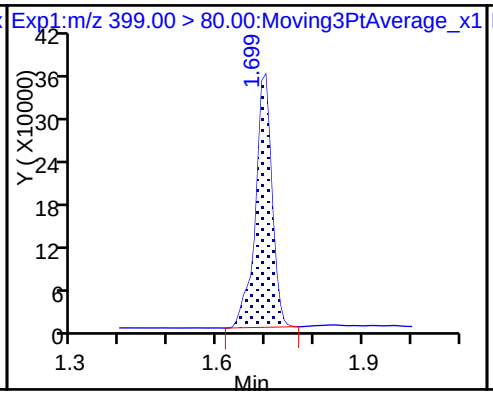
$ 2 13C2 PFHxA



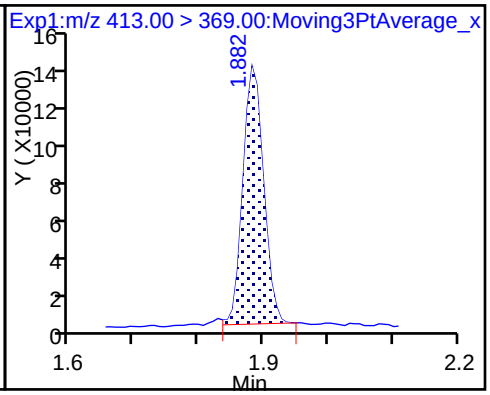
4 Perfluoroheptanoic acid



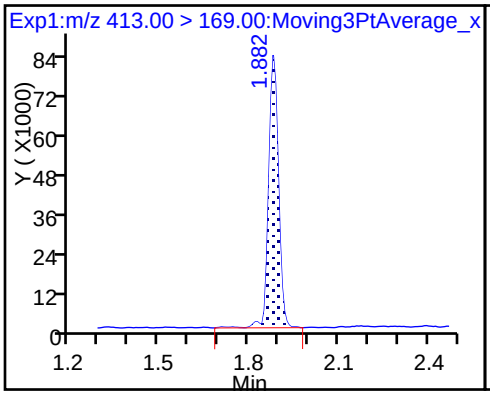
3 Perfluorohexanesulfonic acid



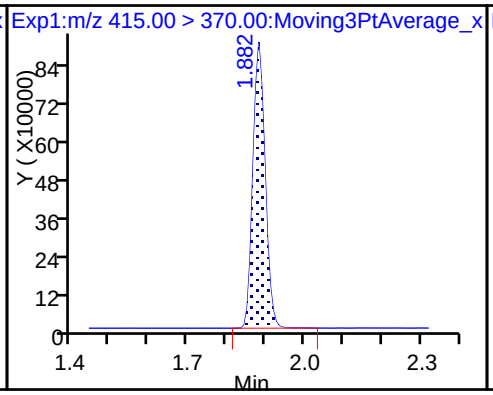
5 Perfluorooctanoic acid



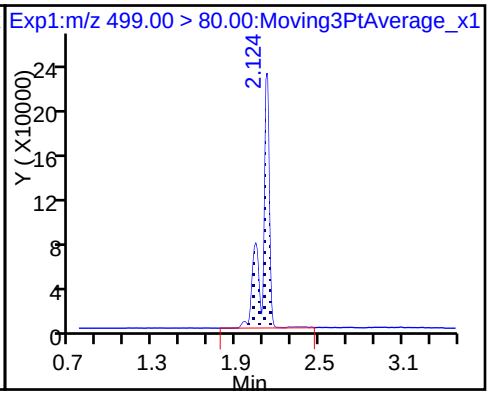
5 Perfluorooctanoic acid



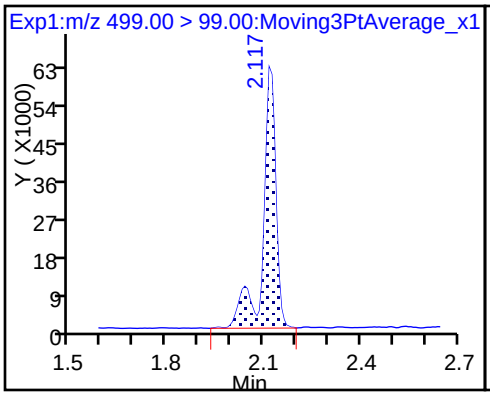
* 6 13C2-PFOA



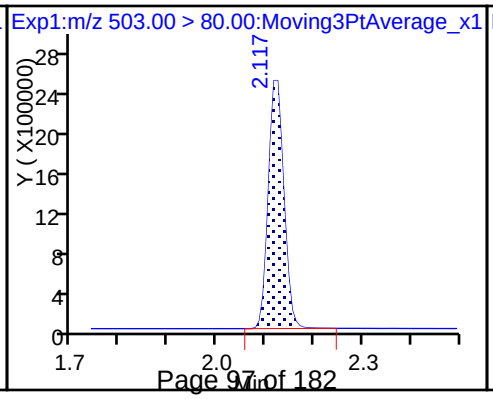
8 Perfluorooctane sulfonic acid



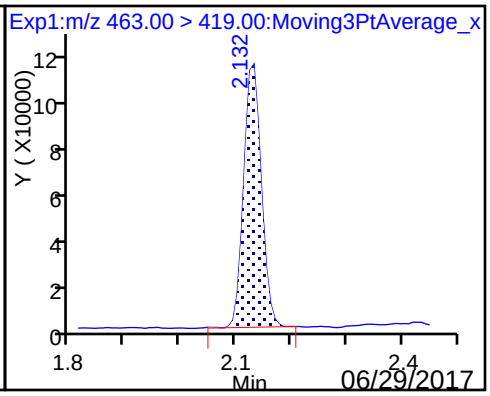
8 Perfluorooctane sulfonic acid



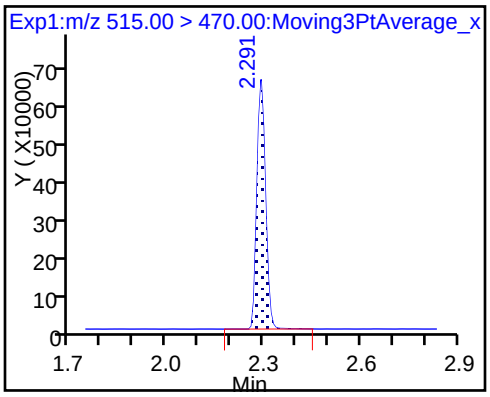
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
70
60
50
40
30
20
10
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 28-Jun-2017 16:16:06 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 16:55:28 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 16:35:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.415	0.004	1.000	4119763	22.5		1210	
298.90 > 99.00	1.419	1.415	0.004	1.000	3074490		1.34(0.00-0.00)	1108	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	1899539	10.2		5966	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.697	0.002	1.000	382424	2.49		66.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	1782416	7.40		819	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1555217	10.0		3952	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	677915	4.96		38.6	
413.00 > 169.00	1.882	1.882	0.0	1.000	409648		1.65(0.00-0.00)	660	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	1589627	9.43		1107	
499.00 > 99.00	2.117	2.117	0.0	0.996	355184		4.48(0.00-0.00)	456	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.119	0.005		4678665	28.7		3312	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.131	0.001	1.000	526209	4.94		49.3	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1042170	10.2		3269	

Reagents:

LC537-L2_00018 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 16:55:28 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_005.d

Injection Date: 28-Jun-2017 16:16:06 Instrument ID: A8_N

Lims ID: IC L2

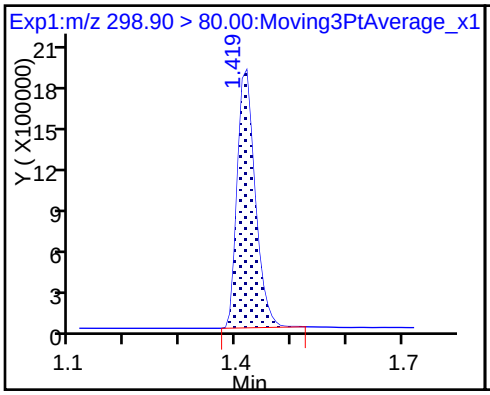
Client ID:

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

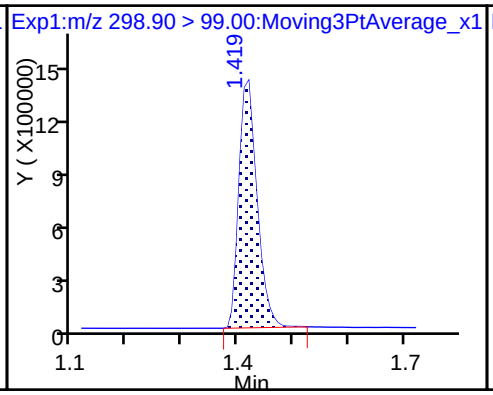
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

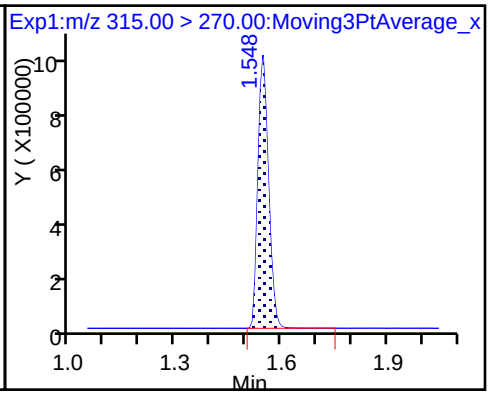
1 Perfluorobutanesulfonic acid



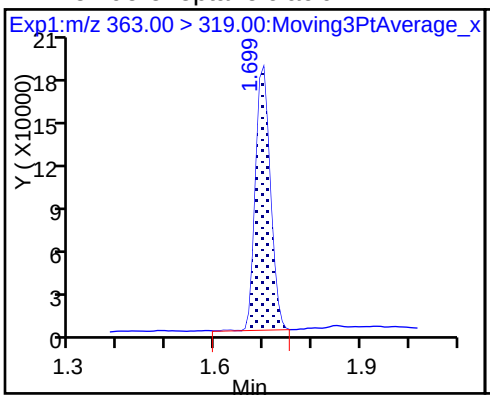
1 Perfluorobutanesulfonic acid



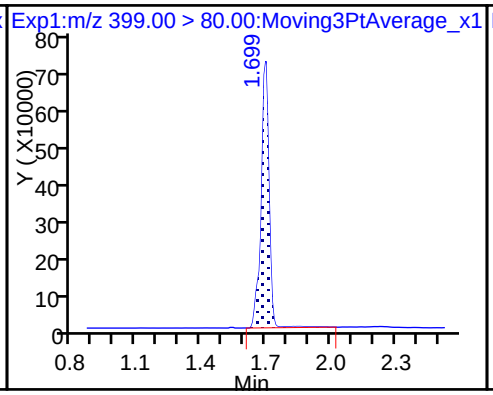
$ 2 13C2 PFHxA



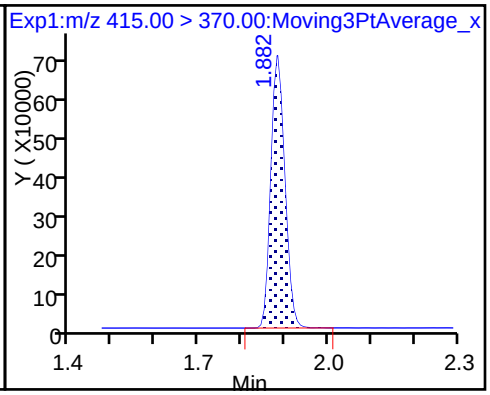
4 Perfluoroheptanoic acid



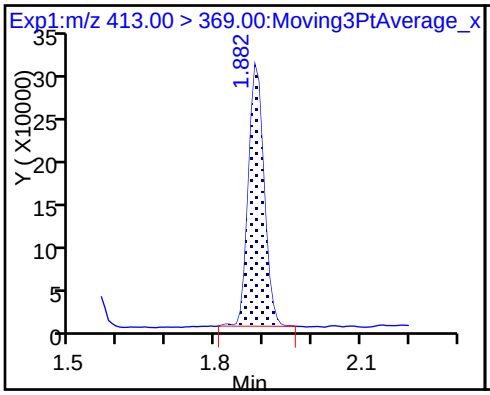
3 Perfluorohexanesulfonic acid



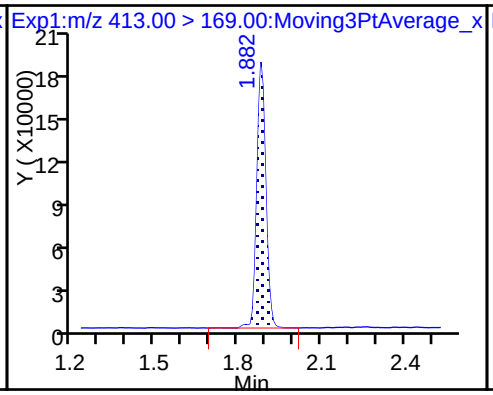
* 6 13C2-PFOA



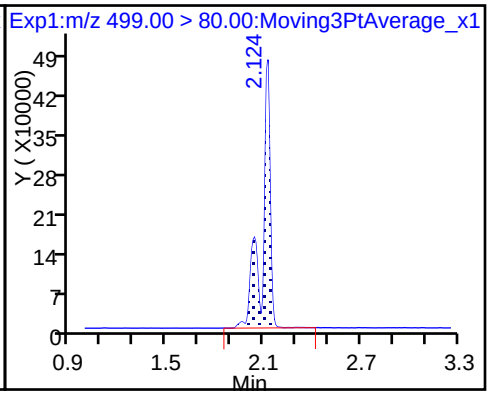
5 Perfluorooctanoic acid



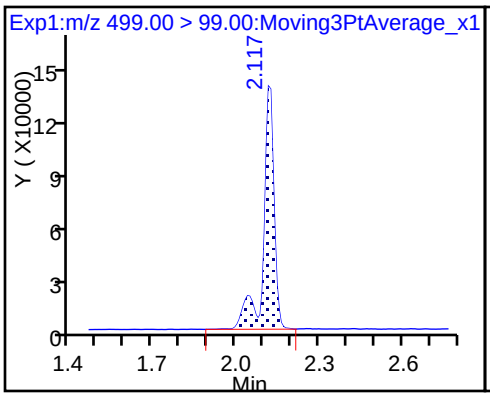
5 Perfluorooctanoic acid



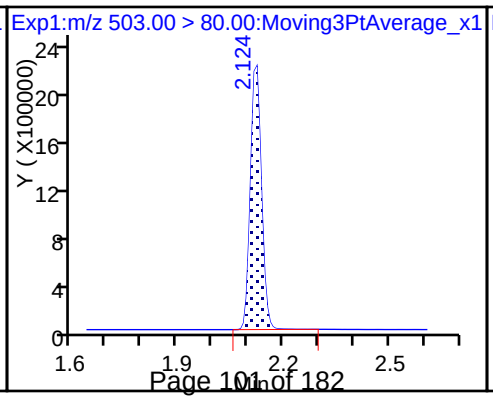
8 Perfluorooctane sulfonic acid



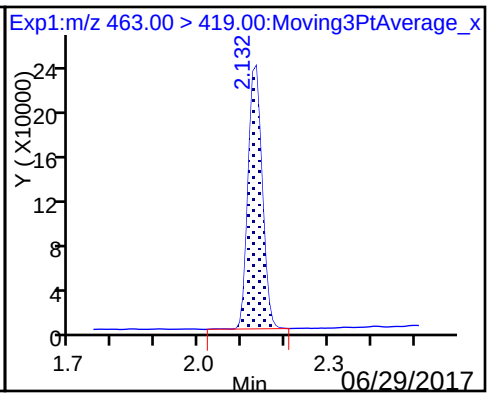
8 Perfluorooctane sulfonic acid



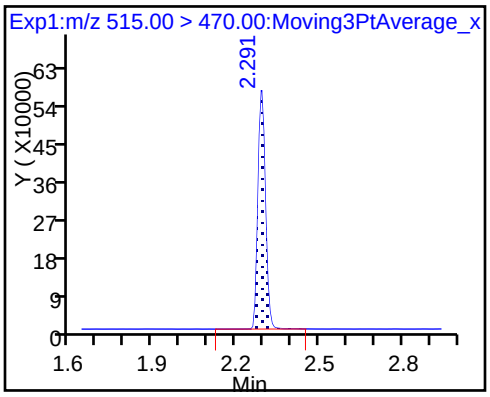
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
63
54
45
36
27
18
9
0
1.6
1.9
2.2
2.5
2.8
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 28-Jun-2017 16:20:50 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 16:55:29 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 16:32:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	11524329	45.8		2493	
298.90 > 99.00	1.411	1.415	-0.004	1.000	8951622		1.29(0.00-0.00)	2436	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	2804666	10.0		6939	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.697	-0.005	1.000	1150592	5.03		197	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	5588395	16.1		1987	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	2061378	10.1		114	
413.00 > 169.00	1.882	1.882	0.0	1.000	1221192		1.69(0.00-0.00)	1652	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		2321071	10.0		5723	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	5038246	20.7		2652	
499.00 > 99.00	2.117	2.117	0.0	0.996	1124439		4.48(0.00-0.00)	1216	
* 7 13C4 PFOS									
503.00 > 80.00	2.124	2.119	0.005		6756643	28.7		4106	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.131	0.001	1.000	1594605	10.0		131	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1519617	9.95		4272	

Reagents:

LC537-L3_00020 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 16:55:30 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_006.d

Injection Date: 28-Jun-2017 16:20:50 Instrument ID: A8_N

Lims ID: IC L3

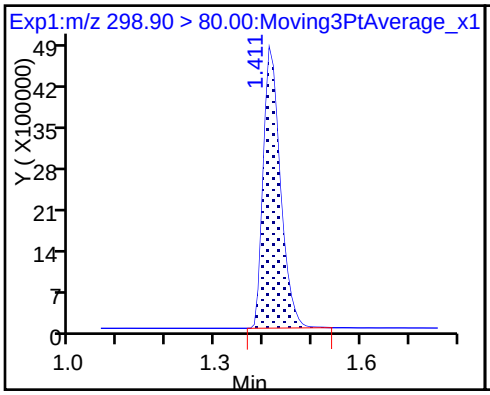
Client ID:

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

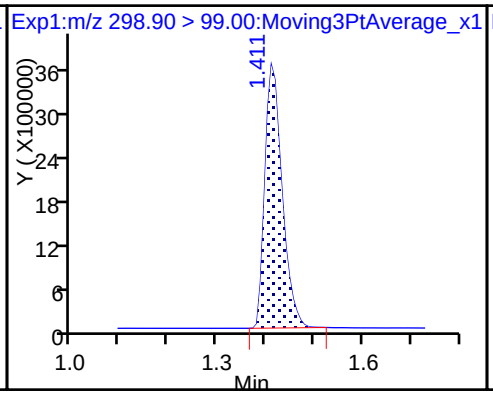
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

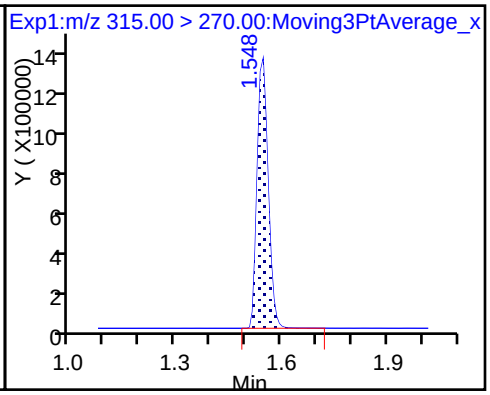
1 Perfluorobutanesulfonic acid



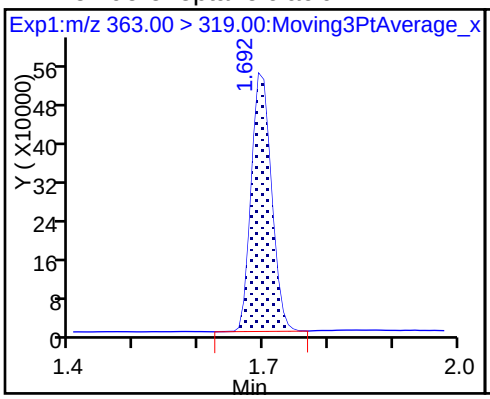
1 Perfluorobutanesulfonic acid



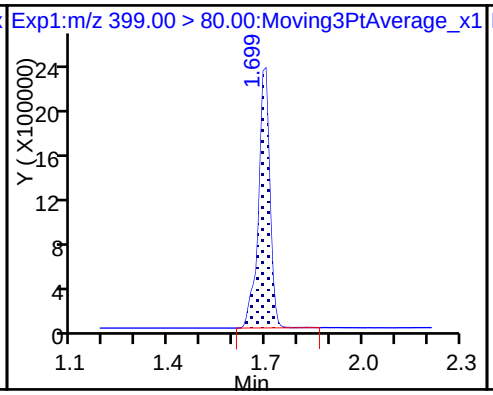
$ 2 13C2 PFHxA



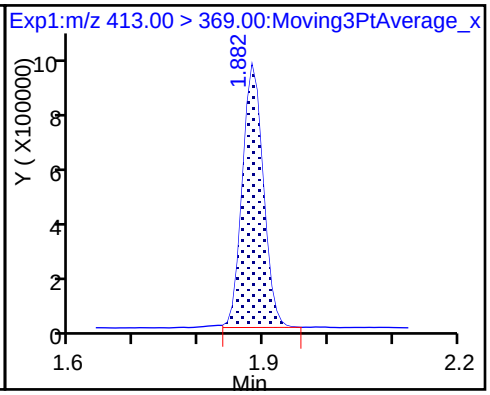
4 Perfluoroheptanoic acid



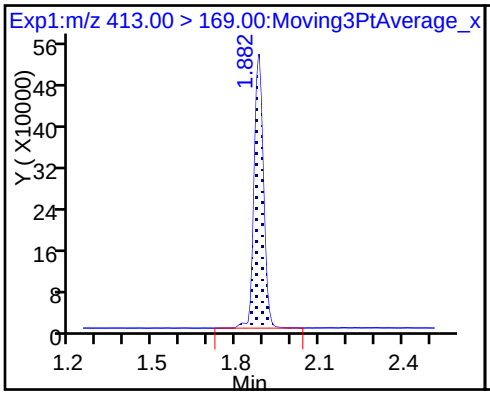
3 Perfluorohexanesulfonic acid



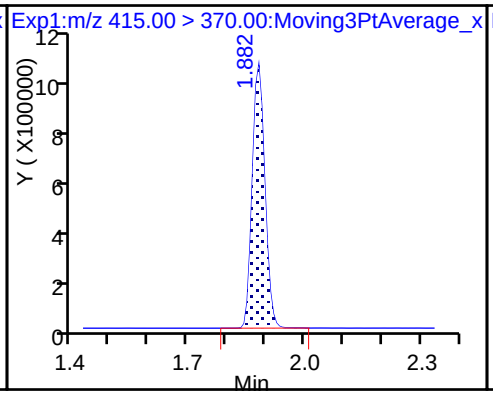
5 Perfluorooctanoic acid



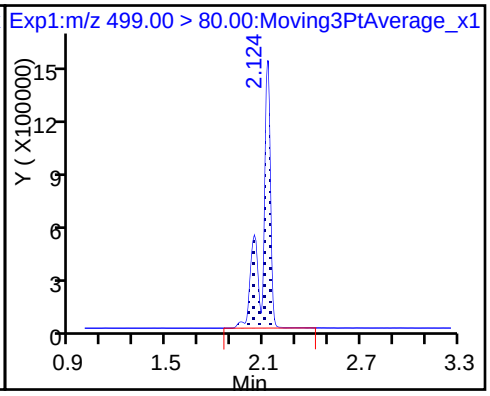
5 Perfluorooctanoic acid



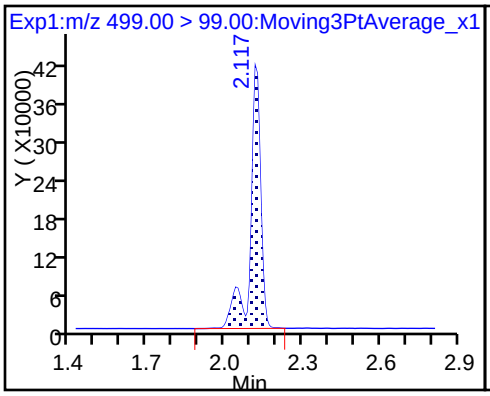
* 6 13C2-PFOA



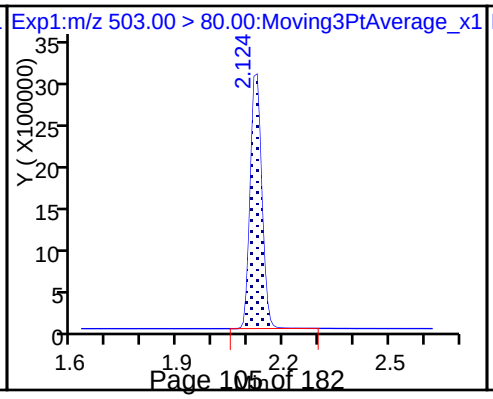
8 Perfluorooctane sulfonic acid



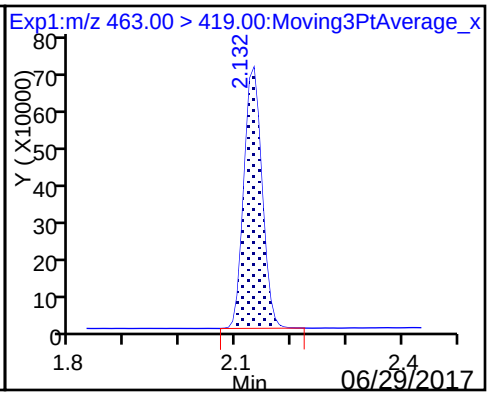
8 Perfluorooctane sulfonic acid



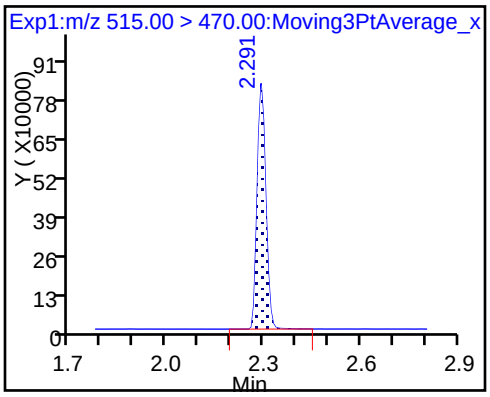
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
91
78
65
52
39
26
13
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_007.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 28-Jun-2017 16:25:35 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 16:55:31 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 16:55:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.415	0.004	1.000	15979460	88.8		2331	
298.90 > 99.00	1.411	1.415	-0.004	0.995	12860446		1.24(0.00-0.00)	2491	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	2069475	10.0		4999	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.697	0.002	1.000	1723856	10.2		294	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	8363563	30.5		2247	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1715754	10.0		4697	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	3106405	20.6		184	
413.00 > 169.00	1.882	1.882	0.0	1.000	1868573		1.66(0.00-0.00)	2128	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.124	2.117	0.007	1.000	7541349	39.3		3213	
499.00 > 99.00	2.117	2.117	0.0	0.996	1752429		4.30(0.00-0.00)	1678	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.119	-0.002		5320058	28.7		3607	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.131	0.001	1.000	2328532	19.8		190	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1107876	9.81		3405	

