



**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 J24442-1**

*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: 320-24442-1  
Client Project/Site: Whidbey Island

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

Attn: Tiffany Hill



Authorized for release by:  
12/23/2016 3:22:02 PM

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### LINKS

Review your project  
results through  
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Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

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

TestAmerica Job ID: 320-24442-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

## 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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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/Site: Whidbey Island

TestAmerica Job ID: 320-24442-1

**Job ID: 320-24442-1**

**Laboratory: TestAmerica Sacramento**

**Narrative**

## CASE NARRATIVE

**Client: CH2M Hill Constructors, Inc.**

**Project: Whidbey Island**

**Report Number: 320-24442-1**

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 West 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 West 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 12/16/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.5 C.

### **PFOA/PFOS**

Samples WI-CV-1RW35-1216 (320-24442-1), WI-CV-1FB35-1216 (320-24442-2), WI-CV-1RW36-1216 (320-24442-3), WI-CV-1FB36-1216 (320-24442-4), WI-CV-1RW37-1216 (320-24442-5) and WI-CV-1FB37-1216 (320-24442-6) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 12/17/2016 and analyzed on 12/22/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-142683.

# Case Narrative

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

TestAmerica Job ID: 320-24442-1

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## Job ID: 320-24442-1 (Continued)

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### Laboratory: TestAmerica Sacramento (Continued)

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

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# Detection Summary

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

TestAmerica Job ID: 320-24442-1

**Client Sample ID: WI-CV-1RW35-1216**

**Lab Sample ID: 320-24442-1**

No Detections.

**Client Sample ID: WI-CV-1FB35-1216**

**Lab Sample ID: 320-24442-2**

No Detections.

**Client Sample ID: WI-CV-1RW36-1216**

**Lab Sample ID: 320-24442-3**

No Detections.

**Client Sample ID: WI-CV-1FB36-1216**

**Lab Sample ID: 320-24442-4**

No Detections.

**Client Sample ID: WI-CV-1RW37-1216**

**Lab Sample ID: 320-24442-5**

No Detections.

**Client Sample ID: WI-CV-1FB37-1216**

**Lab Sample ID: 320-24442-6**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Client Sample Results

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

TestAmerica Job ID: 320-24442-1

**Client Sample ID: WI-CV-1RW35-1216**

**Lab Sample ID: 320-24442-1**

Date Collected: 12/13/16 09:10

Matrix: Water

Date Received: 12/16/16 10:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/17/16 13:06	12/22/16 13:19	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.029	0.0092	ug/L		12/17/16 13:06	12/22/16 13:19	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/17/16 13:06	12/22/16 13:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				12/17/16 13:06	12/22/16 13:19	1
13C2 PFDA	92		70 - 130				12/17/16 13:06	12/22/16 13:19	1

**Client Sample ID: WI-CV-1FB35-1216**

**Lab Sample ID: 320-24442-2**

Date Collected: 12/13/16 09:11

Matrix: Water

Date Received: 12/16/16 10:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L		12/17/16 13:06	12/22/16 13:49	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0090	ug/L		12/17/16 13:06	12/22/16 13:49	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.046	ug/L		12/17/16 13:06	12/22/16 13:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				12/17/16 13:06	12/22/16 13:49	1
13C2 PFDA	95		70 - 130				12/17/16 13:06	12/22/16 13:49	1

**Client Sample ID: WI-CV-1RW36-1216**

**Lab Sample ID: 320-24442-3**

Date Collected: 12/13/16 09:24

Matrix: Water

Date Received: 12/16/16 10:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		12/17/16 13:06	12/22/16 14:19	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		12/17/16 13:06	12/22/16 14:19	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/17/16 13:06	12/22/16 14:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		70 - 130				12/17/16 13:06	12/22/16 14:19	1
13C2 PFDA	92		70 - 130				12/17/16 13:06	12/22/16 14:19	1