Reagents:

LC537-L4_00018 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 16:55:31 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_007.d

Injection Date: 28-Jun-2017 16:25:35 Instrument ID: A8_N

Lims ID: IC L4

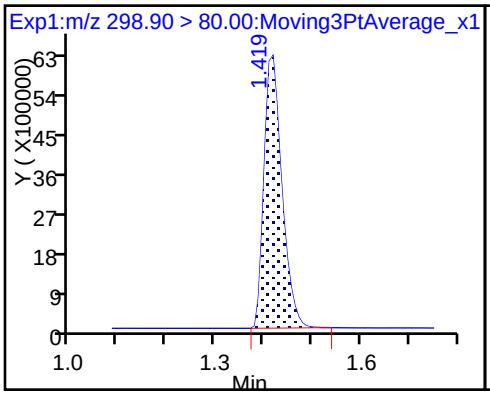
Client ID:

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

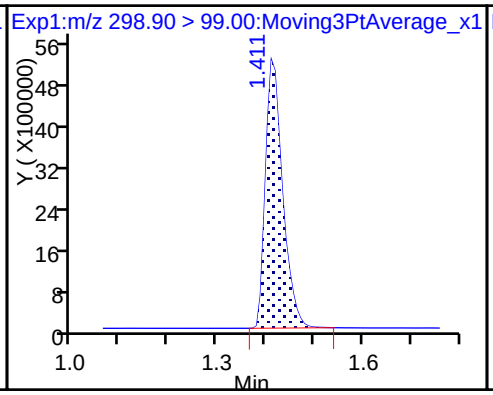
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

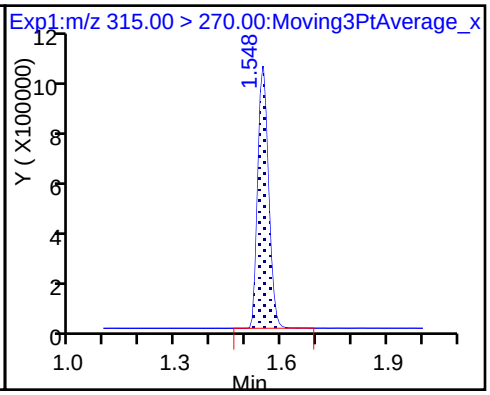
1 Perfluorobutanesulfonic acid



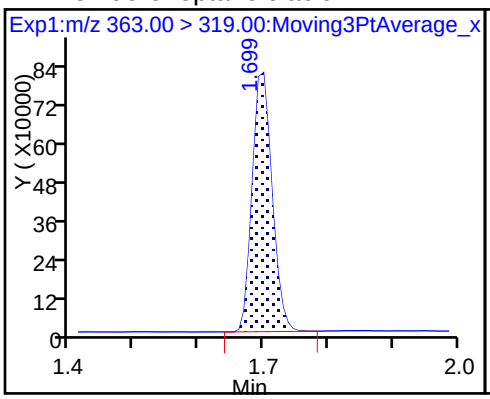
1 Perfluorobutanesulfonic acid



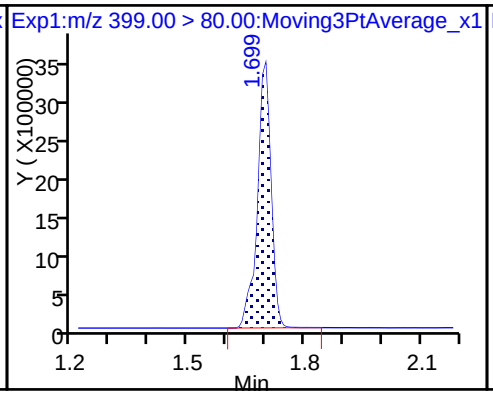
$ 2 13C2 PFHxA



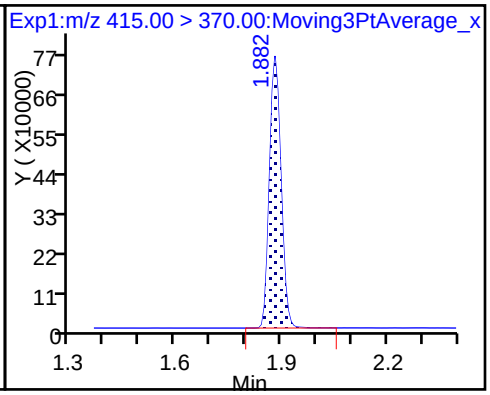
4 Perfluoroheptanoic acid



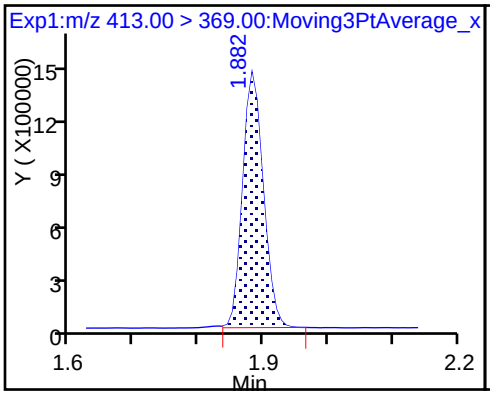
3 Perfluorohexanesulfonic acid



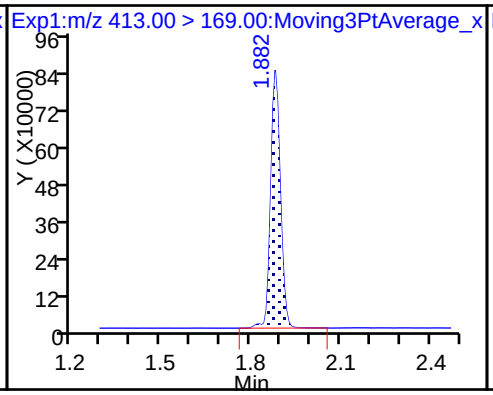
* 6 13C2-PFOA



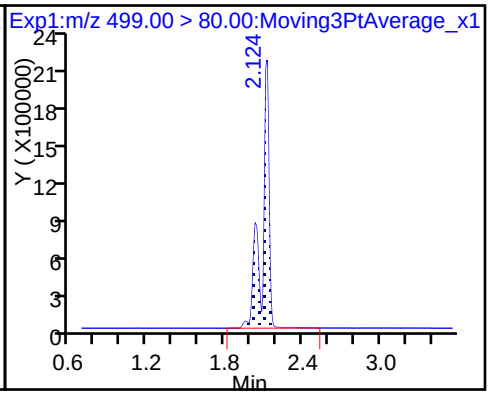
5 Perfluorooctanoic acid



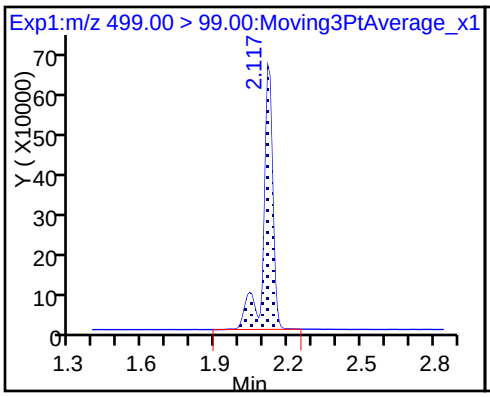
5 Perfluorooctanoic acid



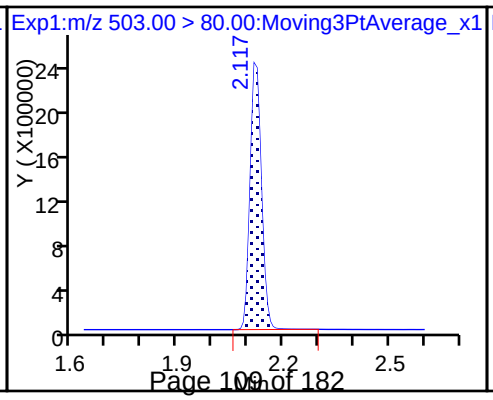
8 Perfluorooctane sulfonic acid



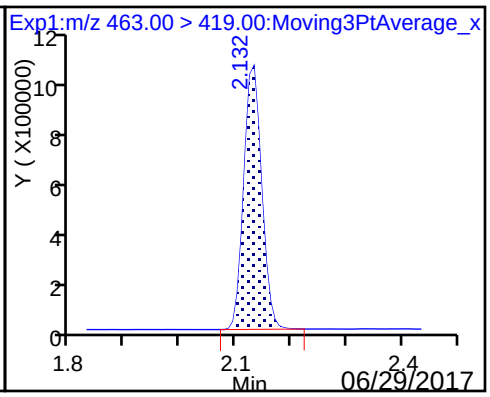
8 Perfluorooctane sulfonic acid



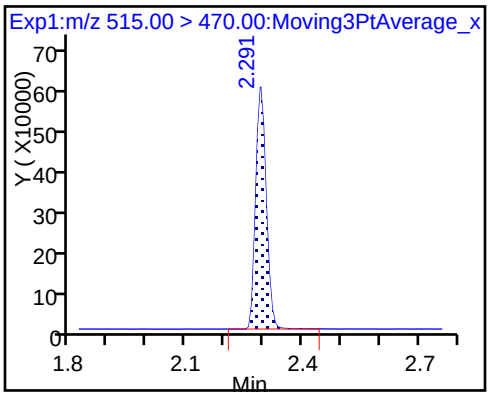
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 28-Jun-2017 16:30:19 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 16:55:32 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 16:44:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.415	0.004	1.000	27434944	130.2		2906	
298.90 > 99.00	1.411	1.415	-0.004	0.995	21997952		1.25(0.00-0.00)	2902	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	2848725	10.3		7994	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.697	0.002	1.000	3354002	14.8		559	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	15739710	44.2		3098	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	6337635	31.4		367	
413.00 > 169.00	1.882	1.882	0.0	1.000	3765616		1.68(0.00-0.00)	3658	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		2301384	10.0		5680	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	15161771	60.9		4851	
499.00 > 99.00	2.117	2.117	0.0	1.000	3453740		4.39(0.00-0.00)	2548	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.119	-0.002		6908198	28.7		4041	
9 Perfluorononanoic acid									
463.00 > 419.00	2.132	2.131	0.001	1.000	4410928	28.0		295	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1532613	10.1		4398	

Reagents:

LC537-L5_00021 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 16:55:32 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_008.d

Injection Date: 28-Jun-2017 16:30:19 Instrument ID: A8_N

Lims ID: IC L5

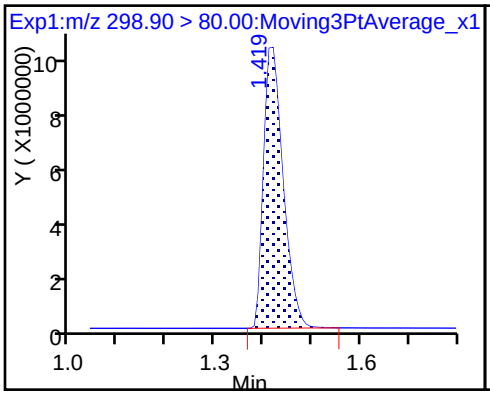
Client ID:

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

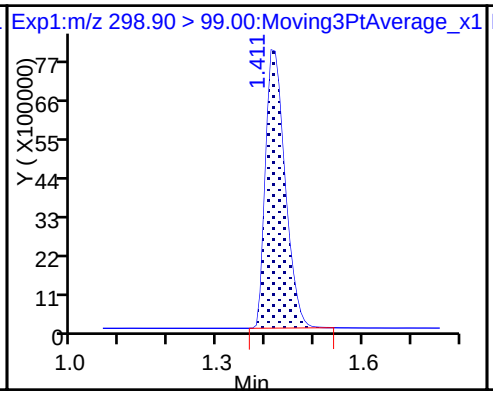
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

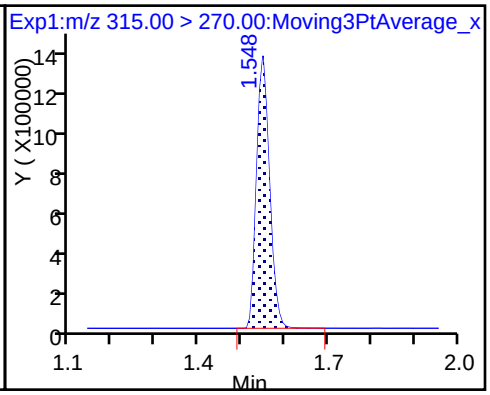
1 Perfluorobutanesulfonic acid



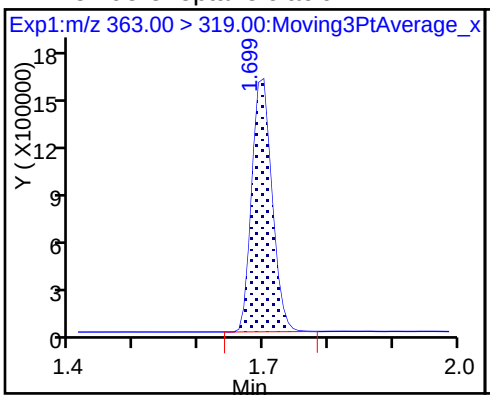
1 Perfluorobutanesulfonic acid



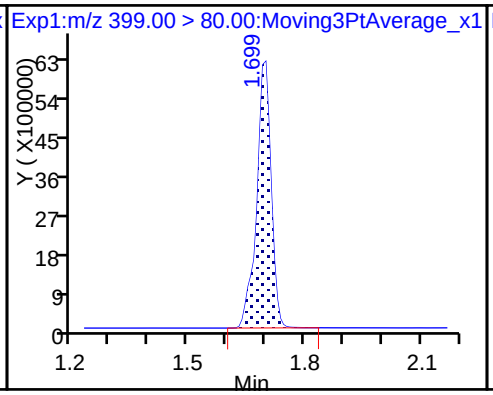
$ 2 13C2 PFHxA



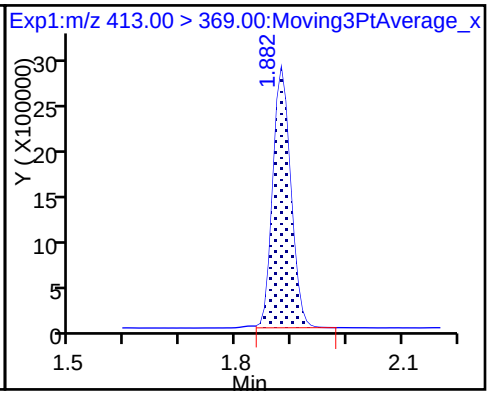
4 Perfluoroheptanoic acid



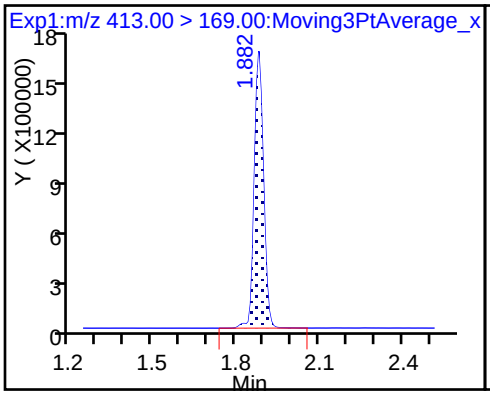
3 Perfluorohexanesulfonic acid



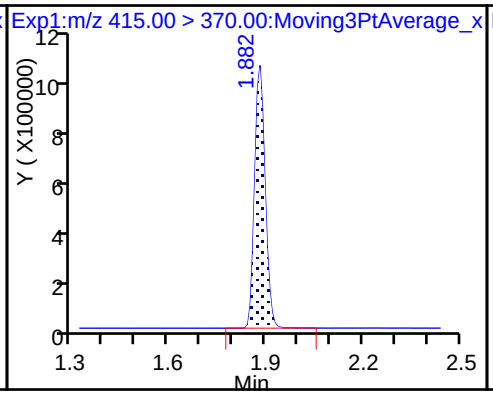
5 Perfluorooctanoic acid



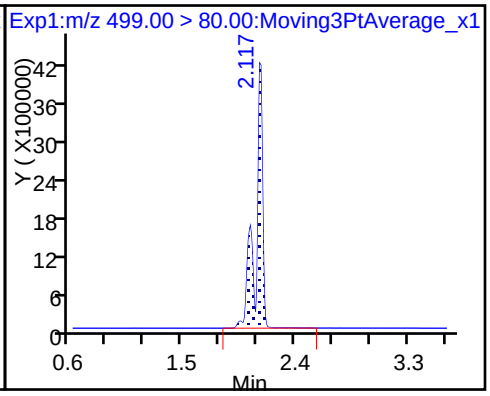
5 Perfluorooctanoic acid



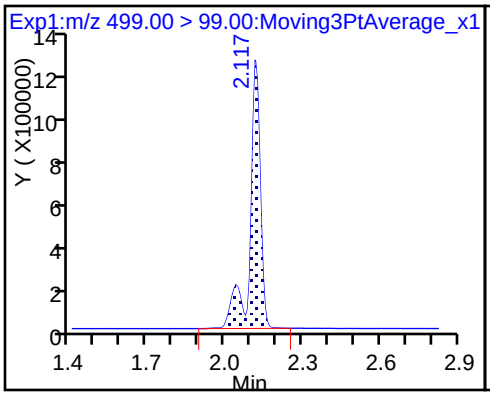
* 6 13C2-PFOA



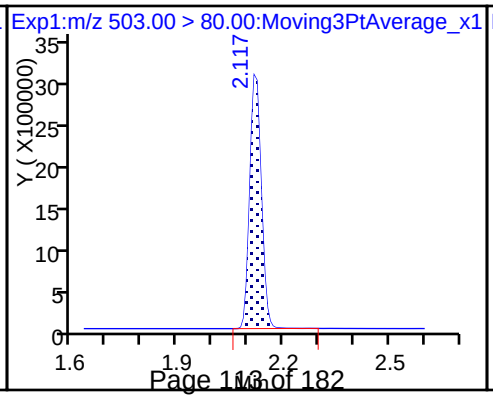
8 Perfluorooctane sulfonic acid



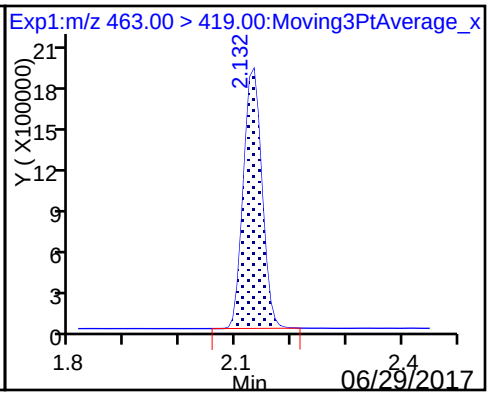
8 Perfluorooctane sulfonic acid



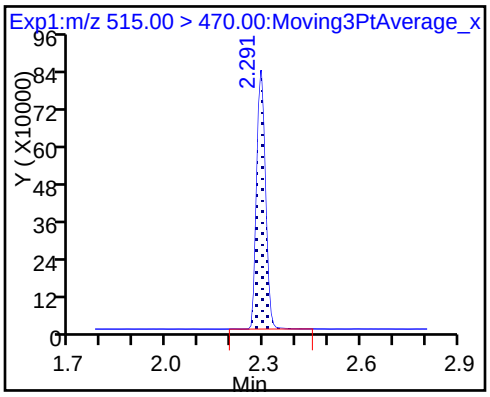
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
96
84
72
60
48
36
24
12
0
1.7
2.0
2.3
2.6
2.9
Min

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 28-Jun-2017 16:35:04 ALS Bottle#: 6 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 16:55:33 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 16:44:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	30127104	177.7		2406	
298.90 > 99.00	1.411	1.415	-0.004	1.000	24441009		1.23(0.00-0.00)	2627	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	2576119	10.1		6622	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.697	-0.005	1.000	3839119	18.4		646	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.698	-0.006	1.000	18580566	56.8		3190	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		2119055	10.0		4846	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	7442161	40.0		389	
413.00 > 169.00	1.882	1.882	0.0	1.000	4539976		1.64(0.00-0.00)	3482	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	18774908	82.0		4721	
499.00 > 99.00	2.117	2.117	0.0	1.000	4251678		4.42(0.00-0.00)	2817	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.119	-0.002		6352413	28.7		3631	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.131	-0.007	1.000	5329596	36.7		409	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1473923	10.6		4283	

Reagents:

LC537-L6_00017 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 16:55:33 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Injection Date: 28-Jun-2017 16:35:04 Instrument ID: A8_N

Lims ID: IC L6

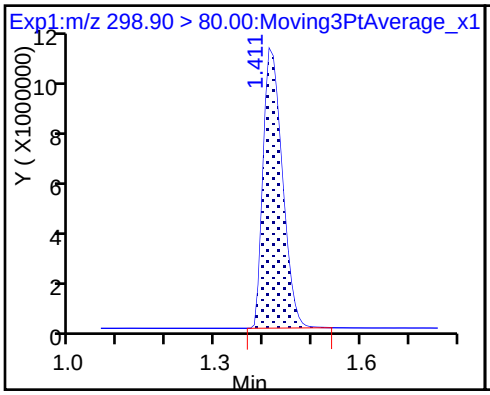
Client ID:

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

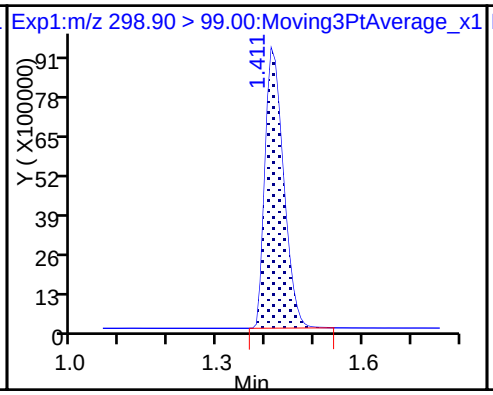
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

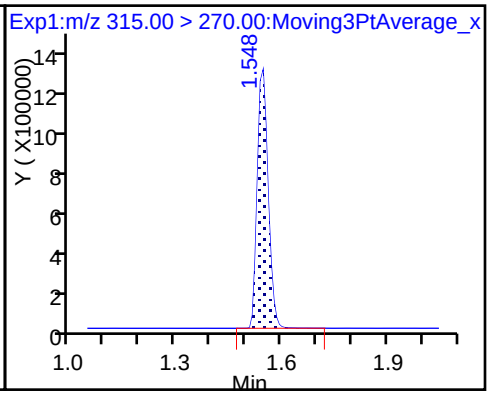
1 Perfluorobutanesulfonic acid



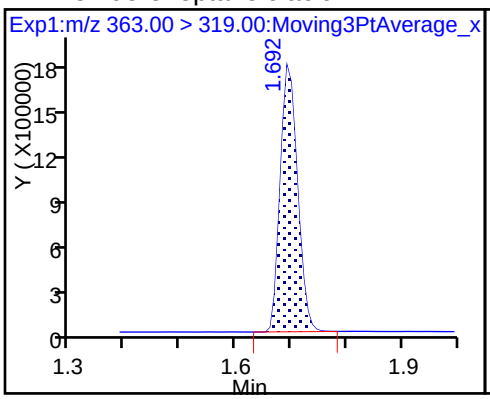
1 Perfluorobutanesulfonic acid



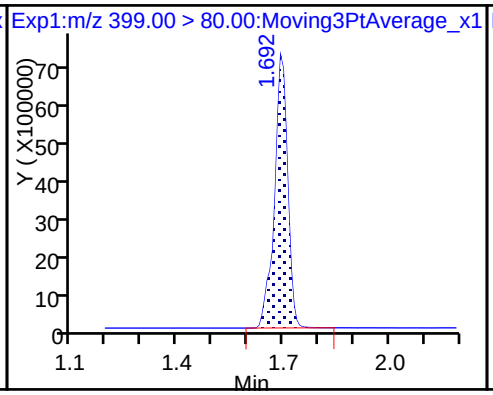
$ 2 13C2 PFHxA



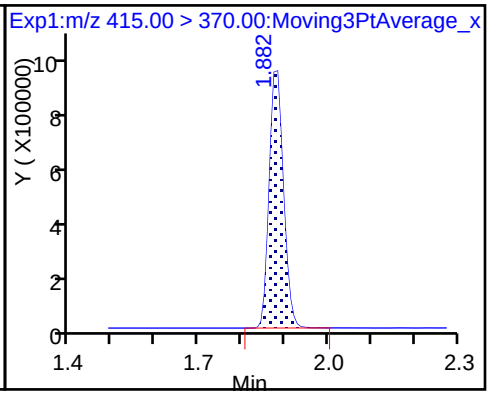
4 Perfluoroheptanoic acid



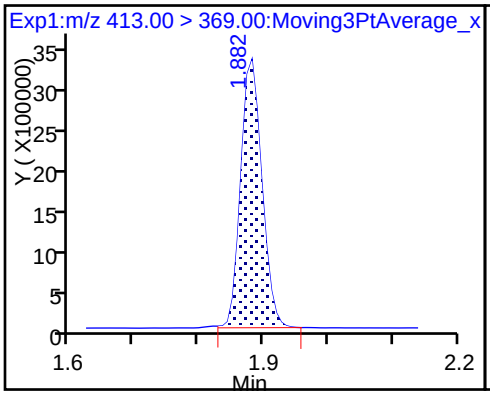
3 Perfluorohexanesulfonic acid



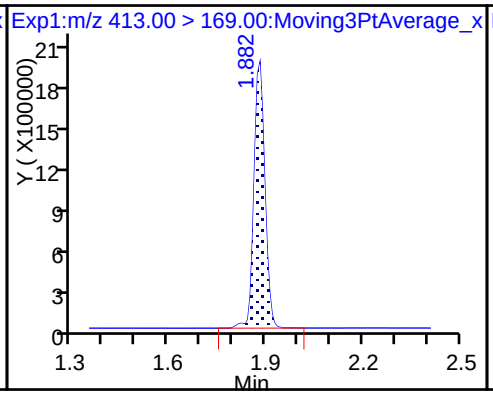
* 6 13C2-PFOA



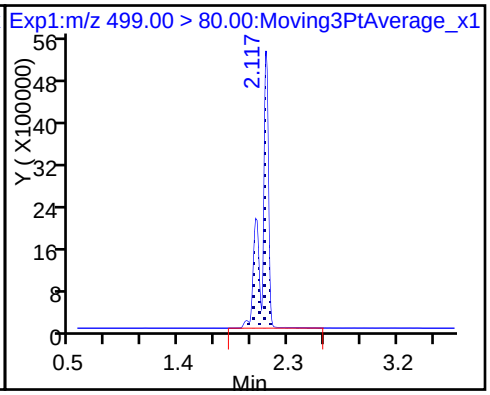
5 Perfluorooctanoic acid



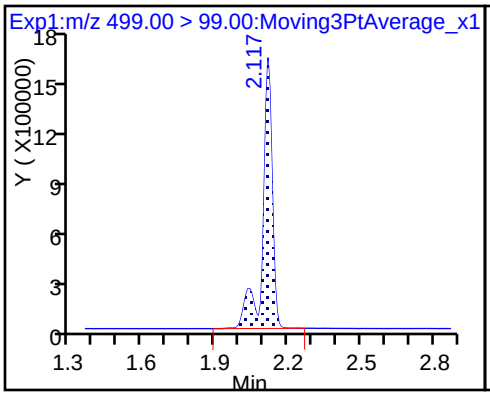
5 Perfluorooctanoic acid



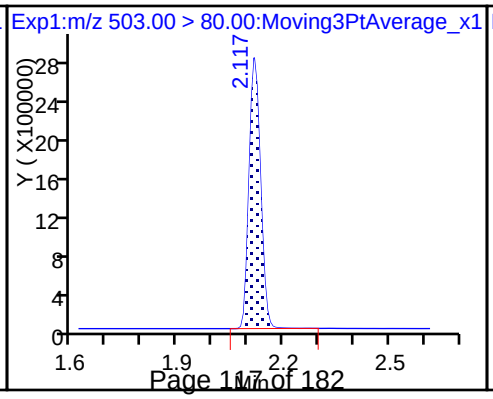
8 Perfluorooctane sulfonic acid



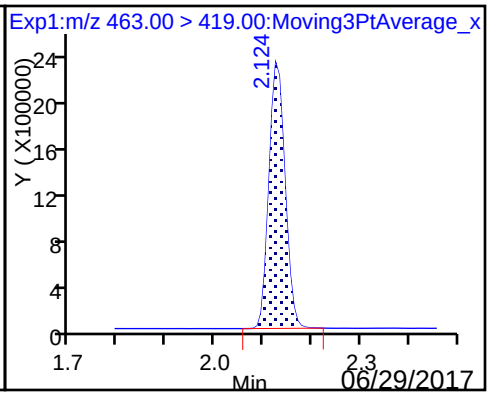
8 Perfluorooctane sulfonic acid



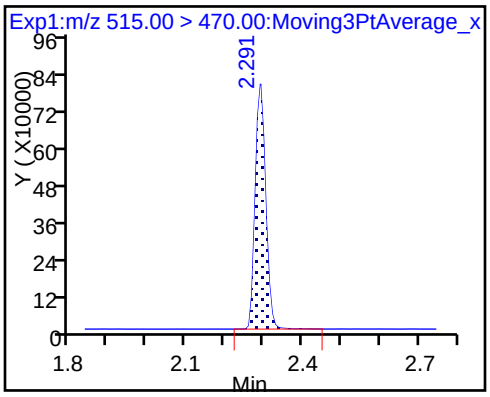
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
96
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Lab Sample ID: CCVL 320-171480/11 Calibration Date: 06/28/2017 16:44