**Client Sample ID: WI-CV-1FB36-1216**

**Lab Sample ID: 320-24442-4**

Date Collected: 12/13/16 09:25

Matrix: Water

Date Received: 12/16/16 10:05

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		12/17/16 13:06	12/22/16 17:53	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0084	ug/L		12/17/16 13:06	12/22/16 17:53	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		12/17/16 13:06	12/22/16 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130				12/17/16 13:06	12/22/16 17:53	1
13C2 PFDA	102		70 - 130				12/17/16 13:06	12/22/16 17:53	1

TestAmerica Sacramento



# Client Sample Results

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

TestAmerica Job ID: 320-24442-1

**Client Sample ID: WI-CV-1RW37-1216**

**Lab Sample ID: 320-24442-5**

**Date Collected: 12/14/16 09:14**

**Matrix: Water**

**Date Received: 12/16/16 10:05**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L	-	12/17/16 13:06	12/22/16 18:22	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0092	ug/L	-	12/17/16 13:06	12/22/16 18:22	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L	-	12/17/16 13:06	12/22/16 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		70 - 130				12/17/16 13:06	12/22/16 18:22	1
13C2 PFDA	115		70 - 130				12/17/16 13:06	12/22/16 18:22	1

**Client Sample ID: WI-CV-1FB37-1216**

**Lab Sample ID: 320-24442-6**

**Date Collected: 12/14/16 09:15**

**Matrix: Water**

**Date Received: 12/16/16 10:05**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L	-	12/17/16 13:06	12/22/16 18:52	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0091	ug/L	-	12/17/16 13:06	12/22/16 18:52	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.046	ug/L	-	12/17/16 13:06	12/22/16 18:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/17/16 13:06	12/22/16 18:52	1
13C2 PFDA	99		70 - 130				12/17/16 13:06	12/22/16 18:52	1

# Surrogate Summary

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

TestAmerica Job ID: 320-24442-1

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

**Matrix: Water**

**Prep Type: Total/NA**

## Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-24442-1	WI-CV-1RW35-1216	100	92
320-24442-2	WI-CV-1FB35-1216	96	95
320-24442-3	WI-CV-1RW36-1216	99	92
320-24442-4	WI-CV-1FB36-1216	95	102
320-24442-5	WI-CV-1RW37-1216	113	115
320-24442-6	WI-CV-1FB37-1216	97	99
LCS 320-142683/2-A	Lab Control Sample	111	113
LCSD 320-142683/3-A	Lab Control Sample Dup	114	114
MB 320-142683/1-A	Method Blank	103	104

### Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

# QC Sample Results

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

TestAmerica Job ID: 320-24442-1

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

**Lab Sample ID: MB 320-142683/1-A**  
**Matrix: Water**  
**Analysis Batch: 143413**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 142683**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L	-	12/17/16 13:06	12/22/16 10:51	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L	-	12/17/16 13:06	12/22/16 10:51	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L	-	12/17/16 13:06	12/22/16 10:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	103		70 - 130	12/17/16 13:06	12/22/16 10:51	1
13C2 PFDA	104		70 - 130	12/17/16 13:06	12/22/16 10:51	1

**Lab Sample ID: LCS 320-142683/2-A**  
**Matrix: Water**  
**Analysis Batch: 143413**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 142683**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanesulfonic acid (PFOS)	0.160	0.149		ug/L	-	93	70 - 130
Perfluorooctanoic acid (PFOA)	0.0811	0.0740		ug/L	-	91	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.359	0.340		ug/L	-	95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	111		70 - 130
13C2 PFDA	113		70 - 130

**Lab Sample ID: LCSD 320-142683/3-A**  
**Matrix: Water**  
**Analysis Batch: 143413**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 142683**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	0.160	0.158		ug/L	-	99	70 - 130	6	30
Perfluorooctanoic acid (PFOA)	0.0811	0.0751		ug/L	-	93	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)	0.359	0.352		ug/L	-	98	70 - 130	4	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	114		70 - 130
13C2 PFDA	114		70 - 130

# QC Association Summary

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

TestAmerica Job ID: 320-24442-1

## LCMS

### Prep Batch: 142683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24442-1	WI-CV-1RW35-1216	Total/NA	Water	537	
320-24442-2	WI-CV-1FB35-1216	Total/NA	Water	537	
320-24442-3	WI-CV-1RW36-1216	Total/NA	Water	537	
320-24442-4	WI-CV-1FB36-1216	Total/NA	Water	537	
320-24442-5	WI-CV-1RW37-1216	Total/NA	Water	537	
320-24442-6	WI-CV-1FB37-1216	Total/NA	Water	537	
MB 320-142683/1-A	Method Blank	Total/NA	Water	537	
LCS 320-142683/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-142683/3-A	Lab Control Sample Dup	Total/NA	Water	537	

### Analysis Batch: 143413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24442-1	WI-CV-1RW35-1216	Total/NA	Water	537	142683
320-24442-2	WI-CV-1FB35-1216	Total/NA	Water	537	142683
320-24442-3	WI-CV-1RW36-1216	Total/NA	Water	537	142683
MB 320-142683/1-A	Method Blank	Total/NA	Water	537	142683
LCS 320-142683/2-A	Lab Control Sample	Total/NA	Water	537	142683
LCSD 320-142683/3-A	Lab Control Sample Dup	Total/NA	Water	537	142683

### Analysis Batch: 143415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24442-4	WI-CV-1FB36-1216	Total/NA	Water	537	142683
320-24442-5	WI-CV-1RW37-1216	Total/NA	Water	537	142683
320-24442-6	WI-CV-1FB37-1216	Total/NA	Water	537	142683

# Lab Chronicle

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

TestAmerica Job ID: 320-24442-1

## Client Sample ID: WI-CV-1RW35-1216

## Lab Sample ID: 320-24442-1

Date Collected: 12/13/16 09:10

Matrix: Water

Date Received: 12/16/16 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			254.9 mL	1.0 mL	142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1			143413	12/22/16 13:19	CBW	TAL SAC

## Client Sample ID: WI-CV-1FB35-1216

## Lab Sample ID: 320-24442-2

Date Collected: 12/13/16 09:11

Matrix: Water

Date Received: 12/16/16 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			260.8 mL	1.0 mL	142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1			143413	12/22/16 13:49	CBW	TAL SAC

## Client Sample ID: WI-CV-1RW36-1216

## Lab Sample ID: 320-24442-3

Date Collected: 12/13/16 09:24

Matrix: Water

Date Received: 12/16/16 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			249.2 mL	1.0 mL	142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1			143413	12/22/16 14:19	CBW	TAL SAC

## Client Sample ID: WI-CV-1FB36-1216

## Lab Sample ID: 320-24442-4

Date Collected: 12/13/16 09:25

Matrix: Water

Date Received: 12/16/16 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			278.9 mL	1.0 mL	142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1			143415	12/22/16 17:53	CBW	TAL SAC

## Client Sample ID: WI-CV-1RW37-1216

## Lab Sample ID: 320-24442-5

Date Collected: 12/14/16 09:14

Matrix: Water

Date Received: 12/16/16 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			255.7 mL	1.0 mL	142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1			143415	12/22/16 18:22	CBW	TAL SAC

## Client Sample ID: WI-CV-1FB37-1216

## Lab Sample ID: 320-24442-6

Date Collected: 12/14/16 09:15

Matrix: Water

Date Received: 12/16/16 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			259.4 mL	1.0 mL	142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1			143415	12/22/16 18:52	CBW	TAL SAC

TestAmerica Sacramento

# Lab Chronicle

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

TestAmerica Job ID: 320-24442-1

**Laboratory References:**

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

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# Certification Summary

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

TestAmerica Job ID: 320-24442-1

## Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Analysis Method	Prep Method	Matrix	Analyte	

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# Method Summary

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

TestAmerica Job ID: 320-24442-1

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

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**Protocol References:**

EPA = US Environmental Protection Agency

**Laboratory References:**

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

- 1
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# Sample Summary


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

TestAmerica Job ID: 320-24442-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24442-1	WI-CV-1RW35-1216	Water	12/13/16 09:10	12/16/16 10:05
320-24442-2	WI-CV-1FB35-1216	Water	12/13/16 09:11	12/16/16 10:05
320-24442-3	WI-CV-1RW36-1216	Water	12/13/16 09:24	12/16/16 10:05
320-24442-4	WI-CV-1FB36-1216	Water	12/13/16 09:25	12/16/16 10:05
320-24442-5	WI-CV-1RW37-1216	Water	12/14/16 09:14	12/16/16 10:05
320-24442-6	WI-CV-1FB37-1216	Water	12/14/16 09:15	12/16/16 10:05