Instrument ID: A8_N Calib Start Date: 06/28/2017 16:11

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/28/2017 16:35

Lab File ID: 2017.06.28_537_CURVE_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.110		20.9	21.2	-1.4	50.0
Perfluoroheptanoic acid	Ave	0.9860	1.011		2.44	2.38	2.5	50.0
Perfluorohexanesulfonic acid	Ave	1.477	1.461		7.13	7.21	-1.1	50.0
Perfluorooctanoic acid (PFOA)	Ave	0.8783	0.8953		4.89	4.80	1.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.034	0.9935		9.24	9.61	-3.9	50.0
Perfluorononanoic acid	Ave	0.6847	0.7253		4.90	4.62	5.9	50.0
13C2 PFHxA	Ave	1.203	1.147		9.53	10.0	-4.7	30.0
13C2 PFDA	Ave	0.6583	0.6379		9.69	10.0	-3.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 28-Jun-2017 16:44:33 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 17:07:11 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 17:06:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.415	0.004	1.000	3928845	20.9		1101	
298.90 > 99.00	1.411	1.415	-0.004	0.995	2994833		1.31(0.00-0.00)	1022	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	1813825	9.53		5389	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.697	0.002	1.000	379920	2.44		69.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	1759780	7.13		637	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.882	1.882	0.0	1.000	679227	4.89		38.9	
413.00 > 169.00	1.882	1.882	0.0	1.000	397588		1.71(0.00-0.00)	592	
* 6 13C2-PFOA									
415.00 > 370.00	1.882	1.882	0.0		1582044	10.0		4701	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	1593927	9.24		1046	
499.00 > 99.00	2.117	2.117	0.0	1.000	361438		4.41(0.00-0.00)	443	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.119	-0.002		4789035	28.7		3269	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.131	-0.007	1.000	530394	4.90		54.2	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1009197	9.69		3142	

Reagents:

LC537-L2_00018 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 17:07:12 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_011.d

Injection Date: 28-Jun-2017 16:44:33 Instrument ID: A8_N

Lims ID: CCVL

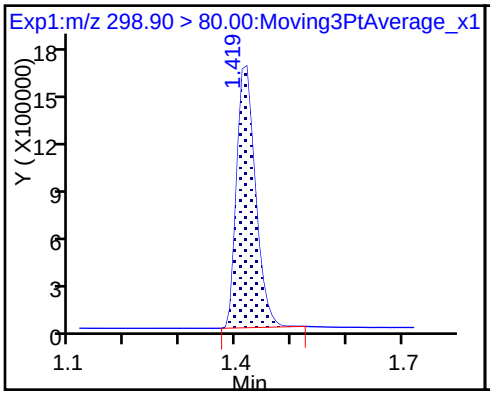
Client ID:

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

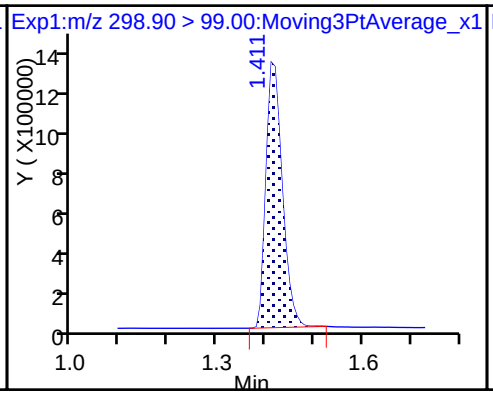
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

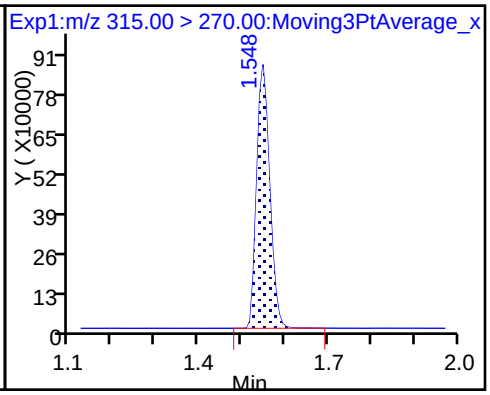
1 Perfluorobutanesulfonic acid



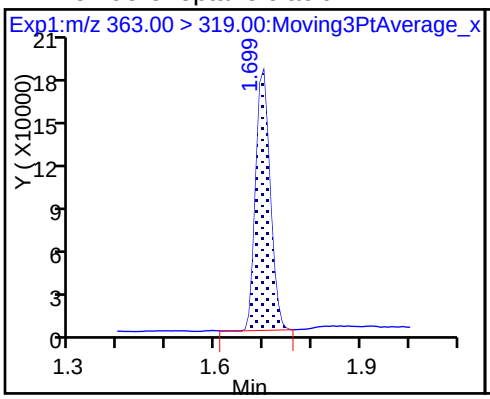
1 Perfluorobutanesulfonic acid



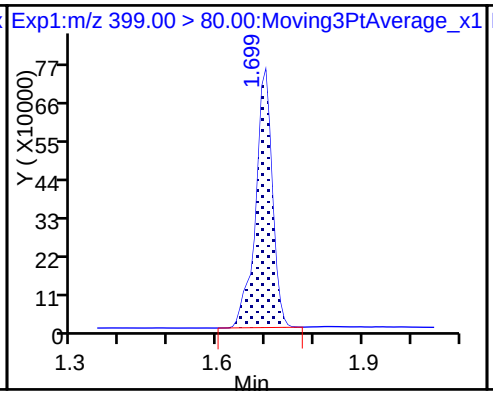
$ 2 13C2 PFHxA



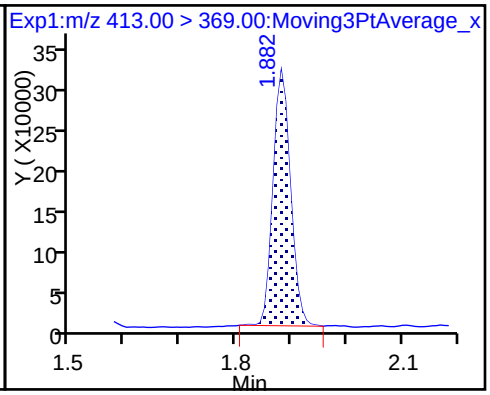
4 Perfluoroheptanoic acid



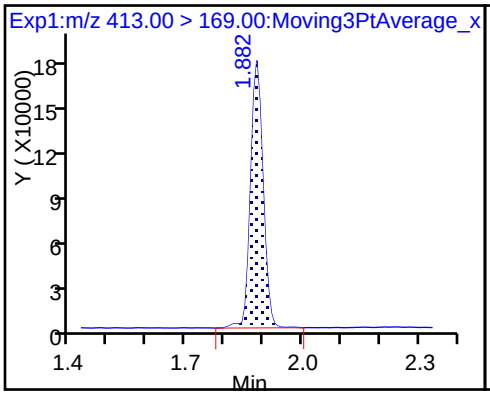
3 Perfluorohexanesulfonic acid



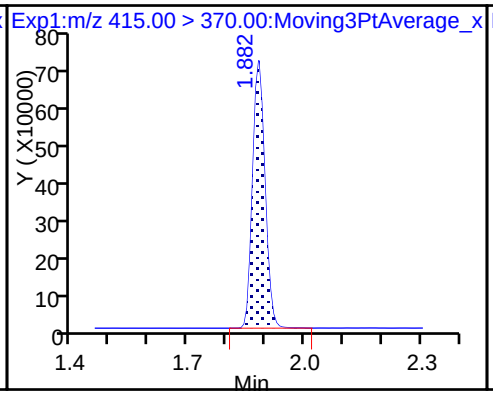
5 Perfluorooctanoic acid



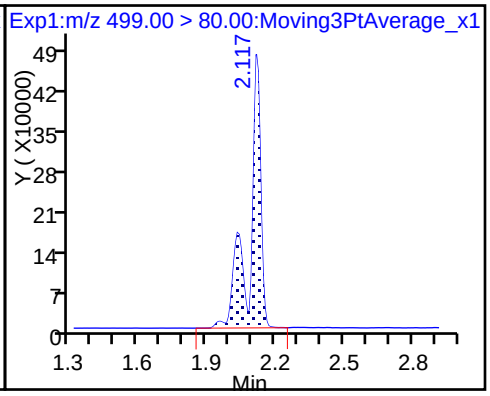
5 Perfluorooctanoic acid



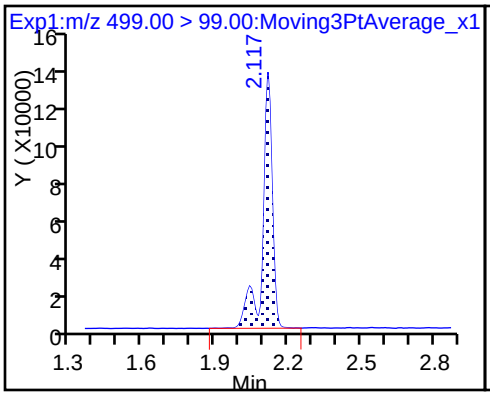
* 6 13C2-PFOA



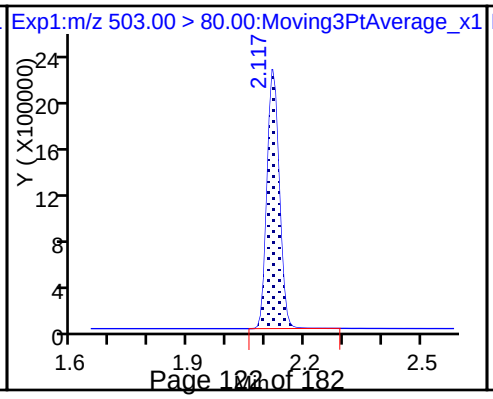
8 Perfluorooctane sulfonic acid



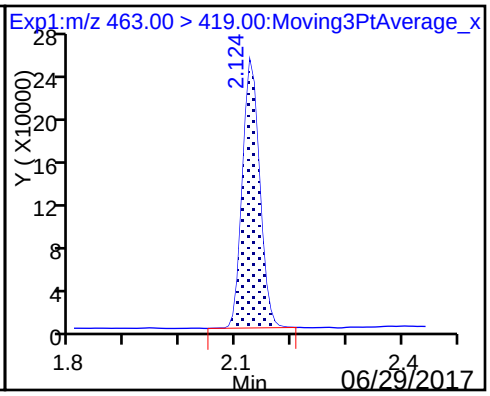
8 Perfluorooctane sulfonic acid



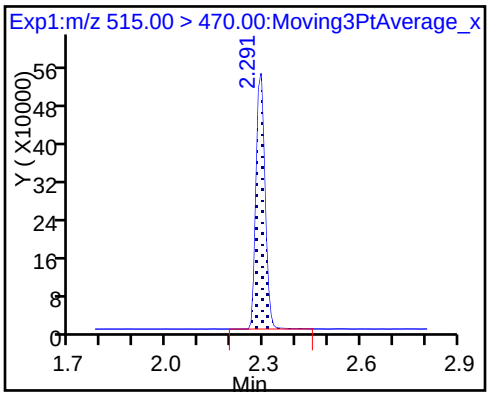
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
56
48
40
32
24
16
8
0
1.7
2.0
2.3
2.6
2.9
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Lab Sample ID: ICV 320-171480/13 Calibration Date: 06/28/2017 16:54

Instrument ID: A8_N Calib Start Date: 06/28/2017 16:11

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/28/2017 16:35

Lab File ID: 2017.06.28_537_CURVE_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.008		110	101	9.4	30.0
Perfluoroheptanoic acid	Ave	0.9860	0.9330		9.54	10.1	-5.4	30.0
Perfluorohexanesulfonic acid	Ave	1.477	1.657		23.8	21.2	12.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8783	0.9424		21.5	20.0	7.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.034	1.098		22.0	20.7	6.2	30.0
Perfluorononanoic acid	Ave	0.6847	0.7209		21.1	20.0	5.3	30.0
13C2 PFHxA	Ave	1.203	1.187		9.86	10.0	-1.4	30.0
13C2 PFDA	Ave	0.6583	0.6889		10.5	10.0	4.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 28-Jun-2017 16:54:03 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\20170628-44832.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 28-Jun-2017 17:36:37 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: barnettj Date: 28-Jun-2017 17:36:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	20322669	110.2		2543	
298.90 > 99.00	1.411	1.415	-0.004	1.000	16013247		1.27(0.00-0.00)	2529	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	2197673	9.86		5336	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.697	-0.005	1.000	1741229	9.54		297	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.698	-0.006	1.000	7031099	23.8		2079	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	3493109	21.5		193	
413.00 > 169.00	1.874	1.882	-0.008	1.000	2046548		1.71(0.00-0.00)	2161	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		1851564	10.0		4138	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	4552562	22.0		2363	
499.00 > 99.00	2.117	2.117	0.0	1.000	853049		5.34(0.00-0.00)	941	
* 7 13C4 PFOS									
503.00 > 80.00	2.117	2.119	-0.002		5746016	28.7		3941	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.131	-0.007	1.000	2670491	21.1		258	
$ 10 13C2 PFDA									
515.00 > 470.00	2.291	2.291	0.0	1.000	1275595	10.5		3491	

Reagents:

LC537-ICV_00020 Amount Added: 1.00 Units: mL

Report Date: 28-Jun-2017 17:36:38 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_013.d

Injection Date: 28-Jun-2017 16:54:03 Instrument ID: A8_N

Lims ID: ICV

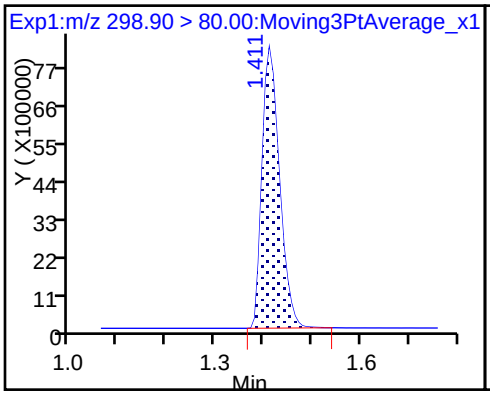
Client ID:

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

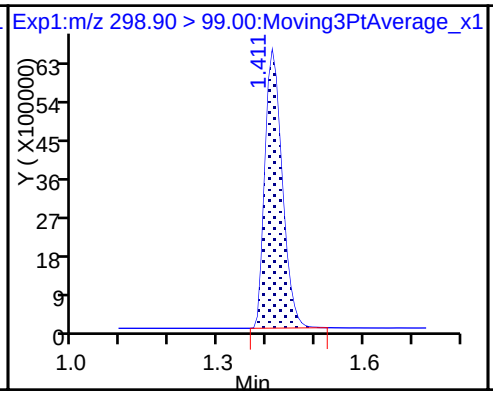
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

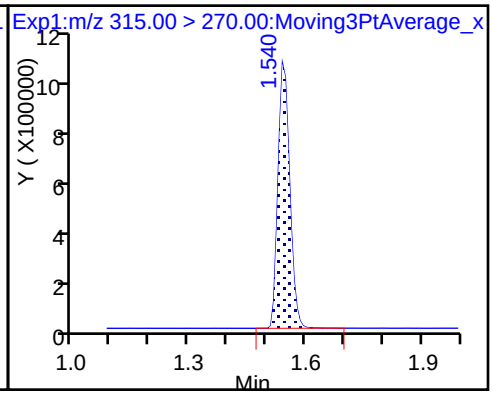
1 Perfluorobutanesulfonic acid



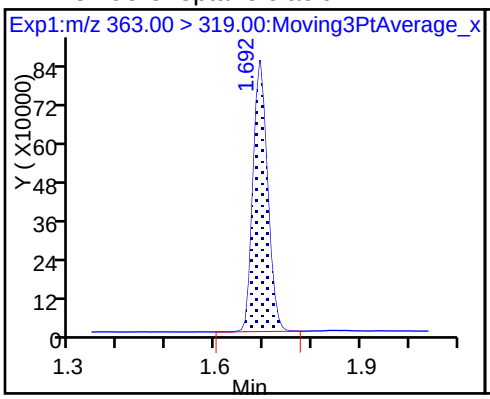
1 Perfluorobutanesulfonic acid



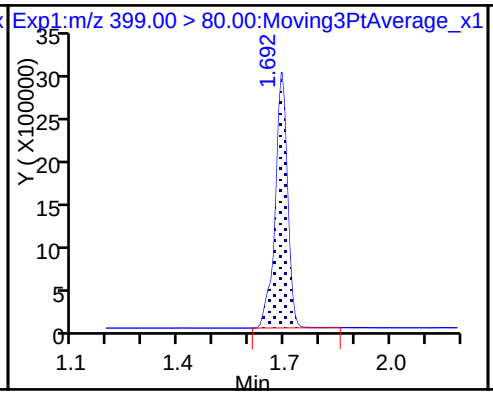
$ 2 13C2 PFHxA



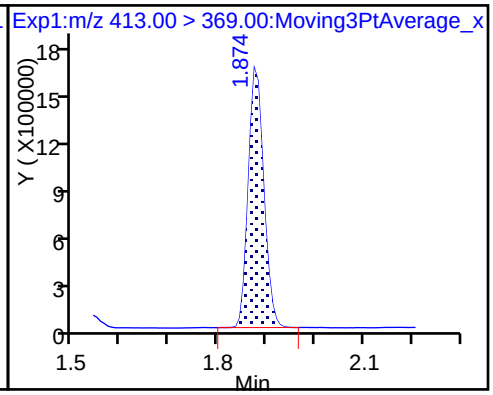
4 Perfluoroheptanoic acid



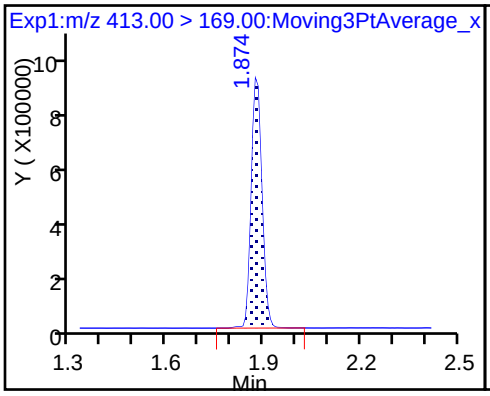
3 Perfluorohexanesulfonic acid



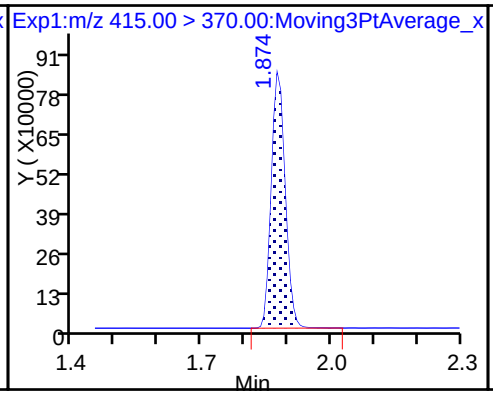
5 Perfluorooctanoic acid



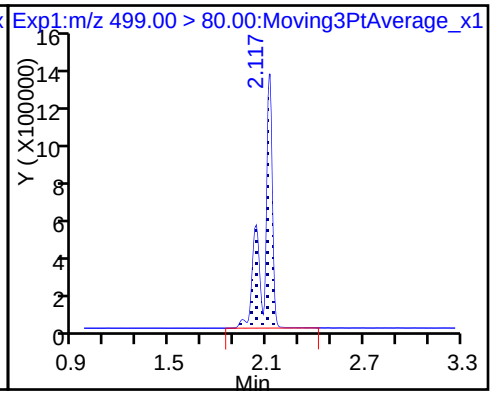
5 Perfluorooctanoic acid



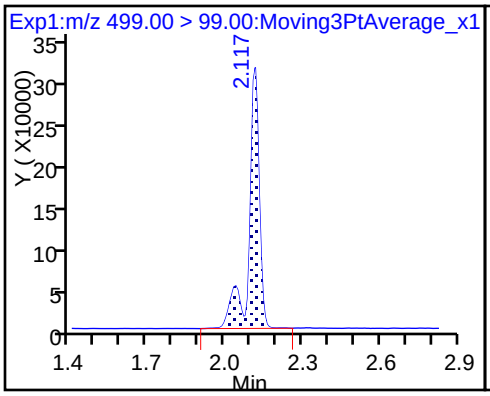
* 6 13C2-PFOA



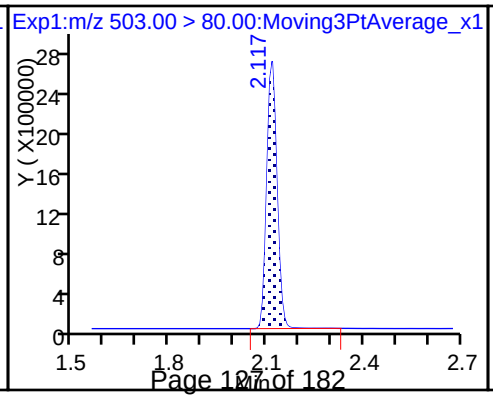
8 Perfluorooctane sulfonic acid



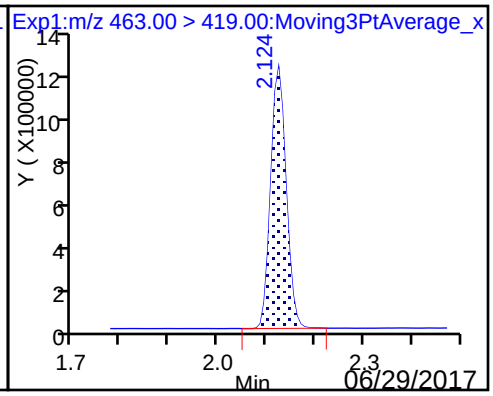
8 Perfluorooctane sulfonic acid



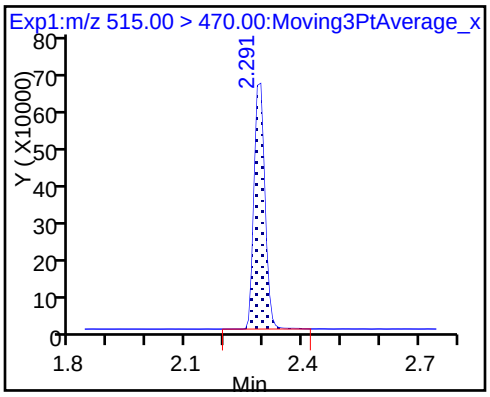
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.291
Y (X10000)
80
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Lab Sample ID: CCV 320-171496/1 Calibration Date: 06/28/2017 18:57