**Client Contact**  
Tiffany Hill  
Project Chemist  
1100 NE Circle Blvd Ste 300 Corvallis, OR 97330  
(541) 768-3109  
(541) 908-3794  
Project Name: CTO-08  
Site: OLF Coupeville  
P O #: 100067106050 - 679580.09.FLFS

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below: 7-Day \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 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)		Sample Specific Notes:
						Y	N	Y	N	
WI-CV-1RW35-1216	12/13/16	0910	G	DW	2	N	N	X	X	 320-24442 Chain of Custody
WI-CV-1FB35-1216	12/13/16	0911	G	DW	2	N	N	X	X	
WI-CV-1RW36-1216	12/13/16	0924	G	DW	2	N	N	X	X	
WI-CV-1FB36-1216	12/13/16	0925	G	DW	2	N	N	X	X	
WI-CV-1RW37-1216	12/14/16	0914	G	DW	2	N	N	X	X	
WI-CV-1FB37-1216	12/14/16	0915	G	DW	2	N	N	X	X	


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

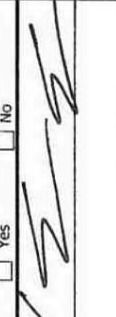
**Possible Hazard Identification:**  
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

**Special Instructions/QC Requirements & Comments:**

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

**Received by:**  Date/Time: **12-15-16/15:00**  
 Company: **CH2M**

**Relinquished by:**  Date/Time: **12-16-16 10:05**  
 Company: **TA-SAC**

**Relinquished by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Company: \_\_\_\_\_

**Cooler Temp. (C):** Obs'd: **1.5** Therm ID No.: \_\_\_\_\_

# Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-24442-1

**Login Number: 24442**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
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 <math><6\text{mm}</math> (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: 320-24442-1  
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  
12/23/2016 3:22 PM

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Laura Turpen, Project Manager I  
880 Riverside Parkway, West Sacramento, CA, 95605  
(916)374-4414  
laura.turpen@testamericainc.com  
12/23/2016

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# Definitions/Glossary

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

TestAmerica Job ID: 320-24442-1

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## Qualifiers

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### LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

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## Glossary

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Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 320-24442-1**

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 West 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 West 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 12/16/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 1.5 C.

### **PFOA/PFOS**

Samples WI-CV-1RW35-1216 (320-24442-1), WI-CV-1FB35-1216 (320-24442-2), WI-CV-1RW36-1216 (320-24442-3), WI-CV-1FB36-1216 (320-24442-4), WI-CV-1RW37-1216 (320-24442-5) and WI-CV-1FB37-1216 (320-24442-6) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 12/17/2016 and analyzed on 12/22/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-142683.

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: 320-24442-1

**Client Sample ID: WI-CV-1RW35-1216**

**Lab Sample ID: 320-24442-1**

No Detections.

**Client Sample ID: WI-CV-1FB35-1216**

**Lab Sample ID: 320-24442-2**

No Detections.

**Client Sample ID: WI-CV-1RW36-1216**

**Lab Sample ID: 320-24442-3**

No Detections.

**Client Sample ID: WI-CV-1FB36-1216**

**Lab Sample ID: 320-24442-4**

No Detections.

**Client Sample ID: WI-CV-1RW37-1216**

**Lab Sample ID: 320-24442-5**

No Detections.

**Client Sample ID: WI-CV-1FB37-1216**

**Lab Sample ID: 320-24442-6**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-24442-1

## Client Sample ID: WI-CV-1RW35-1216

Date Collected: 12/13/16 09:10

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/17/16 13:06	12/22/16 13:19	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.029	0.0092	ug/L		12/17/16 13:06	12/22/16 13:19	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/17/16 13:06	12/22/16 13:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				12/17/16 13:06	12/22/16 13:19	1
13C2 PFDA	92		70 - 130				12/17/16 13:06	12/22/16 13:19	1

## Client Sample ID: WI-CV-1FB35-1216

Date Collected: 12/13/16 09:11

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L		12/17/16 13:06	12/22/16 13:49	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0090	ug/L		12/17/16 13:06	12/22/16 13:49	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.046	ug/L		12/17/16 13:06	12/22/16 13:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				12/17/16 13:06	12/22/16 13:49	1
13C2 PFDA	95		70 - 130				12/17/16 13:06	12/22/16 13:49	1

## Client Sample ID: WI-CV-1RW36-1216

Date Collected: 12/13/16 09:24

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		12/17/16 13:06	12/22/16 14:19	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		12/17/16 13:06	12/22/16 14:19	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/17/16 13:06	12/22/16 14:19	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		70 - 130				12/17/16 13:06	12/22/16 14:19	1
13C2 PFDA	92		70 - 130				12/17/16 13:06	12/22/16 14:19	1

## Client Sample ID: WI-CV-1FB36-1216

Date Collected: 12/13/16 09:25

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-4

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.014	ug/L		12/17/16 13:06	12/22/16 17:53	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0084	ug/L		12/17/16 13:06	12/22/16 17:53	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		12/17/16 13:06	12/22/16 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		70 - 130				12/17/16 13:06	12/22/16 17:53	1
13C2 PFDA	102		70 - 130				12/17/16 13:06	12/22/16 17:53	1

# Client Sample Results

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

TestAmerica Job ID: 320-24442-1

**Client Sample ID: WI-CV-1RW37-1216**

**Lab Sample ID: 320-24442-5**

**Date Collected: 12/14/16 09:14**

**Matrix: Water**

**Date Received: 12/16/16 10:05**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/17/16 13:06	12/22/16 18:22	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0092	ug/L		12/17/16 13:06	12/22/16 18:22	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/17/16 13:06	12/22/16 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		70 - 130				12/17/16 13:06	12/22/16 18:22	1
13C2 PFDA	115		70 - 130				12/17/16 13:06	12/22/16 18:22	1

**Client Sample ID: WI-CV-1FB37-1216**

**Lab Sample ID: 320-24442-6**

**Date Collected: 12/14/16 09:15**

**Matrix: Water**

**Date Received: 12/16/16 10:05**

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L		12/17/16 13:06	12/22/16 18:52	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0091	ug/L		12/17/16 13:06	12/22/16 18:52	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.046	ug/L		12/17/16 13:06	12/22/16 18:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/17/16 13:06	12/22/16 18:52	1
13C2 PFDA	99		70 - 130				12/17/16 13:06	12/22/16 18:52	1

# Default Detection Limits

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

TestAmerica Job ID: 320-24442-1

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

Prep: 537

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.14	0.048	ug/L	537
Perfluorooctanesulfonic acid (PFOS)	0.060	0.016	ug/L	537
Perfluorooctanoic acid (PFOA)	0.030	0.0094	ug/L	537

# Surrogate Summary

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

TestAmerica Job ID: 320-24442-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-24442-1	WI-CV-1RW35-1216	100	92
320-24442-2	WI-CV-1FB35-1216	96	95
320-24442-3	WI-CV-1RW36-1216	99	92
320-24442-4	WI-CV-1FB36-1216	95	102
320-24442-5	WI-CV-1RW37-1216	113	115
320-24442-6	WI-CV-1FB37-1216	97	99
LCS 320-142683/2-A	Lab Control Sample	111	113
LCSD 320-142683/3-A	Lab Control Sample Dup	114	114
MB 320-142683/1-A	Method Blank	103	104

### Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

# QC Sample Results

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

TestAmerica Job ID: 320-24442-1

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

**Lab Sample ID: MB 320-142683/1-A**  
**Matrix: Water**  
**Analysis Batch: 143413**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 142683**