Instrument ID: A8_N Calib Start Date: 06/28/2017 16:11

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/28/2017 16:35

Lab File ID: 2017.06.28_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)	QuaF		0.8337		124	133	-6.1	30.0
Perfluoroheptanoic acid	Ave	0.9860	0.9887		14.9	14.9	0.3	30.0
Perfluorohexanesulfonic acid	Ave	1.477	1.420		43.3	45.1	-3.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8783	0.9415		32.1	30.0	7.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.034	1.052		61.1	60.0	1.8	30.0
Perfluorononanoic acid	Ave	0.6847	0.6883		29.0	28.9	0.5	30.0
13C2 PFHxA	Ave	1.203	1.272		10.6	10.0	5.7	30.0
13C2 PFDA	Ave	0.6583	0.6711		10.2	10.0	1.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_025.d
Lims ID: CCV L5
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Jun-2017 18:57:32 ALS Bottle#: 5 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:09 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

First Level Reviewer: barnettj Date: 29-Jun-2017 09:57:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	26891509	124.4		3084	
298.90 > 99.00	1.411	1.415	-0.004	1.000	21783878		1.23(0.00-0.00)	3157	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	2709486	10.6		7645	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.697	-0.005	1.000	3127699	14.9		678	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.698	-0.006	1.000	15581857	43.3		3502	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	6011048	32.1		324	
413.00 > 169.00	1.874	1.882	-0.008	1.000	3480330		1.73(0.00-0.00)	3710	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		2130233	10.0		5468	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.117	-0.008	1.000	15376069	61.1		9621	
499.00 > 99.00	2.109	2.117	-0.008	1.000	3533248		4.35(0.00-0.00)	3466	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.119	-0.010		6980804	28.7		4715	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.131	-0.014	1.000	4236109	29.0		281	
$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.291	-0.007	1.000	1429603	10.2		5026	

Reagents:

LC537-L5_00021 Amount Added: 1.00 Units: mL

Report Date: 29-Jun-2017 10:01:09 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_025.d

Injection Date: 28-Jun-2017 18:57:32 Instrument ID: A8_N

Lims ID: CCV L5

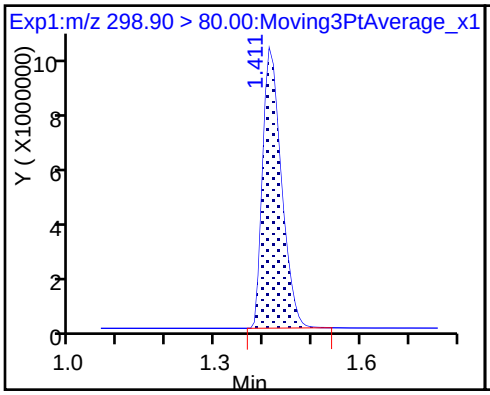
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 1

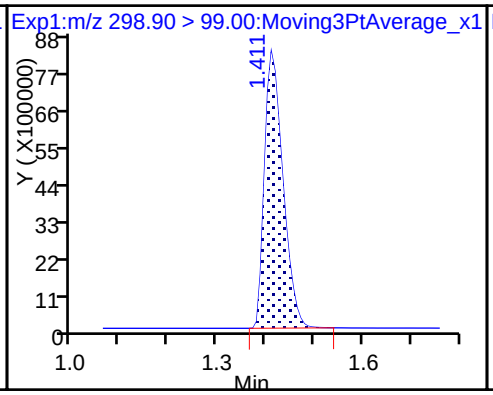
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

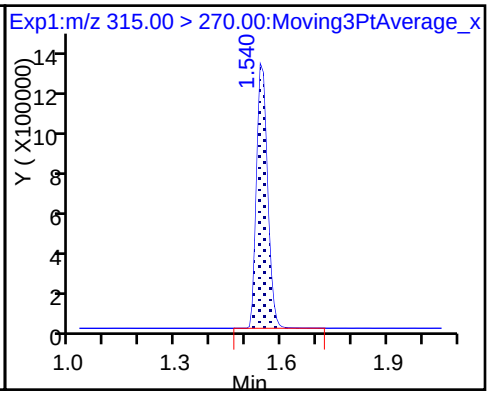
1 Perfluorobutanesulfonic acid



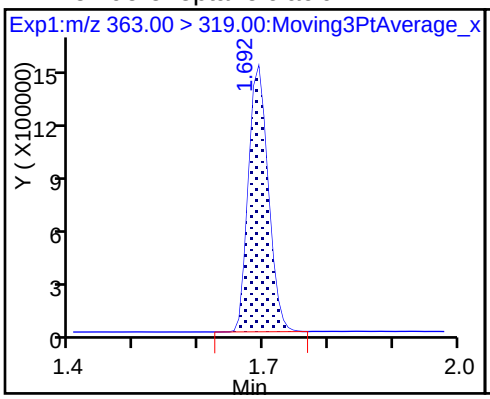
1 Perfluorobutanesulfonic acid



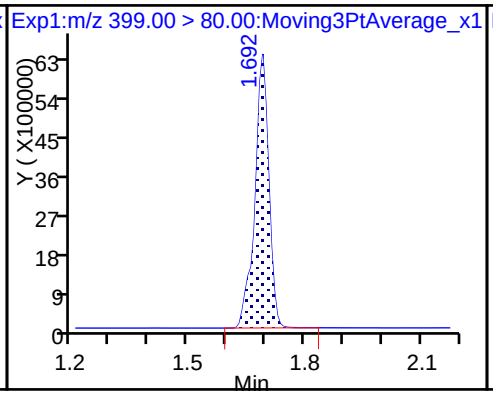
$ 2 13C2 PFHxA



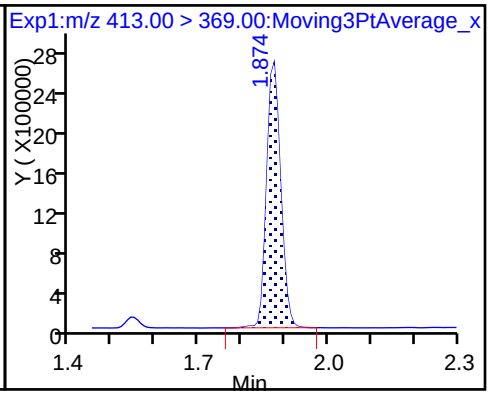
4 Perfluoroheptanoic acid



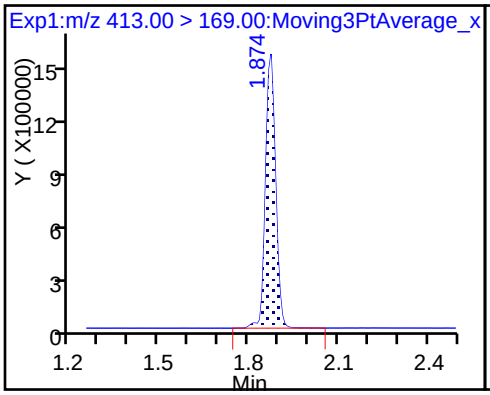
3 Perfluorohexanesulfonic acid



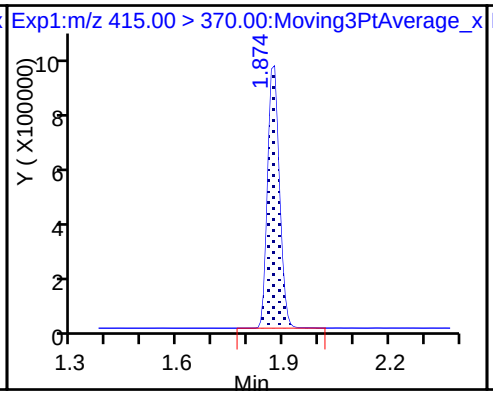
5 Perfluorooctanoic acid



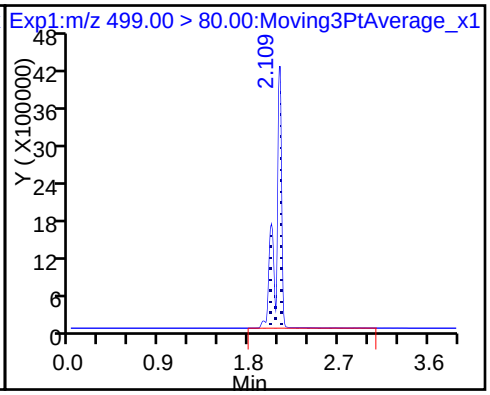
5 Perfluorooctanoic acid



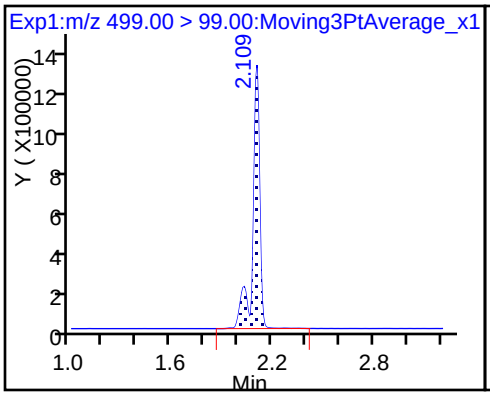
* 6 13C2-PFOA



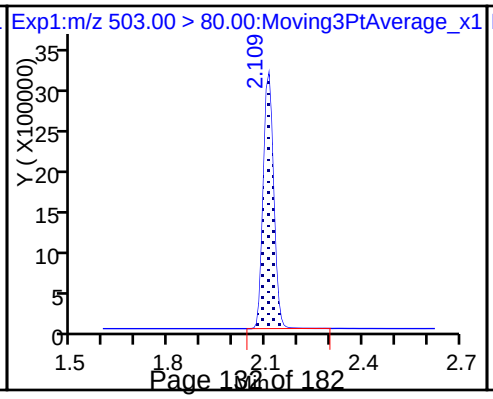
8 Perfluorooctane sulfonic acid



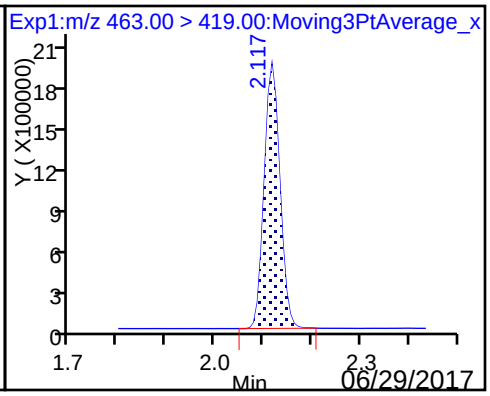
8 Perfluorooctane sulfonic acid



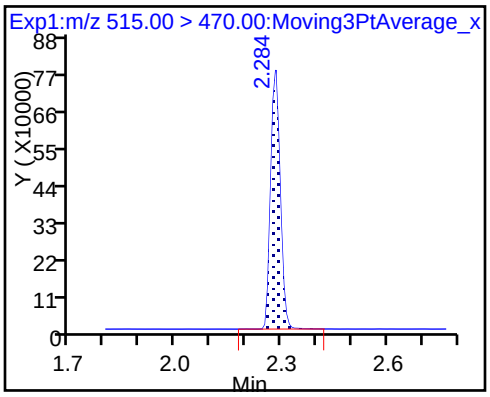
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
88
77
66
55
44
33
22
11
0
1.7
2.0
2.3
2.6
Min

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Lab Sample ID: CCV 320-171496/12 Calibration Date: 06/28/2017 19:49

Instrument ID: A8_N Calib Start Date: 06/28/2017 16:11

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 06/28/2017 16:35

Lab File ID: 2017.06.28_537B_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	QuaF		1.091		45.3	44.4	2.0	30.0
Perfluoroheptanoic acid	Ave	0.9860	1.009		5.09	4.97	2.3	30.0
Perfluorohexanesulfonic acid	Ave	1.477	1.499		15.3	15.1	1.5	30.0
Perfluorooctanoic acid (PFOA)	Ave	0.8783	0.8988		10.3	10.0	2.3	30.0
Perfluorononanoic acid	Ave	0.6847	0.6748		9.54	9.68	-1.4	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.034	1.059		20.6	20.1	2.5	30.0
13C2 PFHxA	Ave	1.203	1.220		10.1	10.0	1.4	30.0
13C2 PFDA	Ave	0.6583	0.6109		9.28	10.0	-7.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_036.d
Lims ID: CCV L3
Client ID:
Sample Type: CCVIS
Inject. Date: 28-Jun-2017 19:49:47 ALS Bottle#: 3 Worklist Smp#: 12
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\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:22 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

First Level Reviewer: barnettj Date: 29-Jun-2017 09:58:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.419	1.415	0.004	1.000	11940817	45.3		2695	
298.90 > 99.00	1.411	1.415	-0.004	0.995	9245246		1.29(0.00-0.00)	2532	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.548	1.548	0.0	1.000	2738066	10.1		8603	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.699	1.697	0.002	1.000	1126754	5.09		242	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.699	1.698	0.001	1.000	5580651	15.3		1994	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	2025574	10.3		105	
413.00 > 169.00	1.874	1.882	-0.008	1.000	1218280		1.66(0.00-0.00)	1993	
* 6 13C2-PFOA									
415.00 > 370.00	1.874	1.882	-0.008		2244655	10.0		5662	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.117	0.0	1.000	5250256	20.6		3188	
499.00 > 99.00	2.109	2.117	-0.008	0.996	1187826		4.42(0.00-0.00)	1283	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.119	-0.010		7068377	28.7		4671	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.131	-0.014	1.000	1465924	9.54		69.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.291	-0.007	1.000	1371190	9.28		4748	

Reagents:

LC537-L3_00020 Amount Added: 1.00 Units: mL

Report Date: 29-Jun-2017 10:01:22 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_036.d

Injection Date: 28-Jun-2017 19:49:47 Instrument ID: A8_N

Lims ID: CCV L3

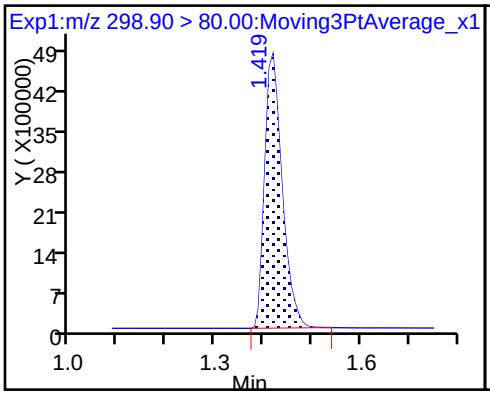
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 12

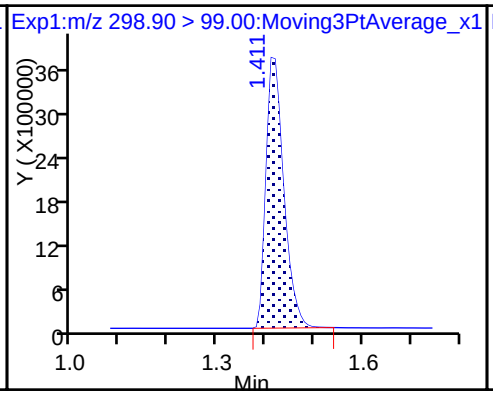
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

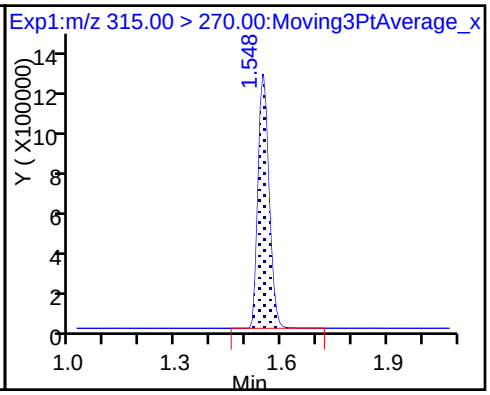
1 Perfluorobutanesulfonic acid



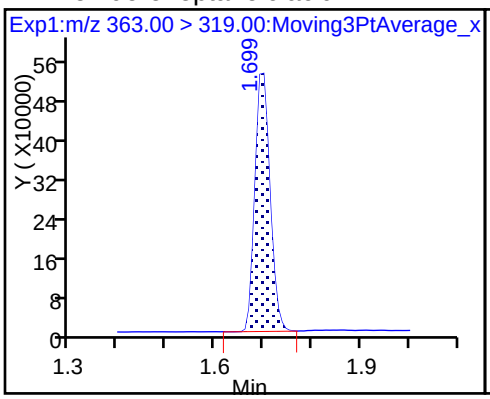
1 Perfluorobutanesulfonic acid



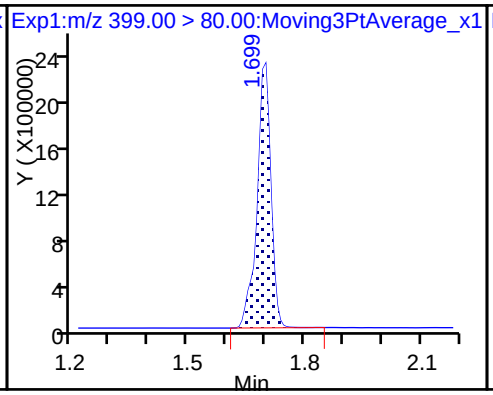
$ 2 13C2 PFHxA



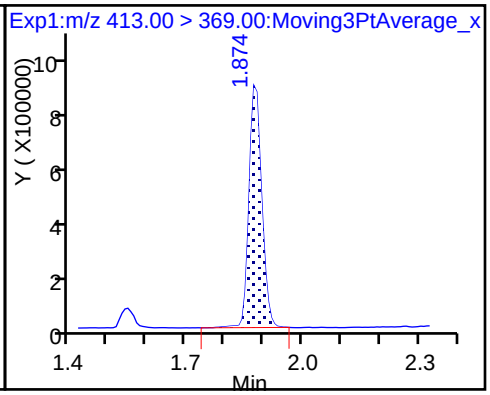
4 Perfluoroheptanoic acid



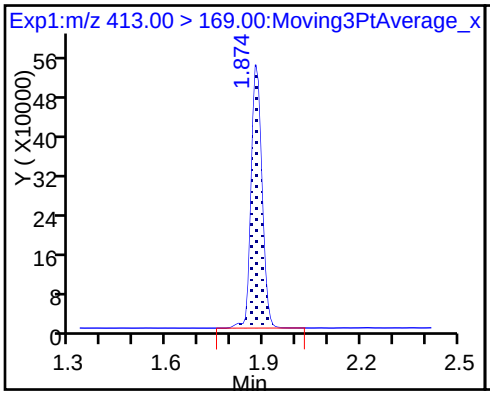
3 Perfluorohexanesulfonic acid



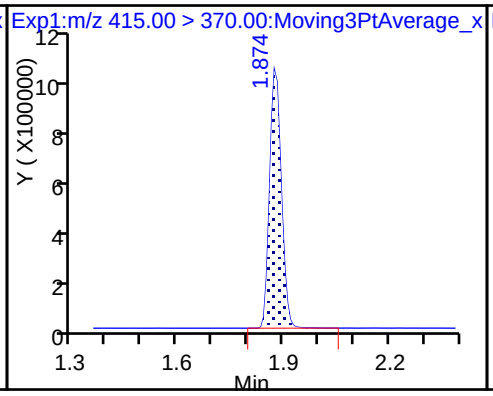
5 Perfluorooctanoic acid



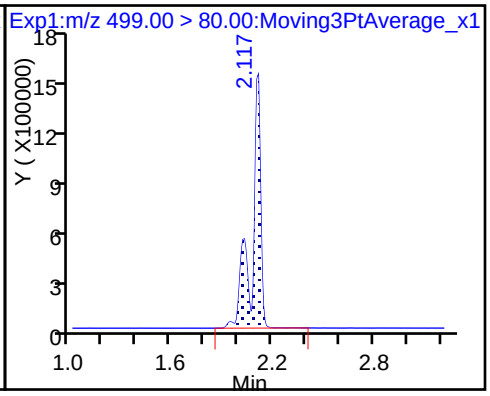
5 Perfluorooctanoic acid



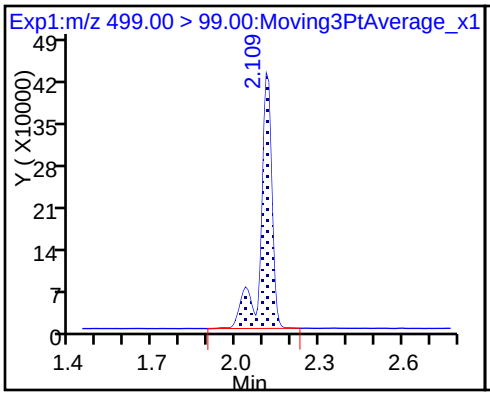
* 6 13C2-PFOA



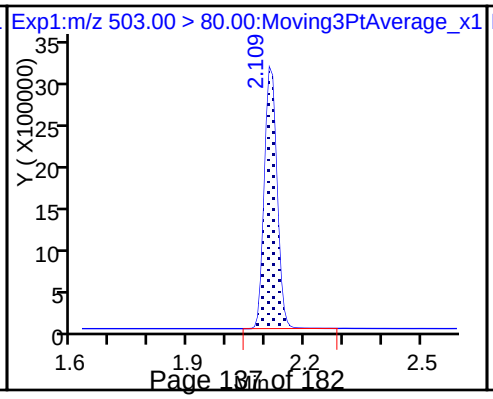
8 Perfluorooctane sulfonic acid



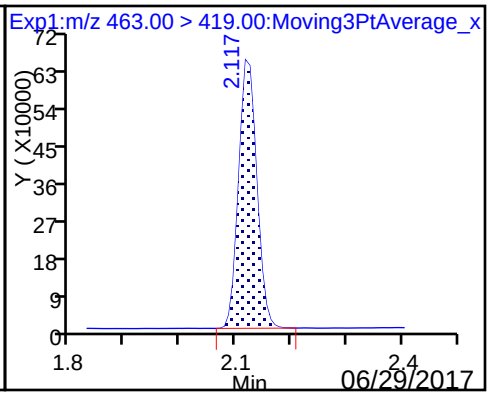
8 Perfluorooctane sulfonic acid



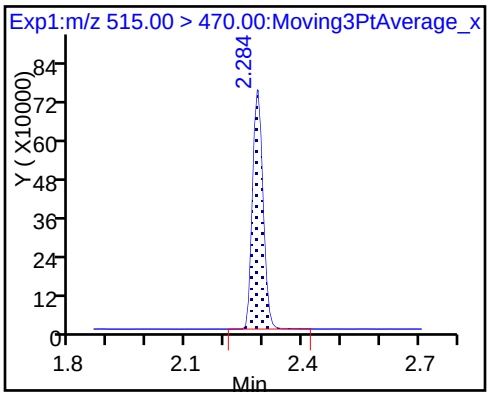
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
84
72
60
48
36
24
12
0
1.8
2.1
2.4
2.7
Min

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-170888/1-A

Matrix: Water Lab File ID: 2017.06.28_537B_029.d

Analysis Method: 537 Date Collected:

Extraction Method: 537 Date Extracted: 06/26/2017 08:40

Sample wt/vol: 250(mL) Date Analyzed: 06/28/2017 19:16

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

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

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

Analysis Batch No.: 171496 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.016	0.0068
335-67-1	Perfluorooctanoic acid (PFOA)	0.0080	U	0.020	0.0080	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.090	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_029.d
Lims ID: MB 320-170888/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Jun-2017 19:16:31 ALS Bottle#: 23 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-170888/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:09 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	1846821	8.41		5514	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1825622	10.0		5123	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.119	-0.017		5097233	28.7		3351	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.291	-0.015	1.000	1103889	9.19		4005	

Report Date: 29-Jun-2017 10:01:14 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_029.d

Injection Date: 28-Jun-2017 19:16:31 Instrument ID: A8_N

Lims ID: MB 320-170888/1-A

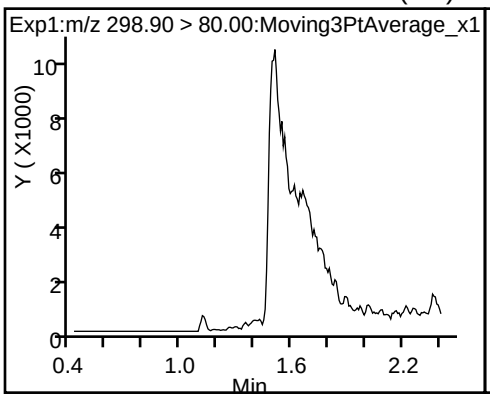
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 5

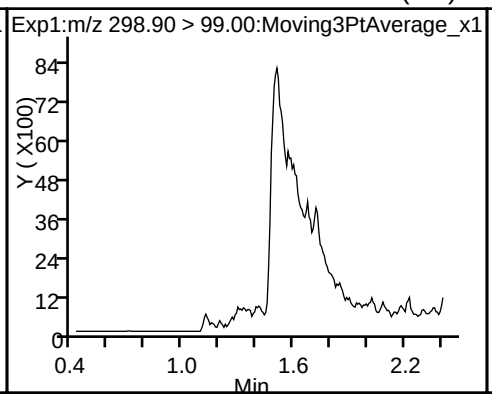
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

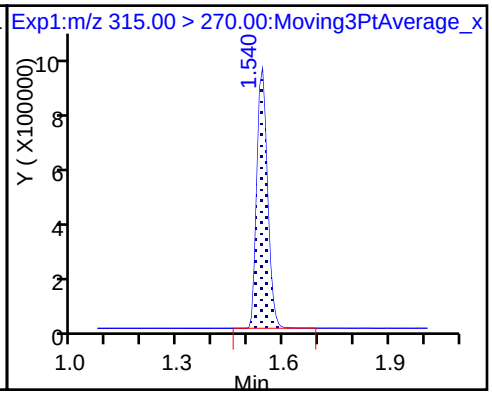
1 Perfluorobutanesulfonic acid (ND)



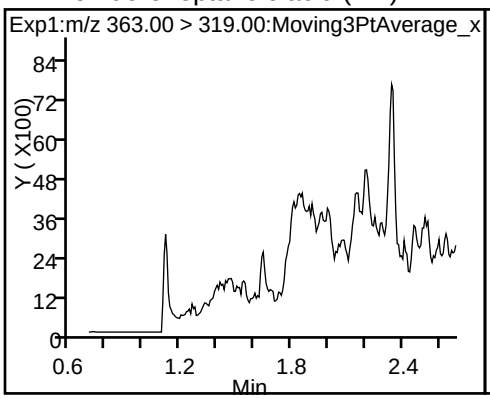
1 Perfluorobutanesulfonic acid (ND)