Analyte	MB MB		LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		12/17/16 13:06	12/22/16 10:51	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		12/17/16 13:06	12/22/16 10:51	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/17/16 13:06	12/22/16 10:51	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	103		70 - 130	12/17/16 13:06	12/22/16 10:51	1
13C2 PFDA	104		70 - 130	12/17/16 13:06	12/22/16 10:51	1

**Lab Sample ID: LCS 320-142683/2-A**  
**Matrix: Water**  
**Analysis Batch: 143413**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 142683**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanoic acid (PFOA)	0.0811	0.0740		ug/L		91	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.359	0.340		ug/L		95	70 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	111		70 - 130
13C2 PFDA	113		70 - 130

**Lab Sample ID: LCSD 320-142683/3-A**  
**Matrix: Water**  
**Analysis Batch: 143413**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 142683**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.0811	0.0751		ug/L		93	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)	0.359	0.352		ug/L		98	70 - 130	4	30

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	114		70 - 130
13C2 PFDA	114		70 - 130

# QC Association Summary

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

TestAmerica Job ID: 320-24442-1

## LCMS

### Prep Batch: 142683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24442-1	WI-CV-1RW35-1216	Total/NA	Water	537	
320-24442-2	WI-CV-1FB35-1216	Total/NA	Water	537	
320-24442-3	WI-CV-1RW36-1216	Total/NA	Water	537	
320-24442-4	WI-CV-1FB36-1216	Total/NA	Water	537	
320-24442-5	WI-CV-1RW37-1216	Total/NA	Water	537	
320-24442-6	WI-CV-1FB37-1216	Total/NA	Water	537	
MB 320-142683/1-A	Method Blank	Total/NA	Water	537	
LCS 320-142683/2-A	Lab Control Sample	Total/NA	Water	537	
LCSD 320-142683/3-A	Lab Control Sample Dup	Total/NA	Water	537	

### Analysis Batch: 143413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24442-1	WI-CV-1RW35-1216	Total/NA	Water	537	142683
320-24442-2	WI-CV-1FB35-1216	Total/NA	Water	537	142683
320-24442-3	WI-CV-1RW36-1216	Total/NA	Water	537	142683
MB 320-142683/1-A	Method Blank	Total/NA	Water	537	142683
LCS 320-142683/2-A	Lab Control Sample	Total/NA	Water	537	142683
LCSD 320-142683/3-A	Lab Control Sample Dup	Total/NA	Water	537	142683

### Analysis Batch: 143415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24442-4	WI-CV-1FB36-1216	Total/NA	Water	537	142683
320-24442-5	WI-CV-1RW37-1216	Total/NA	Water	537	142683
320-24442-6	WI-CV-1FB37-1216	Total/NA	Water	537	142683

# Lab Chronicle

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

TestAmerica Job ID: 320-24442-1

## Client Sample ID: WI-CV-1RW35-1216

Date Collected: 12/13/16 09:10

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1	143413	12/22/16 13:19	CBW	TAL SAC

## Client Sample ID: WI-CV-1FB35-1216

Date Collected: 12/13/16 09:11

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1	143413	12/22/16 13:49	CBW	TAL SAC

## Client Sample ID: WI-CV-1RW36-1216

Date Collected: 12/13/16 09:24

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1	143413	12/22/16 14:19	CBW	TAL SAC

## Client Sample ID: WI-CV-1FB36-1216

Date Collected: 12/13/16 09:25

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1	143415	12/22/16 17:53	CBW	TAL SAC

## Client Sample ID: WI-CV-1RW37-1216

Date Collected: 12/14/16 09:14

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1	143415	12/22/16 18:22	CBW	TAL SAC

## Client Sample ID: WI-CV-1FB37-1216

Date Collected: 12/14/16 09:15

Date Received: 12/16/16 10:05

## Lab Sample ID: 320-24442-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			142683	12/17/16 13:06	VPM	TAL SAC
Total/NA	Analysis	537		1	143415	12/22/16 18:52	CBW	TAL SAC