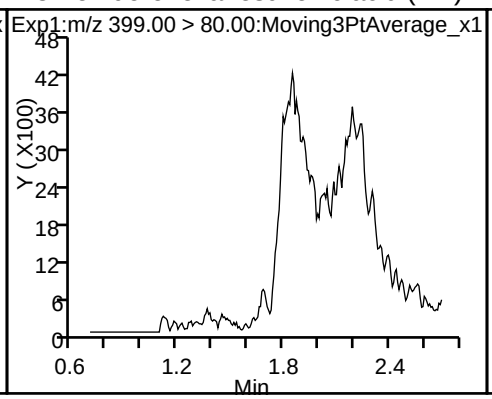
$ 2 13C2 PFHxA



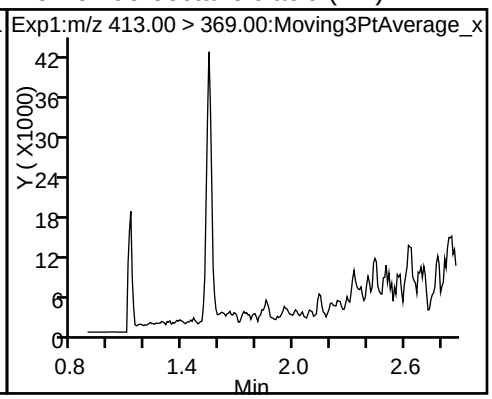
4 Perfluoroheptanoic acid (ND)



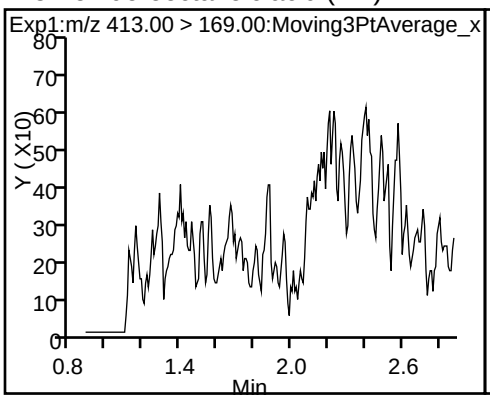
3 Perfluorohexanesulfonic acid (ND)



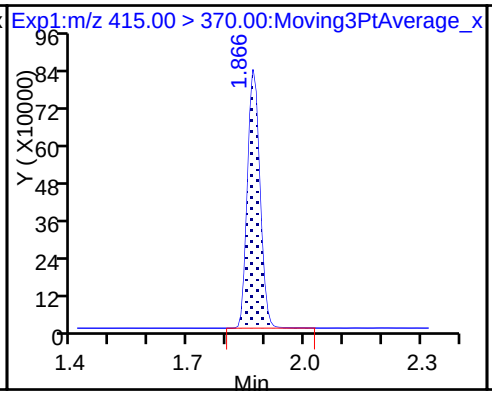
5 Perfluorooctanoic acid (ND)



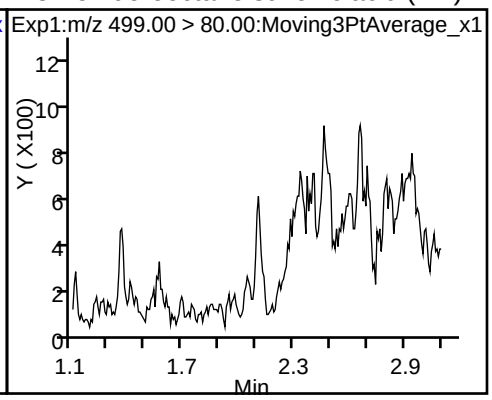
5 Perfluorooctanoic acid (ND)



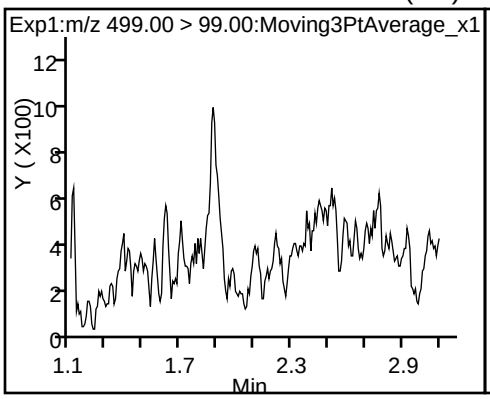
* 6 13C2-PFOA



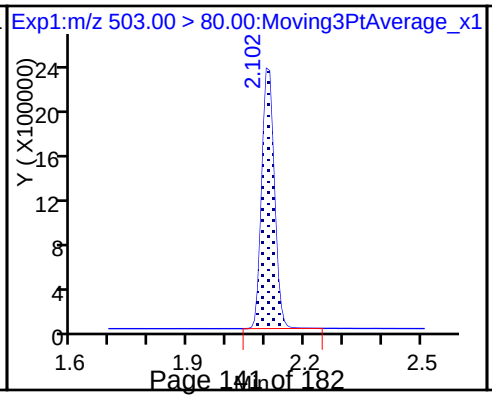
8 Perfluorooctane sulfonic acid (ND)



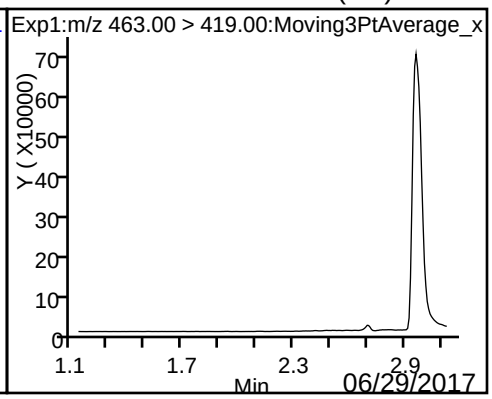
8 Perfluorooctane sulfonic acid (ND)



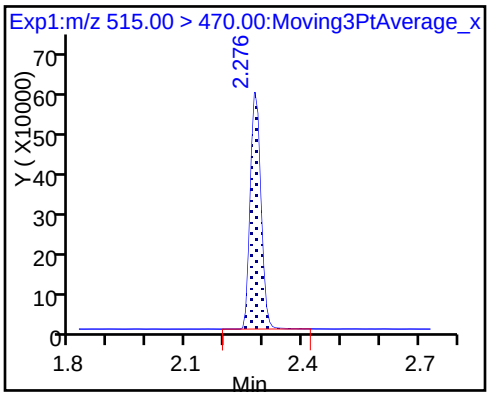
* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_029.d
Lims ID: MB 320-170888/1-A
Client ID:
Sample Type: MB
Inject. Date: 28-Jun-2017 19:16:31 ALS Bottle#: 23 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-170888/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 10:01:09 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK033

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.41	84.07
$ 10 13C2 PFDA	10.0	9.19	91.85

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-29329-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-170888/2-A

Matrix: Water | Lab File ID: 2017.06.28_537B_030.d

Analysis Method: 537 | Date Collected:

Extraction Method: 537 | Date Extracted: 06/26/2017 08:40

Sample wt/vol: 250(mL) | Date Analyzed: 06/28/2017 19:21

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

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

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

Analysis Batch No.: 171496 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.149	M	0.040	0.016	0.0068
335-67-1	Perfluorooctanoic acid (PFOA)	0.0726		0.020	0.0080	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.349		0.090	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	96		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_030.d
Lims ID: LCS 320-170888/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Jun-2017 19:21:15 ALS Bottle#: 24 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-170888/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 12:44:55 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: barnettj Date: 29-Jun-2017 09:58:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	15221840	87.2		2525	
298.90 > 99.00	1.411	1.415	-0.004	1.000	11616169		1.31(0.00-0.00)	2116	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	1848714	8.81		5378	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.697	-0.005	1.000	1630243	9.48		330	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.698	-0.014	1.000	7410184	28.0		1906	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	2780093	18.1		174	
413.00 > 169.00	1.874	1.882	-0.008	1.000	1685620		1.65(0.00-0.00)	2010	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1744334	10.0		4344	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.109	2.117	-0.008	1.000	6885136	37.1		3037	
499.00 > 99.00	2.109	2.117	-0.008	1.000	1534782		4.49(0.00-0.00)	1289	M
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.119	-0.010		5143611	28.7		3398	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.131	-0.014	1.000	2028269	17.0		32.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.291	-0.015	1.000	1101441	9.59		3978	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Jun-2017 12:44:56 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_030.d

Injection Date: 28-Jun-2017 19:21:15 Instrument ID: A8_N

Lims ID: LCS 320-170888/2-A

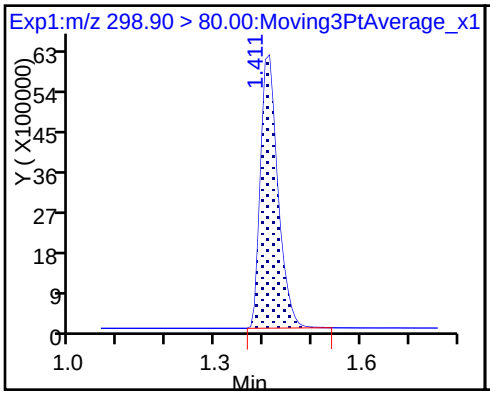
Client ID:

Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 6

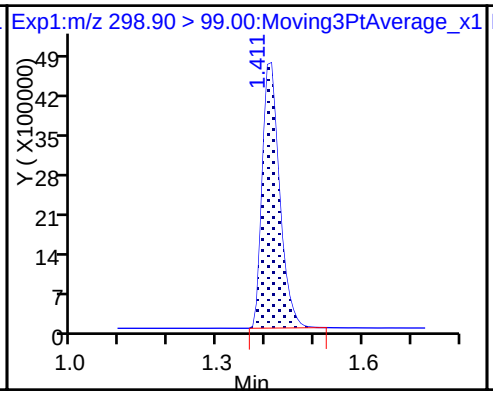
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

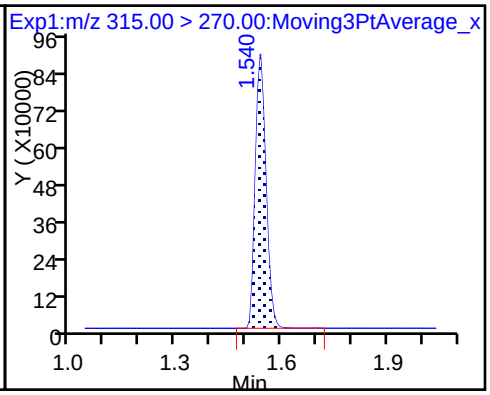
1 Perfluorobutanesulfonic acid



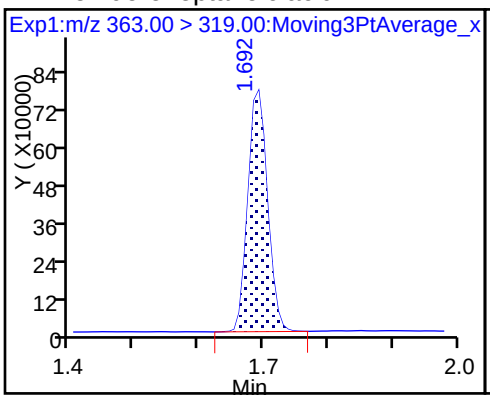
1 Perfluorobutanesulfonic acid



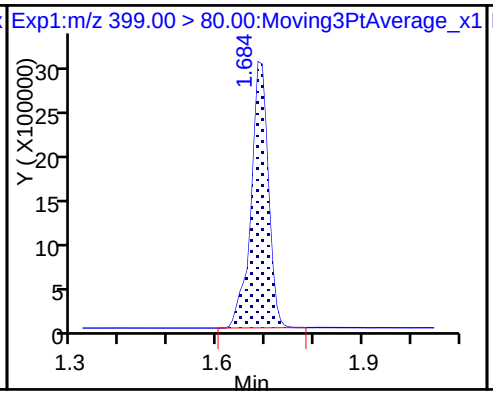
$ 2 13C2 PFHxA



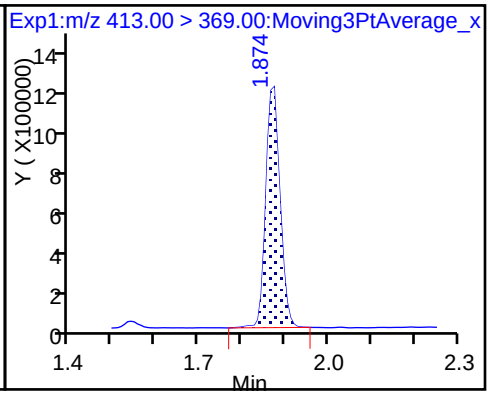
4 Perfluoroheptanoic acid



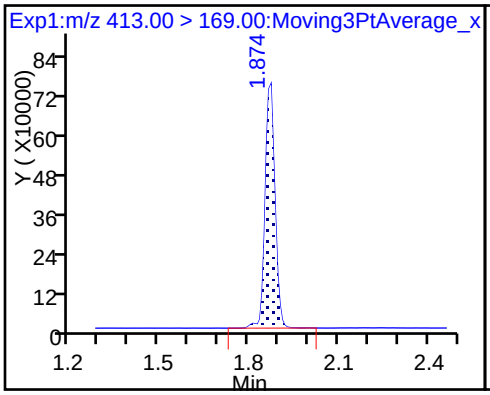
3 Perfluorohexanesulfonic acid



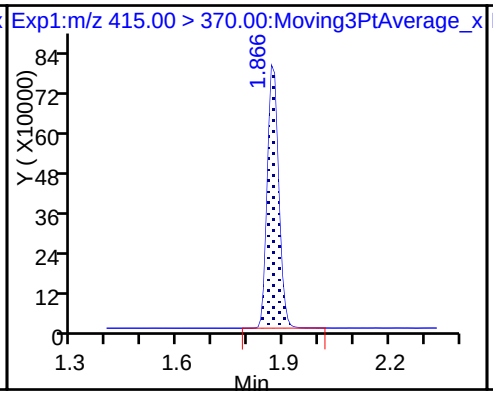
5 Perfluorooctanoic acid



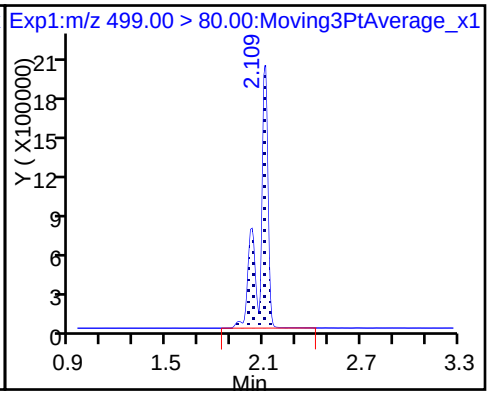
5 Perfluorooctanoic acid



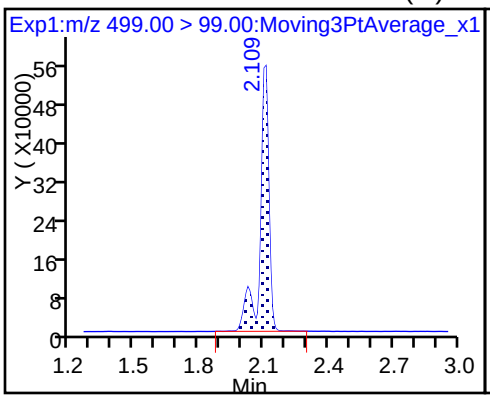
* 6 13C2-PFOA



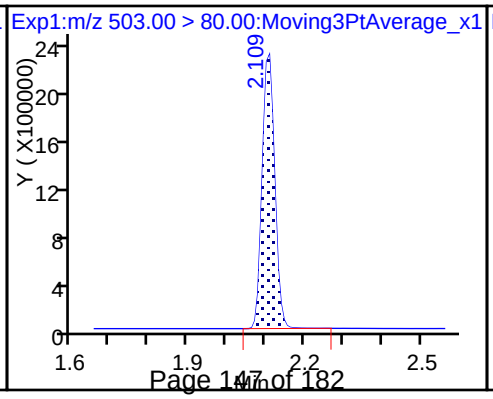
8 Perfluorooctane sulfonic acid



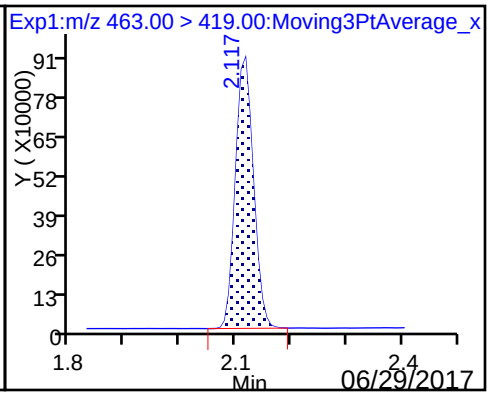
8 Perfluorooctane sulfonic acid (M)



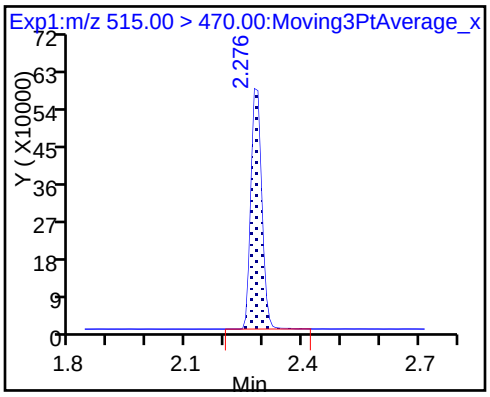
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
72
63
54
45
36
27
18
9
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_030.d
Lims ID: LCS 320-170888/2-A
Client ID:
Sample Type: LCS
Inject. Date: 28-Jun-2017 19:21:15 ALS Bottle#: 24 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-170888/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 12:44:55 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: barnettj Date: 29-Jun-2017 09:58:49

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	8.81	88.08
$ 10 13C2 PFDA	10.0	9.59	95.92

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

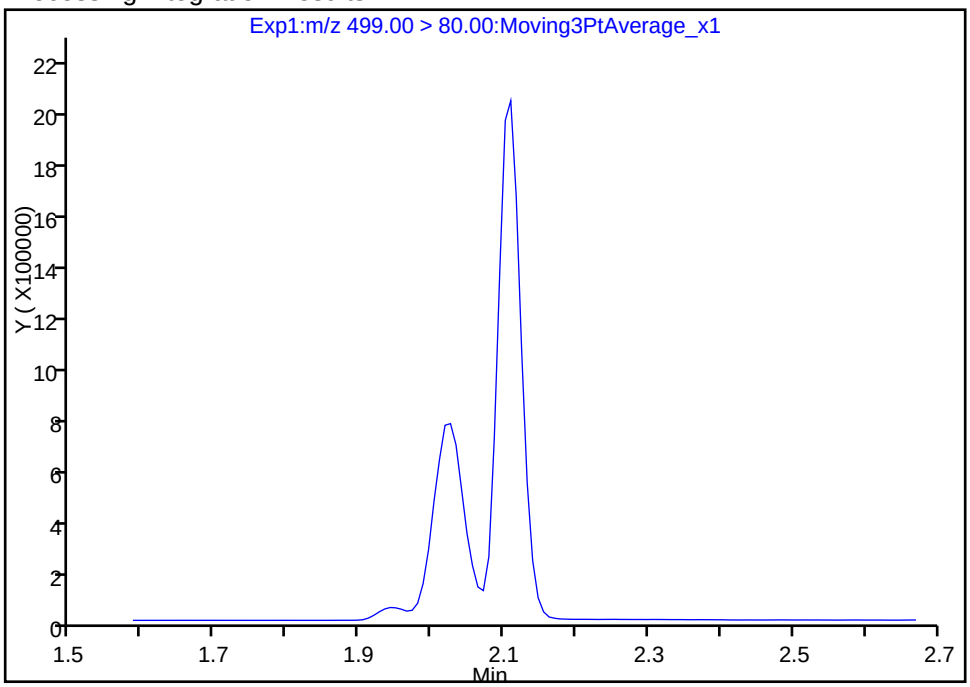
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_030.d
Injection Date: 28-Jun-2017 19:21:15 Instrument ID: A8_N
Lims ID: LCS 320-170888/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 1

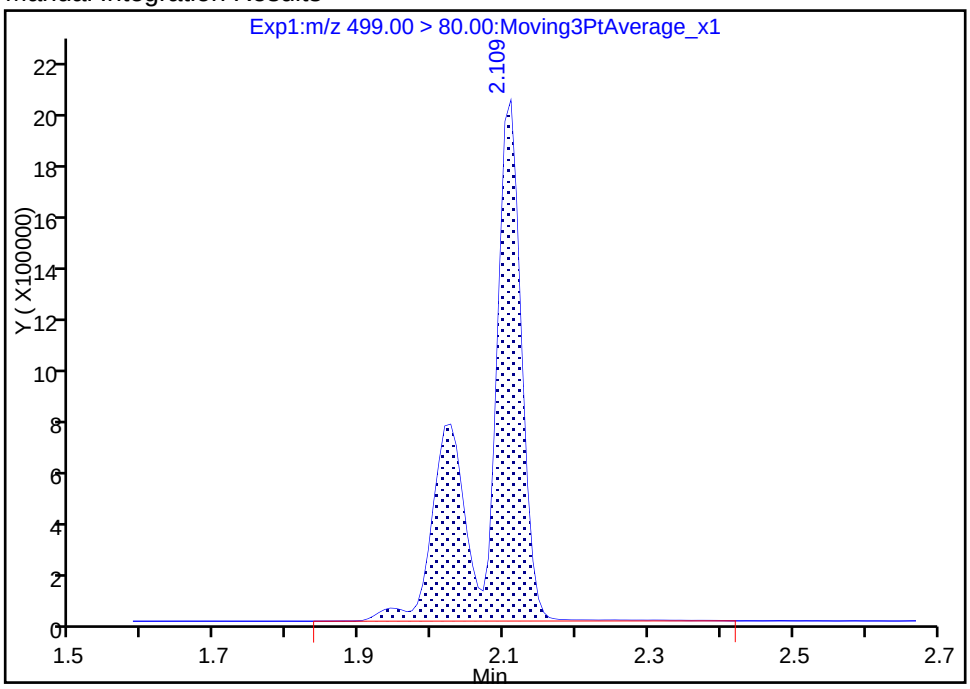
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 6885136
Amount: 37.142525
Amount Units: ng/ml



Reviewer: barnettj, 29-Jun-2017 09:58:32
Audit Action: Assigned Compound ID Audit Reason:

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

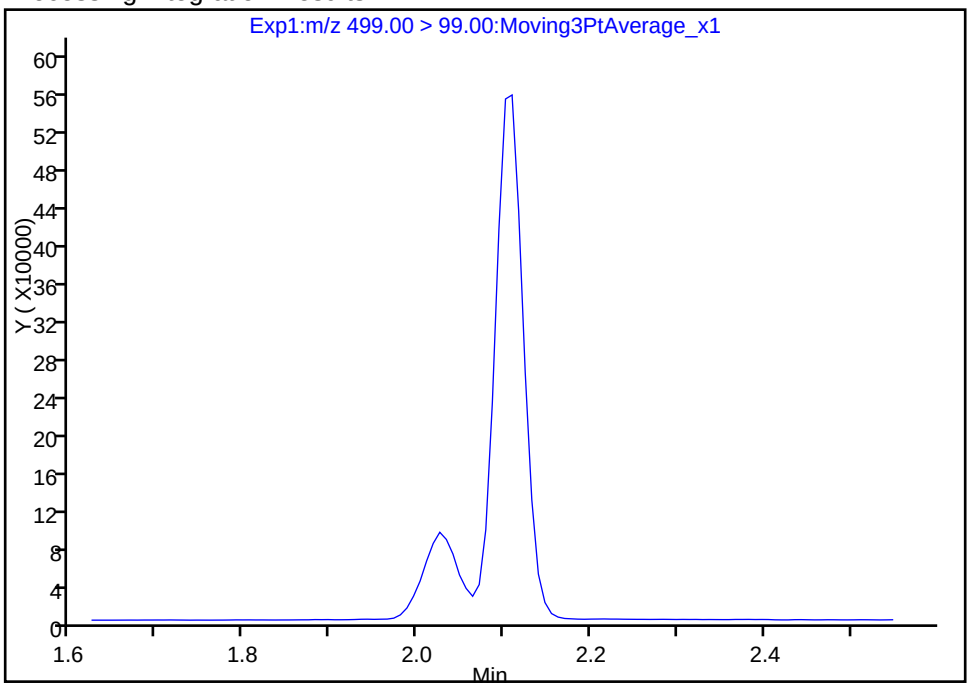
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_030.d
Injection Date: 28-Jun-2017 19:21:15 Instrument ID: A8_N
Lims ID: LCS 320-170888/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

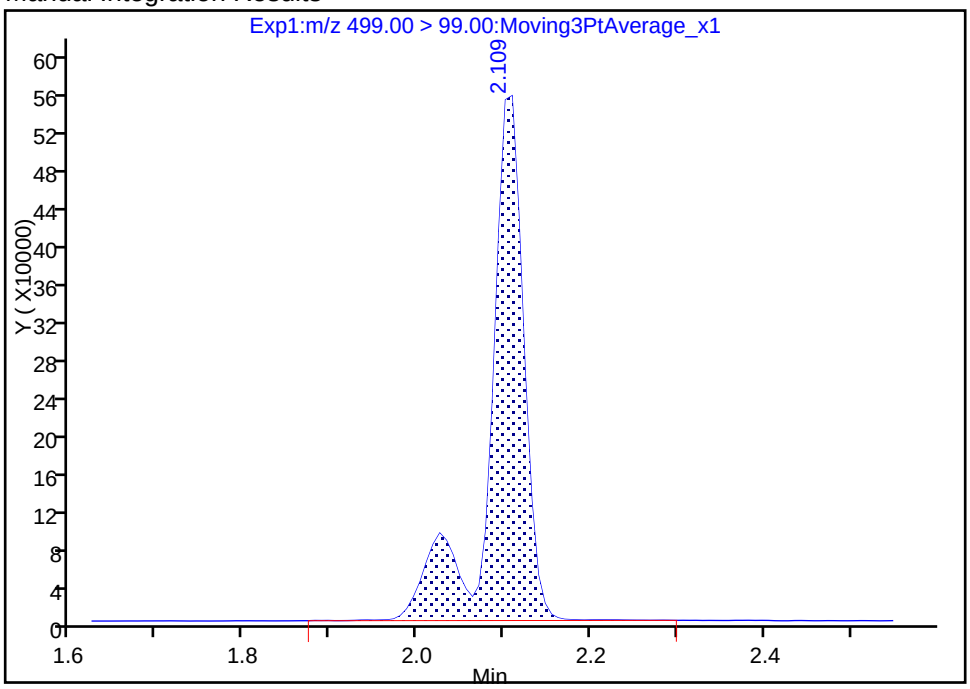
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 1534782
Amount: 37.142525
Amount Units: ng/ml



Reviewer: raineys, 29-Jun-2017 12:44:53
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1RW56-0617 MS Lab Sample ID: 320-29329-1 MS

Matrix: Water Lab File ID: 2017.06.28_537B_032.d

Analysis Method: 537 Date Collected: 06/21/2017 11:05

Extraction Method: 537 Date Extracted: 06/26/2017 08:40

Sample wt/vol: 256.2(mL) Date Analyzed: 06/28/2017 19:30

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

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

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

Analysis Batch No.: 171496 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.147	M	0.039	0.016	0.0066
335-67-1	Perfluorooctanoic acid (PFOA)	0.0694		0.020	0.0078	0.0027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.342		0.088	0.035	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_032.d
Lims ID: 320-29329-A-1-B MS
Client ID: WI-AF-1RW56-0617
Sample Type: MS
Inject. Date: 28-Jun-2017 19:30:47 ALS Bottle#: 26 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-1-b ms
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 12:42:56 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: barnettj Date: 29-Jun-2017 09:59:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.411	1.415	-0.004	1.000	15260751	87.7		2335	
298.90 > 99.00	1.411	1.415	-0.004	1.000	11767241		1.30(0.00-0.00)	2288	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.540	1.548	-0.008	1.000	1665430	7.85		4874	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.692	1.697	-0.005	1.000	1549812	8.92		205	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.692	1.698	-0.006	1.000	7408607	28.0		1372	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.874	1.882	-0.008	1.000	2754609	17.8		159	
413.00 > 169.00	1.874	1.882	-0.008	1.000	1679775		1.64(0.00-0.00)	1860	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1762793	10.0		4564	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.109	2.117	-0.008	1.000	6968840	37.7		2701	
499.00 > 99.00	2.102	2.117	-0.015	0.996	1582904		4.40(0.00-0.00)	1018	M
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.119	-0.010		5130802	28.7		2985	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.131	-0.014	1.000	2130081	17.6		35.7	
$ 10 13C2 PFDA									
515.00 > 470.00	2.284	2.291	-0.007	1.000	1127957	9.72		3818	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Jun-2017 12:42:57 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_032.d

Injection Date: 28-Jun-2017 19:30:47 Instrument ID: A8_N

Lims ID: 320-29329-A-1-B MS

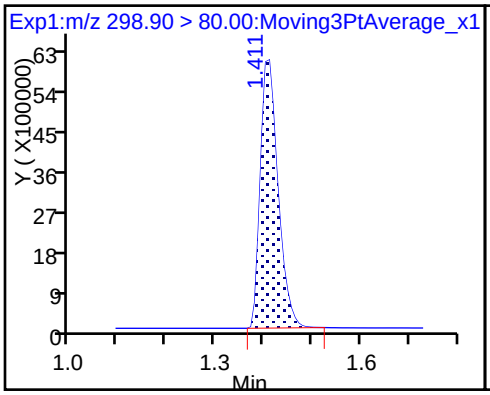
Client ID: WI-AF-1RW56-0617

Operator ID: SACINSTLCMS01 ALS Bottle#: 26 Worklist Smp#: 8

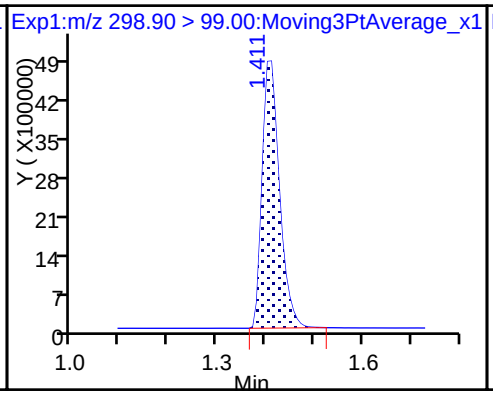
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

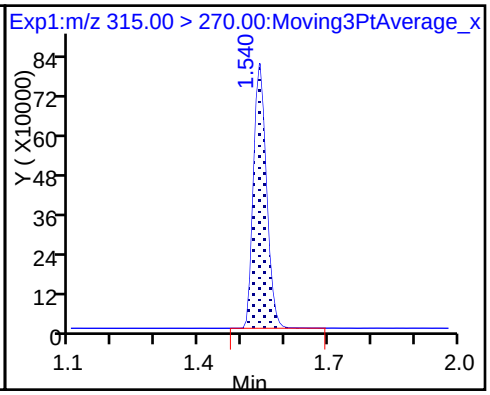
1 Perfluorobutanesulfonic acid



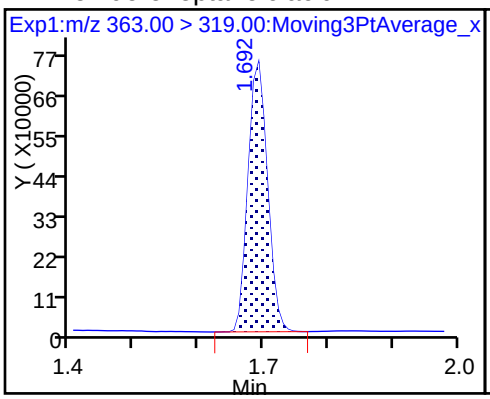
1 Perfluorobutanesulfonic acid



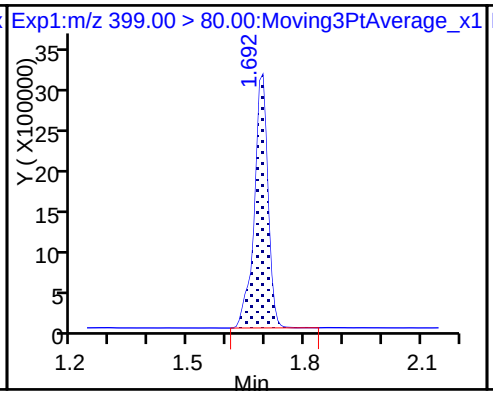
$ 2 13C2 PFHxA



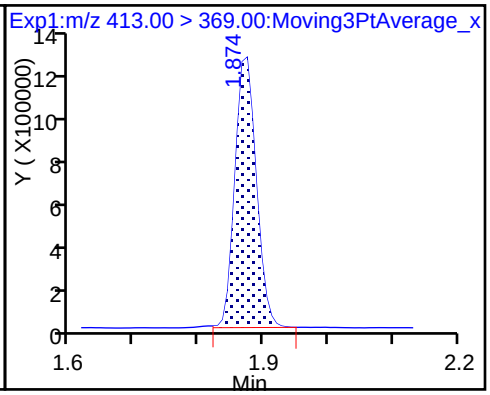
4 Perfluoroheptanoic acid



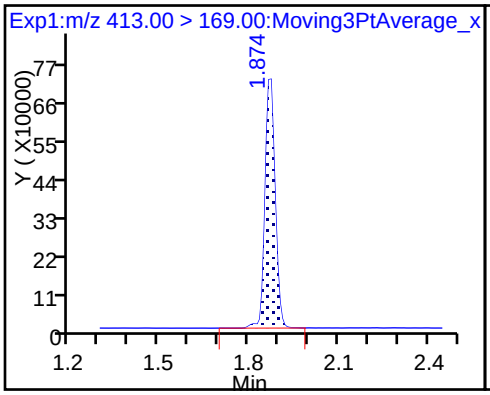
3 Perfluorohexanesulfonic acid



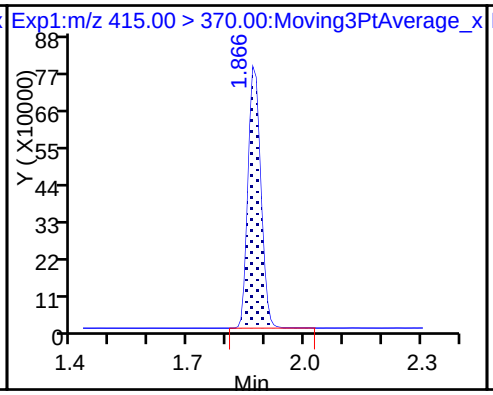
5 Perfluorooctanoic acid



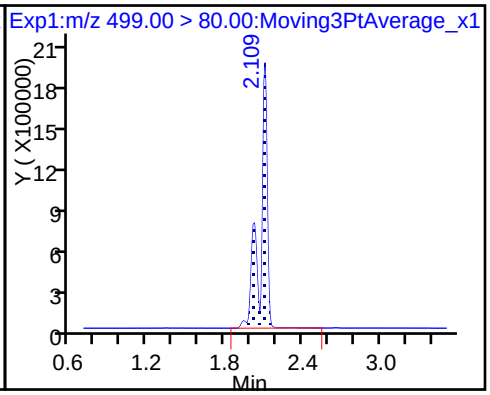
5 Perfluorooctanoic acid



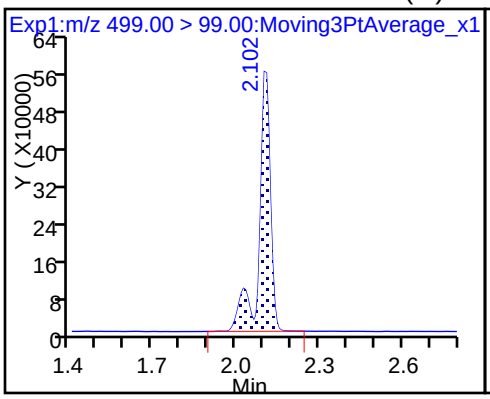
* 6 13C2-PFOA



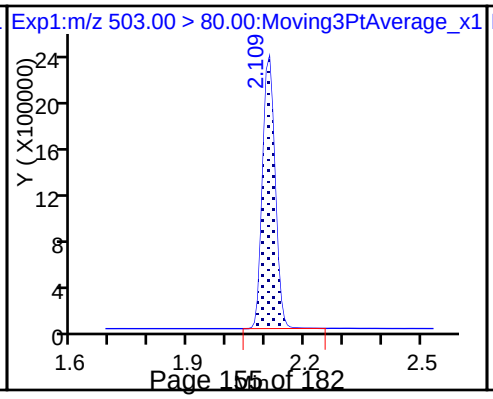
8 Perfluorooctane sulfonic acid



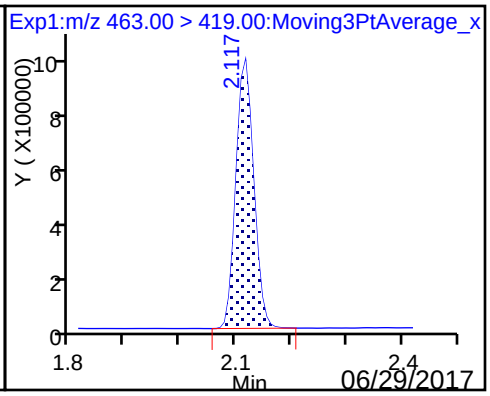
8 Perfluorooctane sulfonic acid (M)



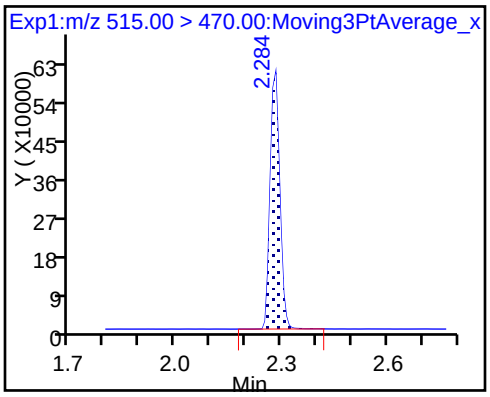
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.284
Y (X10000)
63
54
45
36
27
18
9
0
1.7
2.0
2.3
2.6
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_032.d				
Lims ID:	320-29329-A-1-B MS				
Client ID:	WI-AF-1RW56-0617				
Sample Type:	MS				
Inject. Date:	28-Jun-2017 19:30:47	ALS Bottle#:	26	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-29329-a-1-b ms				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	29-Jun-2017 12:42:56	Calib Date:	28-Jun-2017 16:35:04		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK014				
First Level Reviewer: barnettj		Date:	29-Jun-2017 09:59:18		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.85	78.52
$ 10 13C2 PFDA	10.0	9.72	97.20

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

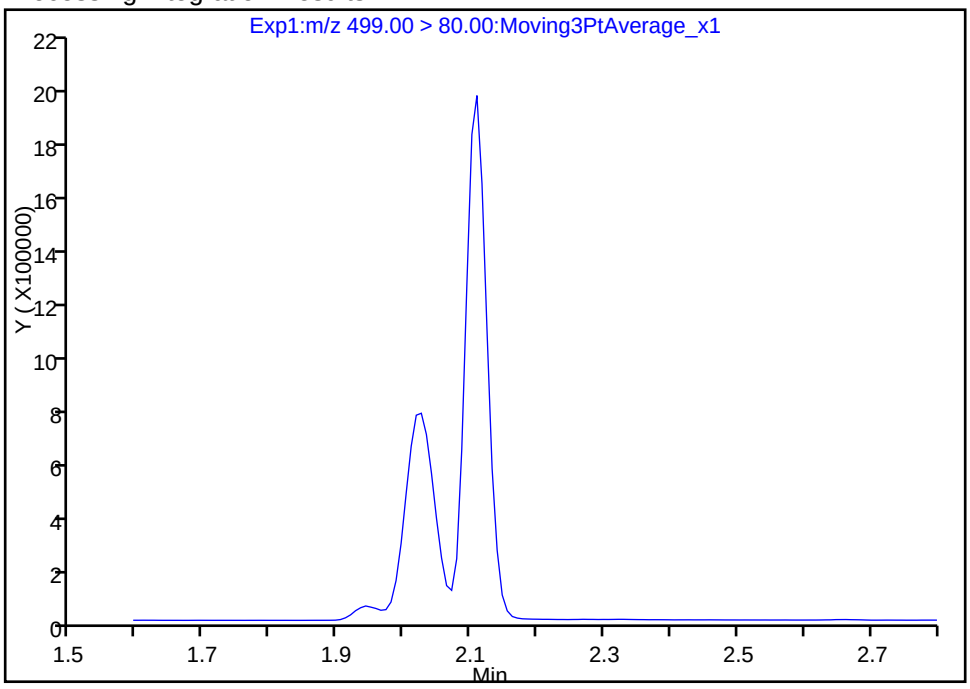
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_032.d				
Injection Date:	28-Jun-2017 19:30:47	Instrument ID:	A8_N		
Lims ID:	320-29329-A-1-B MS				
Client ID:	WI-AF-1RW56-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

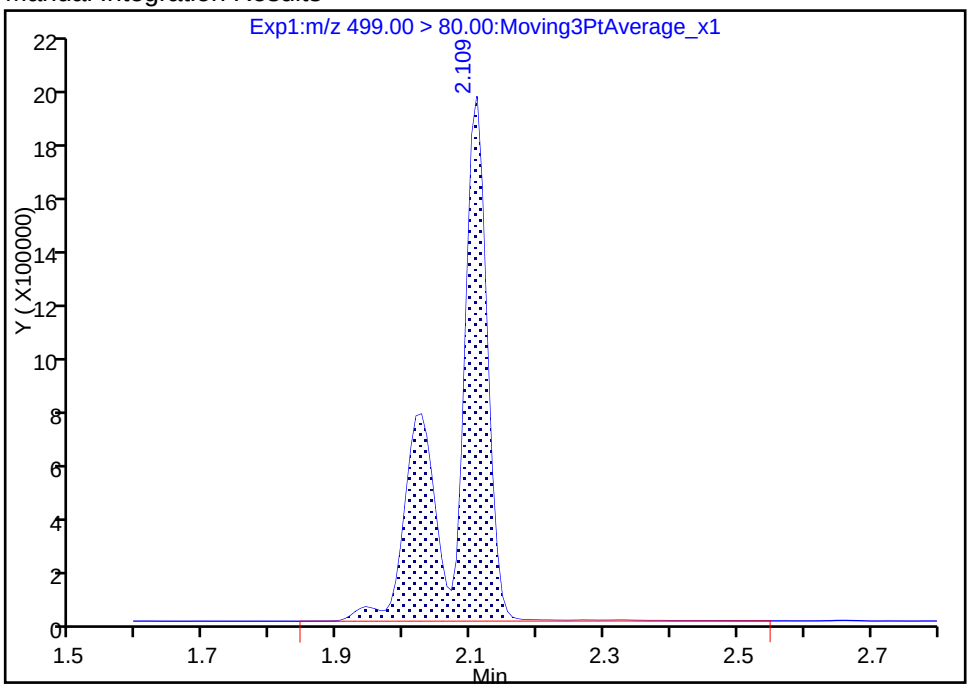
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.11
Area: 6968840
Amount: 37.687927
Amount Units: ng/ml



Reviewer: barnettj, 29-Jun-2017 09:59:01
Audit Action: Assigned Compound ID Audit Reason:

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

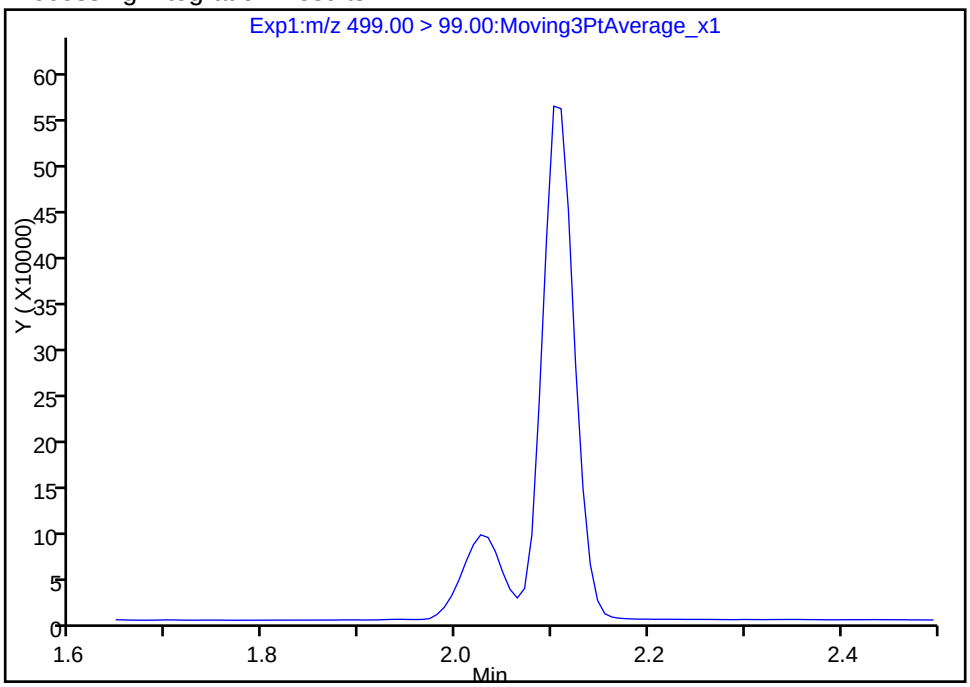
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_032.d				
Injection Date:	28-Jun-2017 19:30:47	Instrument ID:	A8_N		
Lims ID:	320-29329-A-1-B MS				
Client ID:	WI-AF-1RW56-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 2

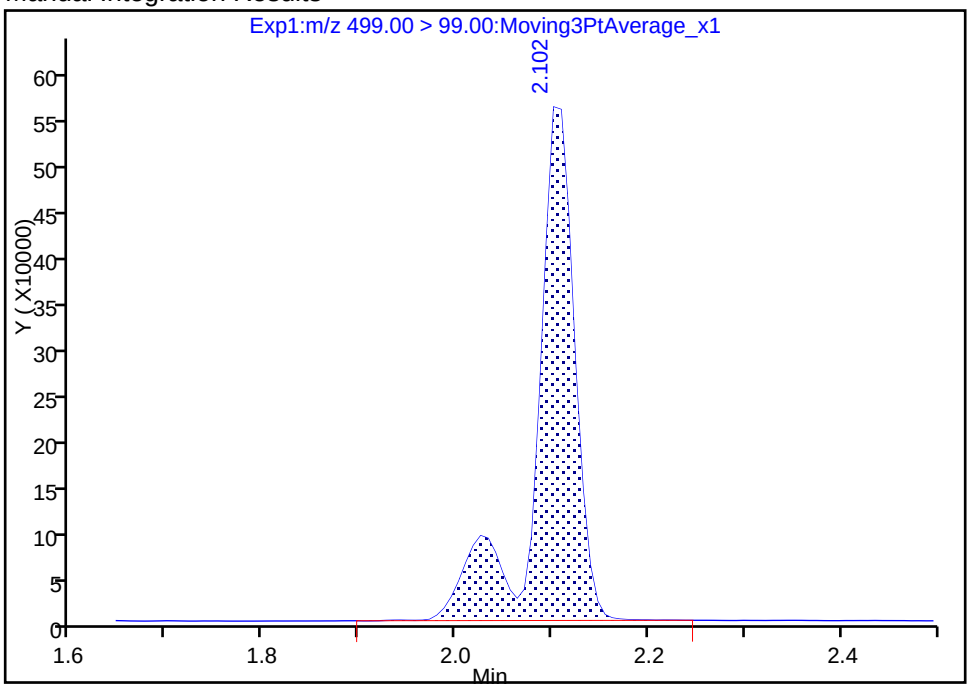
Processing Integration Results

Not Detected
Expected RT: 2.12



Manual Integration Results

RT: 2.10
Area: 1582904
Amount: 37.687927
Amount Units: ng/ml



Reviewer: raineys, 29-Jun-2017 12:42:53
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1RW56-0617 MSD Lab Sample ID: 320-29329-1 MSD

Matrix: Water Lab File ID: 2017.06.28_537B_033.d

Analysis Method: 537 Date Collected: 06/21/2017 11:05

Extraction Method: 537 Date Extracted: 06/26/2017 08:40

Sample wt/vol: 248(mL) Date Analyzed: 06/28/2017 19:35

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

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

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

Analysis Batch No.: 171496 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.151	M	0.040	0.016	0.0069
335-67-1	Perfluorooctanoic acid (PFOA)	0.0766		0.020	0.0081	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.346		0.091	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	77		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_033.d
Lims ID: 320-29329-A-1-C MSD
Client ID: WI-AF-1RW56-0617
Sample Type: MSD
Inject. Date: 28-Jun-2017 19:35:31 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-29329-a-1-c msd
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 29-Jun-2017 12:43:10 Calib Date: 28-Jun-2017 16:35:04
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: barnettj Date: 29-Jun-2017 09:59:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.404	1.415	-0.011	1.000	15184032	85.8		2488	
298.90 > 99.00	1.404	1.415	-0.011	1.000	11388981		1.33(0.00-0.00)	2262	
$ 2 13C2 PFHxA									
315.00 > 270.00	1.533	1.548	-0.015	1.000	1648258	7.70		4585	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.684	1.697	-0.013	1.000	1587484	9.05		220	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.684	1.698	-0.014	1.000	7574727	28.3		1448	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.866	1.882	-0.016	1.000	2967390	19.0		157	
413.00 > 169.00	1.866	1.882	-0.016	1.000	1712347		1.73(0.00-0.00)	1935	
* 6 13C2-PFOA									
415.00 > 370.00	1.866	1.882	-0.016		1778771	10.0		4723	
8 Perfluorooctane sulfonic acid									M
499.00 > 80.00	2.102	2.117	-0.015	1.000	7019653	37.5		2912	
499.00 > 99.00	2.102	2.117	-0.015	1.000	1617209		4.34(0.00-0.00)	1058	M
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.119	-0.017		5194346	28.7		3176	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.131	-0.022	1.000	2200831	18.1		42.9	
$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.291	-0.015	1.000	1105798	9.44		4193	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 29-Jun-2017 12:43:10 Chrom Revision: 2.2 26-Jun-2017 08:09:44

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_033.d

Injection Date: 28-Jun-2017 19:35:31 Instrument ID: A8_N

Lims ID: 320-29329-A-1-C MSD

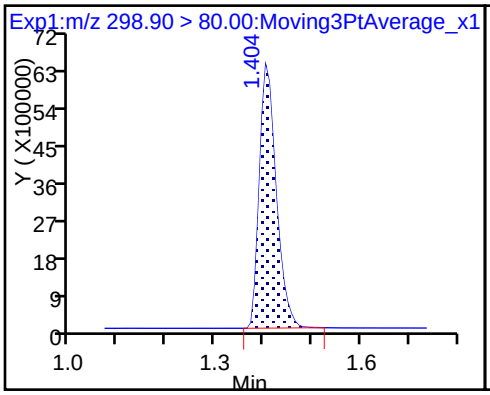
Client ID: WI-AF-1RW56-0617

Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 9

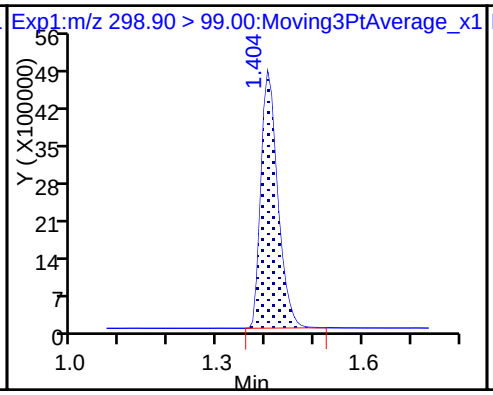
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: 537_A8_N Limit Group: LC 537 ICAL