TestAmerica Sacramento



# Lab Chronicle

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

TestAmerica Job ID: 320-24442-1

**Laboratory References:**

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

# Certification Summary

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

TestAmerica Job ID: 320-24442-1

## Laboratory: TestAmerica Sacramento

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

<u>Authority</u>	<u>Program</u>	<u>EPA Region</u>	<u>Certification ID</u>	<u>Expiration Date</u>
A2LA	DoD ELAP		2928-01	01-31-17

<u>Analysis Method</u>	<u>Prep Method</u>	<u>Matrix</u>	<u>Analyte</u>
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# Method Summary

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

TestAmerica Job ID: 320-24442-1

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<b>Method</b>	<b>Method Description</b>	<b>Protocol</b>	<b>Laboratory</b>
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: 320-24442-1

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<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Matrix</b>	<b>Collected</b>	<b>Received</b>
320-24442-1	WI-CV-1RW35-1216	Water	12/13/16 09:10	12/16/16 10:05
320-24442-2	WI-CV-1FB35-1216	Water	12/13/16 09:11	12/16/16 10:05
320-24442-3	WI-CV-1RW36-1216	Water	12/13/16 09:24	12/16/16 10:05
320-24442-4	WI-CV-1FB36-1216	Water	12/13/16 09:25	12/16/16 10:05
320-24442-5	WI-CV-1RW37-1216	Water	12/14/16 09:14	12/16/16 10:05
320-24442-6	WI-CV-1FB37-1216	Water	12/14/16 09:15	12/16/16 10:05

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Analysis Batch Number: 140688

Lab Sample ID: STD 320-140688/2 IC Client Sample ID: \_\_\_\_\_

Date Analyzed: 12/05/16 17:26 Lab File ID: 05DEC2016A6A\_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.37	Split Peak	barnettj	12/06/16 10:00
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/06/16 10:00

Lab Sample ID: STD 320-140688/3 IC Client Sample ID: \_\_\_\_\_

Date Analyzed: 12/05/16 17:55 Lab File ID: 05DEC2016A6A\_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.38	Split Peak	barnettj	12/06/16 10:03
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/06/16 10:03

Lab Sample ID: CCV 320-140688/9 CCVL Client Sample ID: \_\_\_\_\_

Date Analyzed: 12/05/16 20:53 Lab File ID: 05DEC2016A6A\_011.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.38	Split Peak	barnettj	12/06/16 10:08
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/06/16 10:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Analysis Batch Number: 143413

Lab Sample ID: CCV 320-143413/34 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 12/22/16 15:54 Lab File ID: 19DEC2016A6A\_159.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.36	Split Peak	westendor fc	12/22/16 16:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Analysis Batch Number: 143415

Lab Sample ID: CCV 320-143415/34 CCVIS Client Sample ID: \_\_\_\_\_

Date Analyzed: 12/22/16 15:54 Lab File ID: 19DEC2016A6A\_159.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.36	Split Peak	westendor fc	12/22/16 16:50