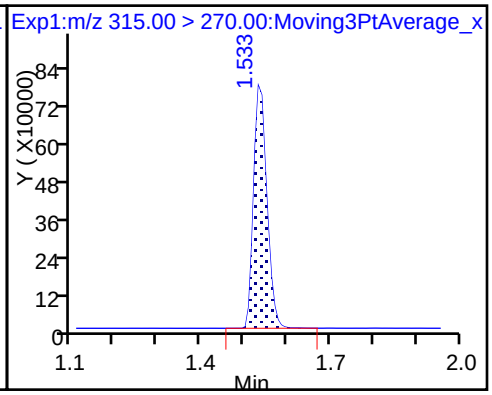
1 Perfluorobutanesulfonic acid



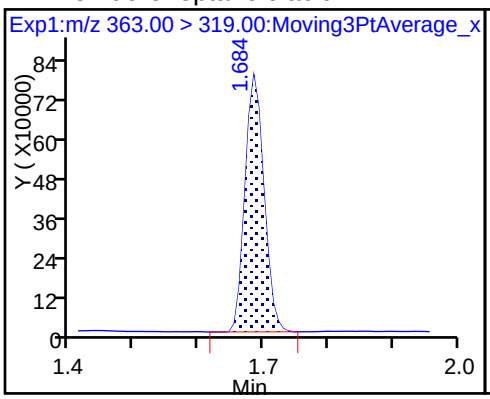
1 Perfluorobutanesulfonic acid



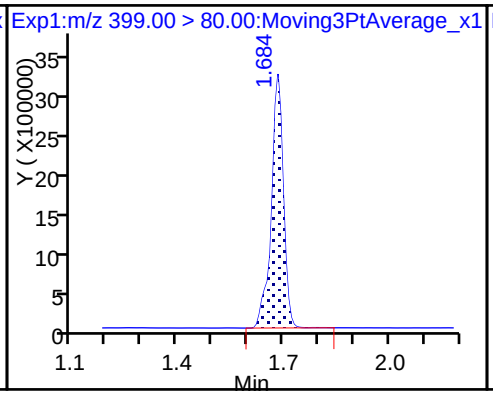
$ 2 13C2 PFHxA



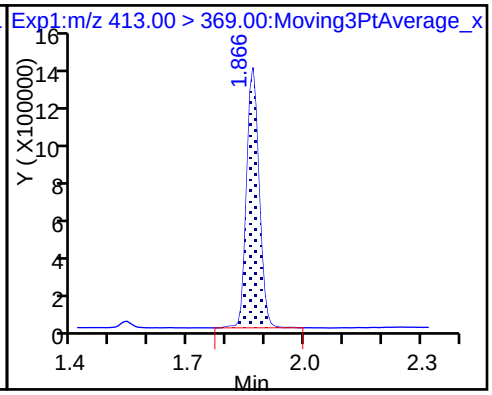
4 Perfluoroheptanoic acid



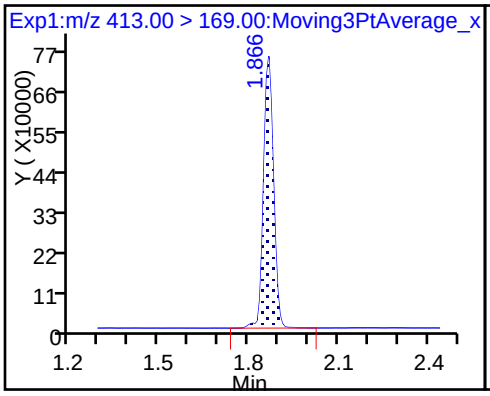
3 Perfluorohexanesulfonic acid



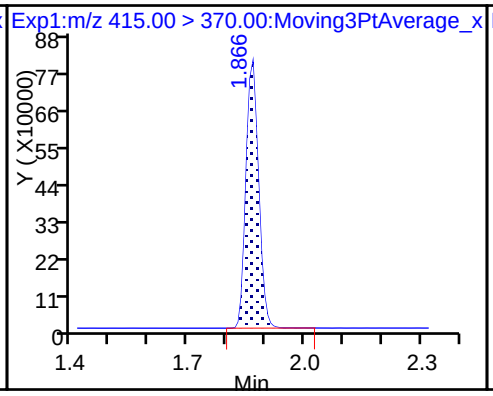
5 Perfluorooctanoic acid



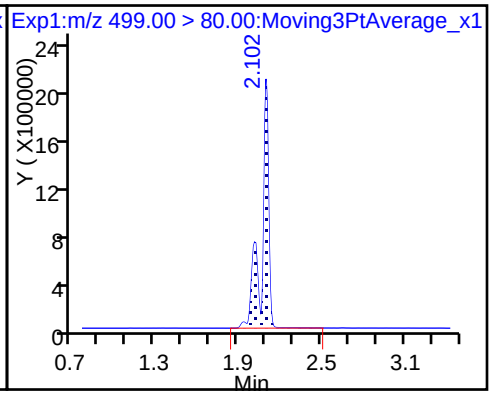
5 Perfluorooctanoic acid



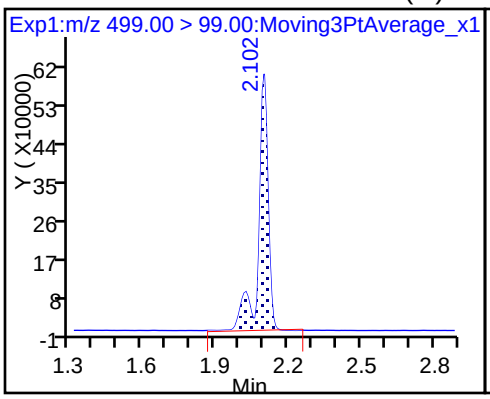
* 6 13C2-PFOA



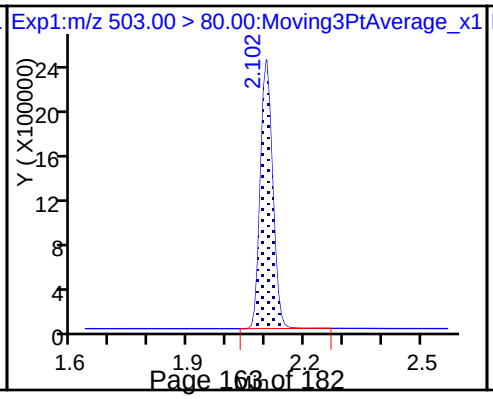
8 Perfluorooctane sulfonic acid



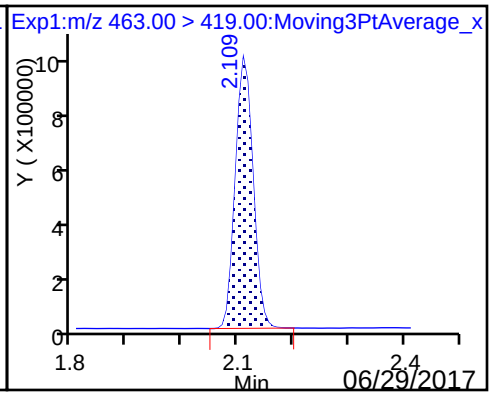
8 Perfluorooctane sulfonic acid (M)



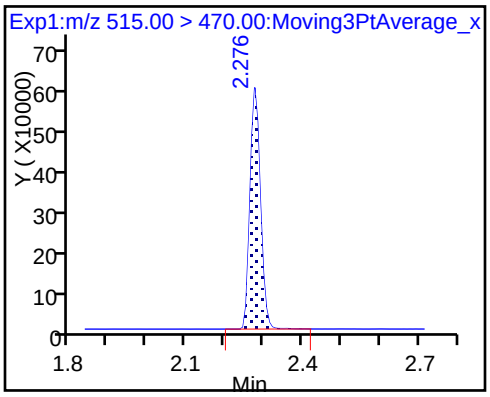
* 7 13C4 PFOS



9 Perfluorononanoic acid



$ 10 13C2 PFDA


Exp1:m/z 515.00 > 470.00:Moving3PtAverage_x
2.276
Y (X10000)
70
60
50
40
30
20
10
0
1.8
2.1
2.4
2.7
Min

TestAmerica Sacramento
Recovery Report

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_033.d				
Lims ID:	320-29329-A-1-C MSD				
Client ID:	WI-AF-1RW56-0617				
Sample Type:	MSD				
Inject. Date:	28-Jun-2017 19:35:31	ALS Bottle#:	27	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-29329-a-1-c msd				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	29-Jun-2017 12:43:10	Calib Date:	28-Jun-2017 16:35:04		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\A8_N\20170628-44832.b\2017.06.28_537_CURVE_009.d				
Column 1 :			Det: EXP1		
Process Host:	XAWRK014				
First Level Reviewer: barnettj		Date:	29-Jun-2017 09:59:29		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	10.0	7.70	77.01
$ 10 13C2 PFDA	10.0	9.44	94.43

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

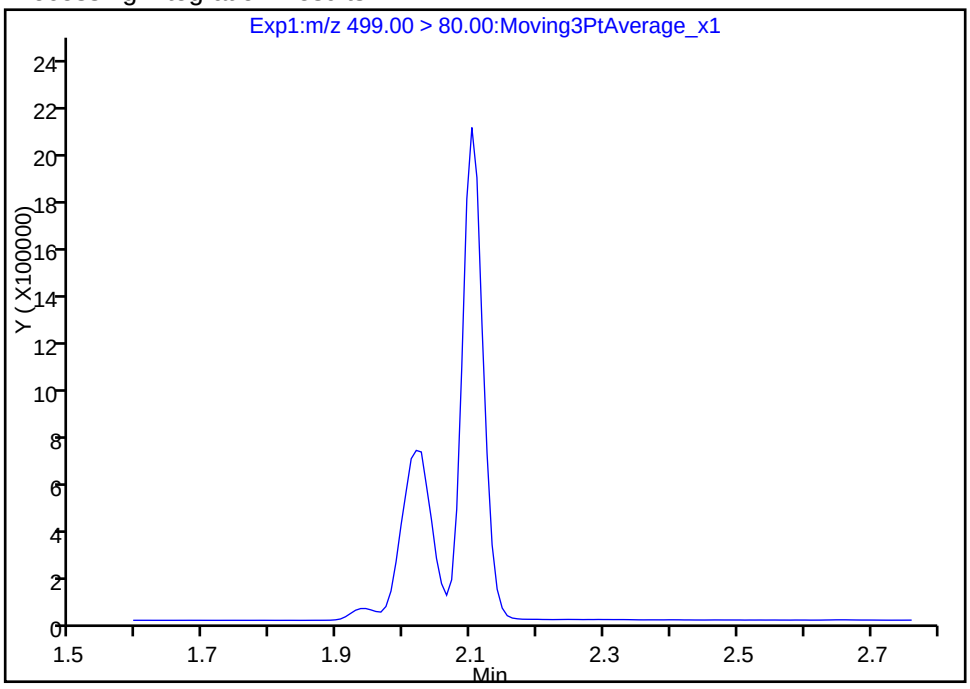
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_033.d				
Injection Date:	28-Jun-2017 19:35:31	Instrument ID:	A8_N		
Lims ID:	320-29329-A-1-C MSD				
Client ID:	WI-AF-1RW56-0617				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

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

Signal: 1

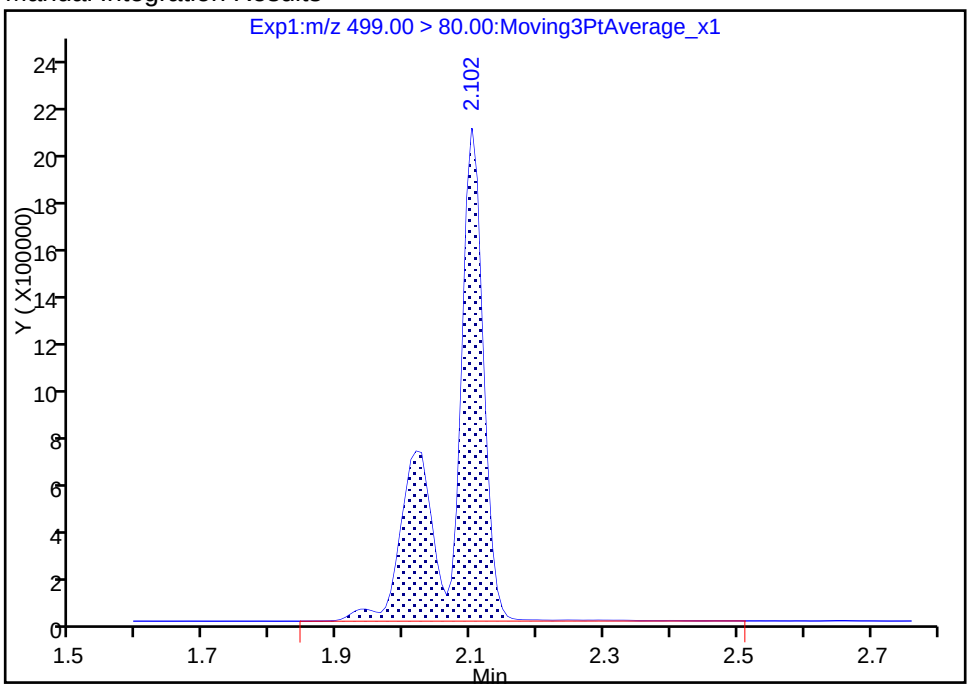
Not Detected
Expected RT: 2.12

Processing Integration Results



Manual Integration Results

RT: 2.10
Area: 7019653
Amount: 37.498318
Amount Units: ng/ml



Reviewer: barnettj, 29-Jun-2017 09:59:22
Audit Action: Assigned Compound ID Audit Reason:

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

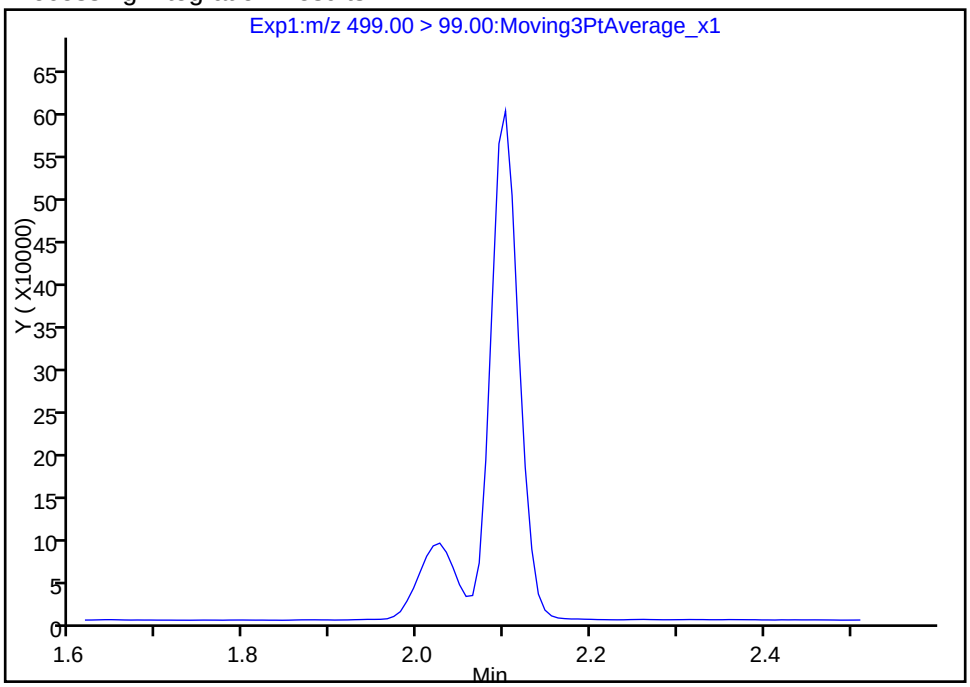
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b\2017.06.28_537B_033.d
Injection Date: 28-Jun-2017 19:35:31 Instrument ID: A8_N
Lims ID: 320-29329-A-1-C MSD
Client ID: WI-AF-1RW56-0617
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

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

Signal: 2

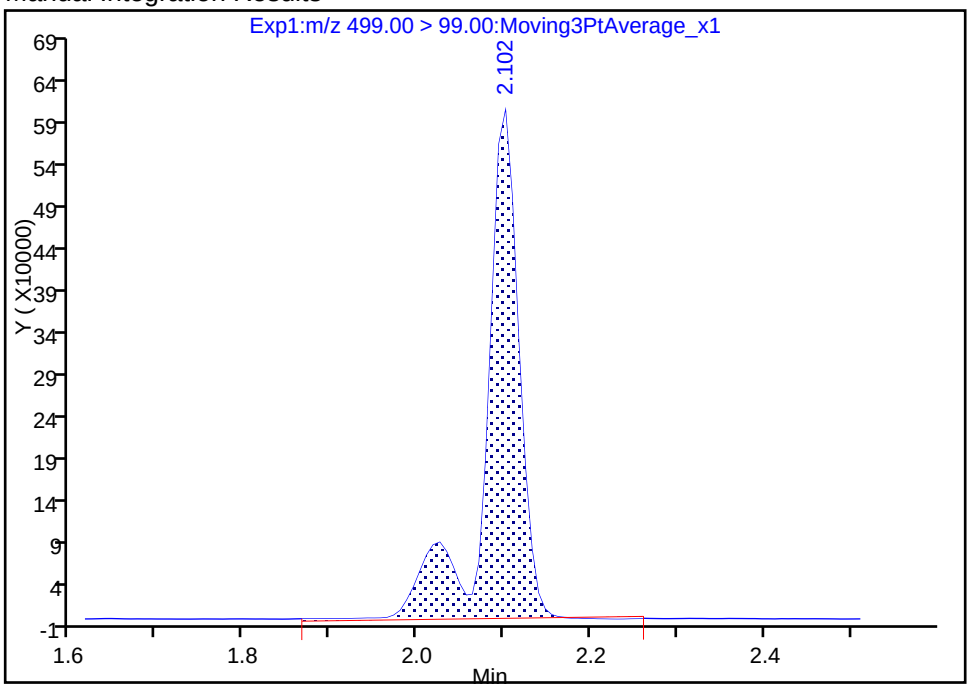
Processing Integration Results

Not Detected
Expected RT: 2.12



Manual Integration Results

RT: 2.10
Area: 1617209
Amount: 37.498318
Amount Units: ng/ml



Reviewer: raineys, 29-Jun-2017 12:43:06
Audit Action: Manually Integrated Audit Reason: Isomers

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Instrument ID: A8_N Start Date: 06/28/2017 16:11

Analysis Batch Number: 171480 End Date: 06/28/2017 16:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-171480/4		06/28/2017 16:11	1	2017.06.28_537_CURVE_004.d	GeminiC18 3x100 3(mm)
IC 320-171480/5		06/28/2017 16:16	1	2017.06.28_537_CURVE_005.d	GeminiC18 3x100 3(mm)
IC 320-171480/6		06/28/2017 16:20	1	2017.06.28_537_CURVE_006.d	GeminiC18 3x100 3(mm)
IC 320-171480/7 ICISAV		06/28/2017 16:25	1	2017.06.28_537_CURVE_007.d	GeminiC18 3x100 3(mm)
IC 320-171480/8		06/28/2017 16:30	1	2017.06.28_537_CURVE_008.d	GeminiC18 3x100 3(mm)
IC 320-171480/9		06/28/2017 16:35	1	2017.06.28_537_CURVE_009.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/28/2017 16:39	1		GeminiC18 3x100 3(mm)
CCVL 320-171480/11		06/28/2017 16:44	1	2017.06.28_537_CURVE_011.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/28/2017 16:49	1		GeminiC18 3x100 3(mm)
ICV 320-171480/13		06/28/2017 16:54	1	2017.06.28_537_CURVE_013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Instrument ID: A8_N Start Date: 06/28/2017 18:57

Analysis Batch Number: 171496 End Date: 06/28/2017 19:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-171496/1 CCVIS		06/28/2017 18:57	1	2017.06.28_537B_025.d	GeminiC18 3x100 3(mm)
ZZZZZ		06/28/2017 19:02	1		GeminiC18 3x100 3(mm)
MB 320-170888/1-A		06/28/2017 19:16	1	2017.06.28_537B_029.d	GeminiC18 3x100 3(mm)
LCS 320-170888/2-A		06/28/2017 19:21	1	2017.06.28_537B_030.d	GeminiC18 3x100 3(mm)
320-29329-1		06/28/2017 19:26	1	2017.06.28_537B_031.d	GeminiC18 3x100 3(mm)
320-29329-1 MS		06/28/2017 19:30	1	2017.06.28_537B_032.d	GeminiC18 3x100 3(mm)
320-29329-1 MSD		06/28/2017 19:35	1	2017.06.28_537B_033.d	GeminiC18 3x100 3(mm)
320-29329-2		06/28/2017 19:40	1	2017.06.28_537B_034.d	GeminiC18 3x100 3(mm)
320-29329-3		06/28/2017 19:45	1	2017.06.28_537B_035.d	GeminiC18 3x100 3(mm)
CCV 320-171496/12 CCVIS		06/28/2017 19:49	1	2017.06.28_537B_036.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Batch Number: 170888 Batch Start Date: 06/26/17 08:40 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 06/27/17 00:08

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00041
MB 320-170888/1		537, 537				250 mL	1.00 mL	7 SU	100 uL
LCS 320-170888/2		537, 537				250 mL	1.00 mL	7 SU	100 uL
320-29329-A-1	WI-AF-1RW56-0617	537, 537	T	279.69 g	28.09 g	251.6 mL	1.00 mL	7 SU	100 uL
320-29329-A-1 MS	WI-AF-1RW56-0617	537, 537	T	284.58 g	28.35 g	256.2 mL	1.00 mL	7 SU	100 uL
320-29329-A-1 MSD	WI-AF-1RW56-0617	537, 537	T	276.69 g	28.68 g	248 mL	1.00 mL	7 SU	100 uL
320-29329-A-2	WI-AF-1FB56-0617	537, 537	T	285.56 g	27.36 g	258.2 mL	1.00 mL	7 SU	100 uL
320-29329-A-3	WI-AF-1RW56P-0617	537, 537	T	280.93 g	28.24 g	252.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-MSP 00021	LC537-SU 00042	AnalysisComment			
MB 320-170888/1		537, 537			100 uL	ch nd			
LCS 320-170888/2		537, 537		100 uL	100 uL	ch nd			
320-29329-A-1	WI-AF-1RW56-0617	537, 537	T		100 uL	ch nd			
320-29329-A-1 MS	WI-AF-1RW56-0617	537, 537	T	100 uL	100 uL	ch nd			
320-29329-A-1 MSD	WI-AF-1RW56-0617	537, 537	T	100 uL	100 uL	ch nd			
320-29329-A-2	WI-AF-1FB56-0617	537, 537	T		100 uL	ch nd			
320-29329-A-3	WI-AF-1RW56P-0617	537, 537	T		100 uL	ch nd			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Batch Number: 170888 Batch Start Date: 06/26/17 08:40 Batch Analyst: Branscum, Cassie

Batch Method: 537 Batch End Date: 06/27/17 00:08

Batch Notes	
Batch Comment	IS:924420
Manifold ID	9
Methanol ID	959490
Pipette ID	M16387D
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TN
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	NSH
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	NSH
SPE Cartridge ID	6346595-05
Trizma ID	SLBR4303V
Reagent Water ID	6-19-17

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: 29329 Instrument ID & Date: 6-29-17 ICAL Batch: 171480
Extraction Batch: 170888 Worklist #: 44835 TALS Batch: 171496

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 6-29-17 2nd Level Reviewer / Date: MCWay 6/29/2017

NCM # and Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

Method 537 ICAL Checklist

A8

Instrument ID & Date: 6-28-17 Worklist#: 44832

ICAL Batch: 171480, 171481 Calibration ID number: 32056, 32057

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 6-29-17 2nd Level Reviewer / Date: MKW 6/29/2017

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 28JUN2017B_537A Worklist Number: 44835
Instrument Name: A8_N Chrom Method: 537_A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170628-44835.b
QC Batching: Enabled Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 171496	LC 537 CS ICAL Raw Batch: 171497
# 1 CCV L5	# 1 CCV L5	
# 2 RB	# 2 RB	
# 3 Cartridge QC 6357081 MD	# 3 Cartridge QC 6357081 MD	
# 4 Cartridge QC 6357981 LCS	# 4 Cartridge QC 6357981 LCS	
# 5 MB 320-170888/1-A	# 5 MB 320-170888/1-A	
# 6 LCS 320-170888/2-A	# 6 LCS 320-170888/2-A	
# 7 320-29329-A-1-A	# 7 320-29329-A-1-A	
# 8 320-29329-A-1-B MS	# 8 320-29329-A-1-B MS	
# 9 320-29329-A-1-C MSD	# 9 320-29329-A-1-C MSD	
#10 320-29329-A-2-A	#10 320-29329-A-2-A	
#11 320-29329-A-3-A	#11 320-29329-A-3-A	
#12 CCV L3	#12 CCV L3	#12 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 171498	LC 537 CS ICAL Raw Batch: 171499
#12 CCV L3	#12 CCV L3	#12 CCV L3
#13 RB		#13 RB
#14 MB 320-170602/1-A		#14 MB 320-170602/1-A
#15 LLCS 320-170602/2-A		#15 LLCS 320-170602/2-A
#16 320-29189-A-1-A		#16 320-29189-A-1-A
#17 320-29189-A-1-B LMS		#17 320-29189-A-1-B LMS
#18 320-29189-A-1-C LMSD		#18 320-29189-A-1-C LMSD
#19 320-29189-A-6-A		#19 320-29189-A-6-A
#20 320-29189-A-8-A		#20 320-29189-A-8-A
#21 320-29195-A-7-A		#21 320-29195-A-7-A
#22 320-29195-A-7-B LMS		#22 320-29195-A-7-B LMS
#23 320-29195-A-7-C LMSD		#23 320-29195-A-7-C LMSD
#24 CCV L5		#24 CCV L5

QC Batch: 3	LC 537 CS ICAL Raw Batch: 171500
#24 CCV L5	#24 CCV L5
#25 RB	#25 RB
#26 320-29195-A-10-A	#26 320-29195-A-10-A
#27 320-29200-A-1-A	#27 320-29200-A-1-A
#28 320-29200-A-2-A	#28 320-29200-A-2-A
#29 320-29200-A-2-B LMS	#29 320-29200-A-2-B LMS
#30 320-29200-A-2-C LMSD	#30 320-29200-A-2-C LMSD
#31 CCV L3	#31 CCV L3
#32 RB	#32 RB

171480
171480

28

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-170888

Method Code: 320-537_Prep-320

Analyst: Branscum, Cassie

Batch Open: 6/26/2017 8:40:00AM

Batch End: 6/27/2017 12:08:00AM

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~320-170888/1 N/A	N/A		250 mL 1.00 mL	7			N/A	N/A	N/A	ch nd	MB 320-170888/1-A
2	LCS~320-170888/2 N/A	N/A		250 mL 1.00 mL	7			N/A	N/A	N/A	ch nd	LCS 320-170888/2-A
3	320-29329-A-1 (537_DOD5)	N/A (320-29329-1)	279.69 g 28.09 g	251.6 mL 1.00 mL	7			6/26/17	5_Days	4	ch nd	320-29329-A-1-A
4	320-29329-A-1~MS (537_DOD5)	N/A (320-29329-1)	284.58 g 28.35 g	256.2 mL 1.00 mL	7			6/26/17	5_Days	4	ch nd	320-29329-A-1-B MS
5	320-29329-A-1~MSD (537_DOD5)	N/A (320-29329-1)	276.69 g 28.68 g	248 mL 1.00 mL	7			6/26/17	5_Days	4	ch nd	320-29329-A-1-C MSD
6	320-29329-A-2 (537_DOD5)	N/A (320-29329-1)	285.56 g 27.36 g	258.2 mL 1.00 mL	7			6/26/17	5_Days	4	ch nd	320-29329-A-2-A
7	320-29329-A-3 (537_DOD5)	N/A (320-29329-1)	280.93 g 28.24 g	252.7 mL 1.00 mL	7			6/26/17	5_Days	4	ch nd	320-29329-A-3-A

06/29/2017

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-170888

Method Code: 320-537_Prep-320

Analyst: Branscum, Cassie

Batch Open: 6/26/2017 8:40:00AM

Batch End:

Batch Notes

Manifold ID	9
Trizma ID	SLBR4303V
SPE Cartridge ID	6346595-05
Methanol ID	959490
Reagent Water ID	6-9-17
Pipette ID	M16387D
Analyst ID - TA Reagent Drop	CCB
Analyst ID - TA Reagent Drop Witness	NSH
Analyst ID - SU Reagent Drop	CCB
Analyst ID - SU Reagent Drop Witness	NSH
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	TW
Batch Comment	IS: 924420

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-170888

Method Code: 320-537_Prep-320

Analyst: Branscum, Cassie

Batch Open: 6/26/2017 8:40:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-170888/1	LC537-SU_00042	100 uL	1.00 mL	CB 6-26-17	MSH 6-26-17
LCS 320-170888/2	LC537-MSP_00021	100 uL	1.00 mL		
LCS 320-170888/2	LC537-SU_00042	100 uL	1.00 mL		
320-29329-A-1	LC537-SU_00042	100 uL	1.00 mL		
320-29329-A-1 MS	LC537-MSP_00021	100 uL	1.00 mL		
320-29329-A-1 MS	LC537-SU_00042	100 uL	1.00 mL		
320-29329-A-1 MSD	LC537-MSP_00021	100 uL	1.00 mL		
320-29329-A-1 MSD	LC537-SU_00042	100 uL	1.00 mL		
320-29329-A-2	LC537-SU_00042	100 uL	1.00 mL		
320-29329-A-3	LC537-SU_00042	100 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-170888

Analyst: Branscum, Cassie

Batch Open: 6/26/2017 8:40:00AM

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): 170888 Test: 537- DOD5

Earliest Holding Time: 07-05-17

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct		
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	✓	✓
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	✓	✓
The pH is transcribed correctly in TALS	✓	✓
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: TM Date: 06/27/17

2nd Level Reviewer: VPM Date: 06/27/17

Comments:

Shipping and Receiving Documents

TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Chain of Custody Record

198086

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Katie Tippin	Site Contact: Rachel Clennan	Date: 6/21/2017	COC No: 1
Company Name: Tiffany Hill/CH2M	Tel/Fax: 757-671-6258	Lab Contact: 978-387-8171	Carrier: Fed Ex	1 of 1 COCs
Address: 1100 NE Circle Blvd ste300	Analysis Turnaround Time			Sampler:
City/State/Zip: Corvallis, OR 97330	☒ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 541-768-3109	TAT if different from Below 1day			Walk-in Client:
Fax: 541-908-3794	☐ 2 weeks			Lab Sampling:
Project Name: CTO-08	☐ 1 week			
Site: NAS Whidbey Island	☐ 2 days			Job / SDG No.:
PO# 1000671060800-679530.06.FI.FS	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	USCPA METHOD 537	Sample Specific Notes:
WI-AF-1RW56-0617	6/21/17	11:05	G	AQ	2	N	N	X	
WI-AF-1RW56-0617-MS	6/21/17	11:05	G	AQ	2	N	Y	X	
WI-AF-1RW56-0617-SD	6/21/17	11:05	G	AQ	2	N	Y	X	
WI-AF-1FB56-0617	6/21/17	11:06	G	AQ	2	N	N	X	
WI-AF-1RW56P-0617	6/21/17	11:10	G	AQ	2	N	N	X	

320-29329 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other TRIZMA

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
Additional reagent blank labelled WI-AF-1FB56P-0617 → PLEASE DISPOSE

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 1.4 Corr'd: — | Therm ID No.: AP-1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	CH2M	6/21/2017 1530	[signature]	TAMS	6/22/17 430
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-29329-1

Login Number: 29329
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
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?	N/A	
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	

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	CH2M_Code	Analysis_Group	Analytical_Method	PRC_Code	Lab_Code	Lab_Name	Leachate_Method	Sample_Basis	Extraction_Method	Result_Type	Lab_QC_Type	Sample_Medium	QC_Level	DateTime_Collected	Date_Received	Leachate_Date	Leachate_Time	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:49:00	320-28973-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.016	UG_L	U		PR	TRG					00000000				5.0	0.0068	0.016	0.040	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:49:00	320-28973-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0080	UG_L	U		PR	TRG					00000000				5.0	0.0028	0.0080	0.020	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:49:00	320-28973-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.036	UG_L	U		PR	TRG					00000000				5.0	0.016	0.036	0.090	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:49:00	320-28973-1	1	1			13C2 PFHXA	13C2 PFHXA		89	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:49:00	320-28973-1	1	1			13C2 PFDA	13C2 PFDA		91	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:10	06/09/2017			20170613	08:47:00	20170614	23:02:00	320-28973-2	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.037	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:10	06/09/2017			20170613	08:47:00	20170614	23:02:00	320-28973-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0075	UG_L	U		PR	TRG					00000000				5.0	0.0026	0.0075	0.019	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:10	06/09/2017			20170613	08:47:00	20170614	23:02:00	320-28973-2	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.084	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:10	06/09/2017			20170613	08:47:00	20170614	23:02:00	320-28973-2	1	1			13C2 PFHXA	13C2 PFHXA		93	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 10:10	06/09/2017			20170613	08:47:00	20170614	23:02:00	320-28973-2	1	1			13C2 PFDA	13C2 PFDA		93	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:01	06/09/2017			20170613	08:47:00	20170614	23:07:00	320-28973-3	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.032	UG_L	J		PR	TRG					00000000				5.0	0.0064	0.015	0.038	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:01	06/09/2017			20170613	08:47:00	20170614	23:07:00	320-28973-3	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0064	UG_L	J M		PR	TRG					00000000				5.0	0.0027	0.0076	0.019	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:01	06/09/2017			20170613	08:47:00	20170614	23:07:00	320-28973-3	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U M		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:01	06/09/2017			20170613	08:47:00	20170614	23:07:00	320-28973-3	1	1			13C2 PFHXA	13C2 PFHXA		84	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:01	06/09/2017			20170613	08:47:00	20170614	23:07:00	320-28973-3	1	1			13C2 PFDA	13C2 PFDA		91	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:02	06/09/2017			20170613	08:47:00	20170614	23:11:00	320-28973-4	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.038	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:02	06/09/2017			20170613	08:47:00	20170614	23:11:00	320-28973-4	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0076	UG_L	U M		PR	TRG					00000000				5.0	0.0027	0.0076	0.019	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:02	06/09/2017			20170613	08:47:00	20170614	23:11:00	320-28973-4	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:02	06/09/2017			20170613	08:47:00	20170614	23:11:00	320-28973-4	1	1			13C2 PFHXA	13C2 PFHXA		91	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB51-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/05/2017 12:02	06/09/2017			20170613	08:47:00	20170614	23:11:00	320-28973-4	1	1			13C2 PFDA	13C2 PFDA		90	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:45	06/09/2017			20170613	08:47:00	20170619	18:42:00	320-28973-5	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0066	0.015	0.039	320-28973-1	320-169962		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:45	06/09/2017			20170613	08:47:00	20170619	18:42:00	320-28973-5	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0077	UG_L	U		PR	TRG					00000000				5.0	0.0027	0.0077	0.019	320-28973-1	320-169962		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:45	06/09/2017			20170613	08:47:00	20170619	18:42:00	320-28973-5	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.035	UG_L	U		PR	TRG					00000000				5.0	0.016	0.035	0.087	320-28973-1	320-169962		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:45	06/09/2017			20170613	08:47:00	20170619	18:42:00	320-28973-5	1	1			13C2 PFHXA	13C2 PFHXA		81	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169962		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:45	06/09/2017			20170613	08:47:00	20170619	18:42:00	320-28973-5	1	1			13C2 PFDA	13C2 PFDA		84	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169962		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52P-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:46	06/09/2017			20170613	08:47:00	20170614	23:20:00	320-28973-6	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.038	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52P-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:46	06/09/2017			20170613	08:47:00	20170614	23:20:00	320-28973-6	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0075	UG_L	U		PR	TRG					00000000				5.0	0.0026	0.0075	0.019	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52P-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:46	06/09/2017			20170613	08:47:00	20170614	23:20:00	320-28973-6	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52P-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:46	06/09/2017			20170613	08:47:00	20170614	23:20:00	320-28973-6	1	1			13C2 PFHXA	13C2 PFHXA		87	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW52P-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:46	06/09/2017			20170613	08:47:00	20170614	23:20:00	320-28973-6	1	1			13C2 PFDA	13C2 PFDA		87	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:48	06/09/2017			20170613	08:47:00	20170614	23:33:00	320-28973-7	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0066	0.015	0.039	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:48	06/09/2017			20170613	08:47:00	20170614	23:33:00	320-28973-7	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0077	UG_L	U		PR	TRG					00000000				5.0	0.0027	0.0077	0.019	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:48	06/09/2017			20170613	08:47:00	20170614	23:33:00	320-28973-7	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.035	UG_L	U		PR	TRG					00000000				5.0	0.016	0.035	0.087	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:48	06/09/2017			20170613	08:47:00	20170614	23:33:00	320-28973-7	1	1			13C2 PFHXA	13C2 PFHXA		88	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB52-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/06/2017 11:48	06/09/2017			20170613	08:47:00	20170614	23:33:00	320-28973-7	1	1			13C2 PFDA	13C2 PFDA		90	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:19	06/09/2017			20170613	08:47:00	20170614	23:38:00	320-28973-8	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.016	UG_L	U		PR	TRG					00000000				5.0	0.0067	0.016	0.039	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:19	06/09/2017			20170613	08:47:00	20170614	23:38:00	320-28973-8	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0079	UG_L	U		PR	TRG					00000000				5.0	0.0028	0.0079	0.020	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:19	06/09/2017			20170613	08:47:00	20170614	23:38:00	320-28973-8	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.035	UG_L	U		PR	TRG					00000000				5.0	0.016	0.035	0.089	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:19	06/09/2017			20170613	08:47:00	20170614	23:38:00	320-28973-8	1	1			13C2 PFHXA	13C2 PFHXA		84	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:19	06/09/2017			20170613	08:47:00	20170614	23:38:00	320-28973-8	1	1			13C2 PFDA	13C2 PFDA		95	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:20	06/09/2017			20170613	08:47:00	20170614	23:42:00	320-28973-9	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0065	0.015	0.038	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:20	06/09/2017			20170613	08:47:00	20170614	23:42:00	320-28973-9	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0076	UG_L	U		PR	TRG					00000000				5.0	0.0027	0.0076	0.019	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:20	06/09/2017			20170613	08:47:00	20170614	23:42:00	320-28973-9	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:20	06/09/2017			20170613	08:47:00	20170614	23:42:00	320-28973-9	1	1			13C2 PFHXA	13C2 PFHXA		90	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB53-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/07/2017 15:20	06/09/2017			20170613	08:47:00	20170614	23:42:00	320-28973-9	1	1			13C2 PFDA	13C2 PFDA		83	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:33	06/09/2017			20170613	08:47:00	20170614	23:46:00	320-28973-10	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.038	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:33	06/09/2017			20170613	08:47:00	20170614	23:46:00	320-28973-10	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0076	UG_L	U		PR	TRG					00000000				5.0	0.0026	0.0076	0.019	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:33	06/09/2017			20170613	08:47:00	20170614	23:46:00	320-28973-10	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:33	06/09/2017			20170613	08:47:00	20170614	23:46:00	320-28973-10	1	1			13C2 PFHXA	13C2 PFHXA		85	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:33	06/09/2017			20170613	08:47:00	20170614	23:46:00	320-28973-10	1	1			13C2 PFDA	13C2 PFDA		85	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:34	06/09/2017			20170613	08:47:00	20170614	23:51:00	320-28973-11	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.037	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:34	06/09/2017			20170613	08:47:00	20170614	23:51:00	320-28973-11	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0075	UG_L	U		PR	TRG					00000000				5.0	0.0026	0.0075	0.019	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:34	06/09/2017			20170613	08:47:00	20170614	23:51:00	320-28973-11	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.084	320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:34	06/09/2017			20170613	08:47:00	20170614	23:51:00	320-28973-11	1	1			13C2 PFHXA	13C2 PFHXA		88	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1FB54-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/08/2017 10:34	06/09/2017			20170613	08:47:00	20170614	23:51:00	320-28973-11	1	1			13C2 PFDA	13C2 PFDA		84	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:53:00	320-28973-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		94	PCT_REC	J		PR	TRG		MSA	150	50	00000000				5.0	0.0065	0.015	0.038	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:53:00	320-28973-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		93	PCT_REC	J		PR	TRG		MSA	150	50	00000000				5.0	0.0027	0.0077	0.019	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:53:00	320-28973-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		101	PCT_REC	J		PR	TRG		MSA	150	50	00000000				5.0	0.015	0.034	0.086	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:53:00	320-28973-1	1	1			13C2 PFHXA	13C2 PFHXA		87	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:53:00	320-28973-1	1	1			13C2 PFDA	13C2 PFDA		85	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:58:00	320-28973-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		95	PCT_REC	J		PR	TRG		MSP	150	50	00000000				5.0	0.0066	0.016	0.039	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:58:00	320-28973-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		95	PCT_REC	J		PR	TRG		MSP	150	50	00000000				5.0	0.0027	0.0078	0.020	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:58:00	320-28973-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		105	PCT_REC			PR	TRG		MSP	150	50	00000000				5.0	0.016	0.035	0.088	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:58:00	320-28973-1	1	1			13C2 PFHXA	13C2 PFHXA		90	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-AF-1RW50-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/05/2017 10:09	06/09/2017			20170613	08:47:00	20170614	22:58:00	320-28973-1	1	1			13C2 PFDA	13C2 PFDA		90	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		98	PCT_REC	J		PR	TRG		LSA	150	50	00000000				5.0	0.0068	0.016	0.040	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		94	PCT_REC	J		PR	TRG		LSA	150	50	00000000				5.0	0.0028	0.0080	0.020	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		105	PCT_REC			PR	TRG		LSA	150	50	00000000				5.0	0.016	0.036	0.090	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			13C2 PFHXA	13C2 PFHXA		94	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			13C2 PFDA	13C2 PFDA		92	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-168959/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:40:00	MB 320-168959/1-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.016	UG_L	U		PR	TRG					00000000				5.0	0.0068	0.016	0.040	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-168959/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:40:00	MB 320-168959/1-A	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0080	UG_L	U		PR	TRG					00000000				5.0	0.0028	0.0080	0.020	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-168959/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:40:00	MB 320-168959/1-A	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.036	UG_L	U		PR	TRG					00000000				5.0	0.016	0.036	0.090	320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-168959/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:40:00	MB 320-168959/1-A	1	1			13C2 PFHXA	13C2 PFHXA		87	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	MB 320-168959/1-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	LB1	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:40:00	MB 320-168959/1-A	1	1			13C2 PFDA	13C2 PFDA		89	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28973-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:04:00	320-28994-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.038	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:04:00	320-28994-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0075	UG_L	U		PR	TRG					00000000				5.0	0.0026	0.0075	0.019	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:04:00	320-28994-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:04:00	320-28994-1	1	1			13C2 PFHXA	13C2 PFHXA		86	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:04:00	320-28994-1	1	1			13C2 PFDA	13C2 PFDA		87	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:05	06/10/2017			20170613	08:47:00	20170615	00:26:00	320-28994-2	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		0.015	UG_L	U		PR	TRG					00000000				5.0	0.0064	0.015	0.038	320-28994-1	320-169415		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:05	06/10/2017			20170613	08:47:00	20170615	00:26:00	320-28994-2	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		0.0076	UG_L	U		PR	TRG					00000000				5.0	0.0026	0.0076	0.019	320-28994-1	320-169415		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:05	06/10/2017			20170613	08:47:00	20170615	00:26:00	320-28994-2	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		0.034	UG_L	U		PR	TRG					00000000				5.0	0.015	0.034	0.085	320-28994-1	320-169415		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:05	06/10/2017			20170613	08:47:00	20170615	00:26:00	320-28994-2	1	1			13C2 PFHXA	13C2 PFHXA		89	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169415		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1FB88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	REG	W	4	06/09/2017 09:05	06/10/2017			20170613	08:47:00	20170615	00:26:00	320-28994-2	1	1			13C2 PFDA	13C2 PFDA		89	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169415		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:08:00	320-28994-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		90	PCT_REC	J		PR	TRG		MSA	150	50	00000000				5.0	0.0065	0.015	0.038	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:08:00	320-28994-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		86	PCT_REC	J		PR	TRG		MSA	150	50	00000000				5.0	0.0027	0.0076	0.019	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:08:00	320-28994-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		99	PCT_REC	J		PR	TRG		MSA	150	50	00000000				5.0	0.015	0.034	0.086	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:08:00	320-28994-1	1	1			13C2 PFHXA	13C2 PFHXA		85	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MS	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:08:00	320-28994-1	1	1			13C2 PFDA	13C2 PFDA		85	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:13:00	320-28994-1	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		91	PCT_REC	J		PR	TRG		MSP	150	50	00000000				5.0	0.0065	0.015	0.038	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:13:00	320-28994-1	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		90	PCT_REC	J		PR	TRG		MSP	150	50	00000000				5.0	0.0027	0.0076	0.019	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:13:00	320-28994-1	1	1			Perfluorobutanesulfonic acid (PFBS)	375-73-5		99	PCT_REC	J		PR	TRG		MSP	150	50	00000000				5.0	0.015	0.034	0.086	320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:13:00	320-28994-1	1	1			13C2 PFHXA	13C2 PFHXA		84	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	WI-CV-1RW88-0617	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	MSD	W	4	06/09/2017 09:04	06/10/2017			20170613	08:47:00	20170615	00:13:00	320-28994-1	1	1			13C2 PFDA	13C2 PFDA		86	PCT_REC			PR	SURR		SLSA	130	70	00000000				5.0				320-28994-1	320-169414		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			Perfluorooctane Sulfonate (PFOS)	1763-23-1		98	PCT_REC	J		PR	TRG		LSA	150	50	00000000				5.0	0.0068	0.016	0.040	320-28994-1	320-169413		
N6247016D9000	0008		WHIDBEY_ISLAND_NAS	LLCS 320-168959/2-A	NONE		537	ORG	TAMER	Test America	NONE	NA	METHOD	000	BS	W	4	06/13/2017 08:47	06/13/2017			20170613	08:47:00	20170614	22:45:00	LLCS 320-168959/2-A	1	1			Perfluorooctanoic acid (PFOA)	335-67-1		94	PCT_REC	J		PR	TRG		LSA	150	50	00000000				5.0	0.0028	0.0080	0.020	320-28994-1	320-169413		

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
WHIDBEY ISLAND, WASHINGTON

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 320-29329-1
Laboratory: Test America, Sacramento, California
Site: Whidbey Island, CTO-0008, Washington
Date: July 13, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WI-AF-1RW56-0617	320-29329-1	Water
1MS	WI-AF-1RW56-0617MS	320-29329-1MS	Water
1MSD	WI-AF-1RW56-0617MSD	320-29329-1MSD	Water
2	WI-AF-1FB56-0617	320-29329-2	Water
3	WI-AF-1RW56P-0617	320-29329-3	Water

A full data validation was performed on the analytical data for two water samples and one aqueous field blank sample collected on June 21, 2017 by CH2M HILL at the Whidbey Island site in Washington. The samples were analyzed under the EPA Method "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)".

Specific method references are as follows:

Analysis	*Method References*
PFCs	USEPA Method 537

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (July 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," August 2014;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation
- Holding times

- Gas Chromatography/Mass Spectrometry (GC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- The field blank samples were free of contamination.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD samples exhibited acceptable percent recoveries (%R) and RPD values.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate results are summarized below. The precision was acceptable.

PFCs				
Compound	WI-AF-1RW56-0617 ug/L	WI-AF-1RW56P-0617 ug/L	RPD	Qualifier
None	ND	ND	-	-

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 7/13/17

Nancy Weaver
Senior Chemist

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1RW56-0617 Lab Sample ID: 320-29329-1

Matrix: Water Lab File ID: 2017.06.28_537B_031.d

Analysis Method: 537 Date Collected: 06/21/2017 11:05

Extraction Method: 537 Date Extracted: 06/26/2017 08:40

Sample wt/vol: 251.6(mL) Date Analyzed: 06/28/2017 19:26

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

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

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

Analysis Batch No.: 171496 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.016	0.0068
335-67-1	Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0079	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		70-130
STL00996	13C2 PFDA	92		70-130

NW 7/13/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

2

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1FB56-0617 Lab Sample ID: 320-29329-2

Matrix: Water Lab File ID: 2017.06.28_537B_034.d

Analysis Method: 537 Date Collected: 06/21/2017 11:06

Extraction Method: 537 Date Extracted: 06/26/2017 08:40

Sample wt/vol: 258.2(mL) Date Analyzed: 06/28/2017 19:40

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

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

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

Analysis Batch No.: 171496 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.015	U	0.039	0.015	0.0066
335-67-1	Perfluorooctanoic acid (PFOA)	0.0077	U	0.019	0.0077	0.0027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.035	U	0.087	0.035	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	96		70-130

NW 7/13/17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

3

Lab Name: TestAmerica Sacramento Job No.: 320-29329-1

SDG No.:

Client Sample ID: WI-AF-1RW56P-0617 Lab Sample ID: 320-29329-3

Matrix: Water Lab File ID: 2017.06.28_537B_035.d

Analysis Method: 537 Date Collected: 06/21/2017 11:10

Extraction Method: 537 Date Extracted: 06/26/2017 08:40

Sample wt/vol: 252.7(mL) Date Analyzed: 06/28/2017 19:45

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

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

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

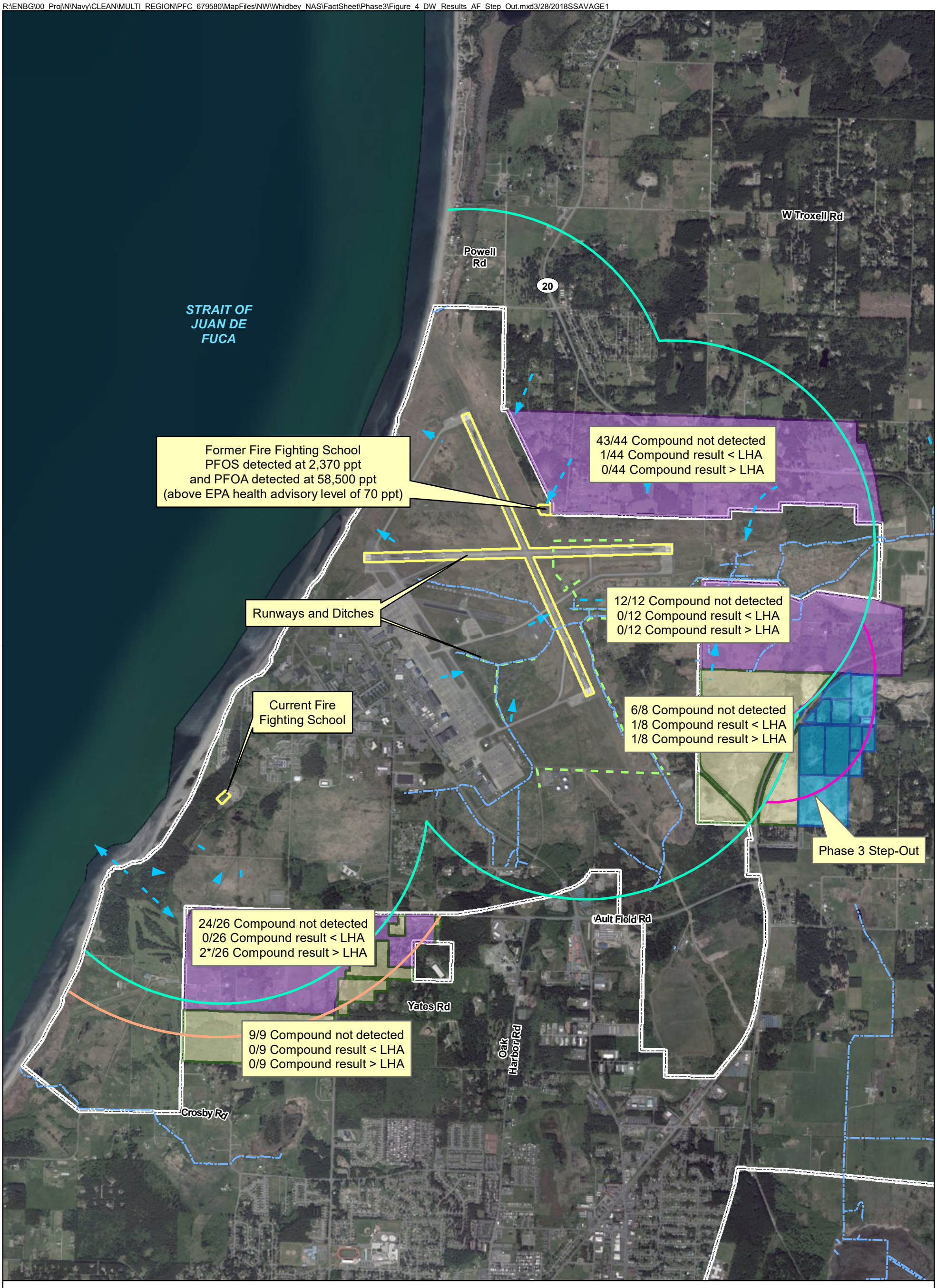
Analysis Batch No.: 171496 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.016	U	0.040	0.016	0.0067
335-67-1	Perfluorooctanoic acid (PFOA)	0.0079	U	0.020	0.0079	0.0028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.036	U	0.089	0.036	0.016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	78		70-130
STL00996	13C2 PFDA	98		70-130

NW 7/13/17

R:\ENBG\00_Proj\N\Navy\CLEAN\MULTI_REGION\PFC_679580\MapFiles\NW\Whidbey_NAS\FactSheet\Phase3\Figure_4_DW_Results_AF_Step_Out.mxd3/28/2018SSAVAGE1



Legend

- 1 Mile Zone
- Half-mile Step-out Downgradient
- Surface Water
- Drainage Ditch
- Half-mile Step-out Downgradient
- Suspected Source Area
- Parcels in Phase 1 Sampling Area
- Parcels Identified in Phase 2 Sampling Area
- Parcels Identified in Phase 3 Sampling Area
- Base Boundary
- Inferred Groundwater Flow Direction

* Second result above the EPA health advisory is from a duplicate sample collected from the well with the first exceedance near Ault Field.

Note:
PFOA and PFOS results reflected on figure, PFBS results discussed in Table 2 and text.

N

0 0.225 0.45 Miles

1 inch = 0.45 mile

Imagery Source: Esri

Figure 2
Results for Drinking Water Well Sampling
Ault Field
Naval Air Station Whidbey Island
Oak Harbor, Washington