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
<b>LC537-ICV_00017</b>	01/13/17	08/09/16	MeOH/H2O, Lot 067374	10 mL	LC537-IS_00018	200 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
..LCM2PFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C2-PFOA	50 ug/mL
<b>LC537-ICV_00017</b>	01/13/17	08/09/16	MeOH/H2O, Lot 067374	10 mL	LC537-SU_00017	500 uL	13C2 PFDA	10 ng/mL
					LC537ICIM_00013	25 uL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	114.77 ng/mL
							Perfluorooctanoic acid (PFOA)	25.0965 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	27.2389 ng/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LC537ICIM_00013	02/05/17	08/09/16	Methanol, Lot 090285	25 mL	LC537-PFBS2_00005	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	45.908 ug/mL
					LC537-PFOA2_00007	0.13 mL	Perfluorooctanoic acid (PFOA)	10.0386 ug/mL
					LC537-PFOS2_00005	0.22 mL	Perfluorooctanesulfonic acid (PFOS)	10.8956 ug/mL
..LC537-PFBS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537_PFBS2_00001	0.023 g	Perfluorobutanesulfonic acid (PFBS)	2295.4 ug/mL
...LC537_PFBS2_00001	08/09/17	Santa Cruz Biotechnology, Lot H0112			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
..LC537-PFOA2_00007	07/25/17	08/05/16	Methanol, Lot 090285	10 mL	LC537_PFOA2_00001	0.0195 g	Perfluorooctanoic acid (PFOA)	1930.5 ug/mL
...LC537_PFOA2_00001	07/25/17	Afla Aesar, Lot D24Y026			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
..LC537-PFOS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537_PFOS2_00001	0.0159 g	Perfluorooctanesulfonic acid (PFOS)	1238.13 ug/mL
...LC537_PFOS2_00001	07/26/17	Sigma, Lot BCBF5116V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
<b>LC537-IS_00027</b>	03/19/17	12/14/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
.LCM2PFOA_00003	03/19/17	Wellington Laboratories, Lot M2PFOA0312			LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C2-PFOA	50 ug/mL
					(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
<b>LC537-L1_00015</b>	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
					LC537-MSP_00012	24.4 uL	13C4 PFOS	28.68 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	8.76058 ng/mL
							Perfluoroheptanoic acid	0.993847 ng/mL
							Perfluorohexanesulfonic acid	2.9532 ng/mL
							Perfluorononanoic acid	1.91737 ng/mL
							Perfluorooctanoic acid (PFOA)	1.9793 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	3.91048 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL



REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2 PFHxA	10 ng/mL
..LCM2PFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	0.5 ug/mL
..LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	1.434 ug/mL
.LC537-MSP_00012	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	200 uL	13C2 PFOS	47.8 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	1795.2 ng/mL
							Perfluoroheptanoic acid	203.657 ng/mL
							Perfluorohexanesulfonic acid	605.164 ng/mL
							Perfluorononanoic acid	392.904 ng/mL
							Perfluorooctanoic acid (PFOA)	405.594 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	801.328 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
...LC537_PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
...LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFDA	50 ug/mL
					(Purchased Reagent)		13C2 PFHxA	50 ug/mL
<b>LC537-L2_00014</b>	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	34 uL	Perfluorobutanesulfonic acid (PFBS)	22.8888 ng/mL
							Perfluoroheptanoic acid	2.59663 ng/mL
							Perfluorohexanesulfonic acid	7.71585 ng/mL
							Perfluorononanoic acid	5.00953 ng/mL
							Perfluorooctanoic acid (PFOA)	5.17132 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	10.2169 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537_PFHpA_00002	04/01/18		Aldrich, Lot BCM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C4 PFOS	47.8 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		LCMPFHxA_00009	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00016	01/28/17	11/07/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	67 uL	Perfluorobutanesulfonic acid (PFBS)	45.1044 ng/mL
							Perfluoroheptanoic acid	5.11689 ng/mL
							Perfluorohexanesulfonic acid	15.2048 ng/mL
							Perfluorononanoic acid	9.87171 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	10.1905 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1334 ng/mL
					LC537-IS_00024	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00020	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V			(Purchased Reagent)	Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537 PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V			(Purchased Reagent)	Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537 PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537 PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V			(Purchased Reagent)	Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F			(Purchased Reagent)	Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
....LC537 PFOA_00002	11/04/18		Fluka, Lot SZBD308XV			(Purchased Reagent)	Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV			(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00024	03/19/17	11/03/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00003	03/19/17		Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)	13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21		Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
.LC537-SU_00020	04/07/17	10/07/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)	13C2 PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)	13C2 PFHxA	50 ug/mL
<b>LC537-L4_00015</b>	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	135 uL	Perfluorobutanesulfonic acid (PFBS)	90.882 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	10.3101 ng/mL
							Perfluorohexanesulfonic acid	30.6364 ng/mL
							Perfluorononanoic acid	19.8908 ng/mL
							Perfluorooctanoic acid (PFOA)	20.5332 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	40.5672 ng/mL
					LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537 PFHpA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537 PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537 PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
....LC537 PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL		
LC537-L5_00017	01/28/17	11/07/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	200 uL	Perfluorobutanesulfonic acid (PFBS)	134.64 ng/mL		
							Perfluoroheptanoic acid	15.2743 ng/mL		
							Perfluorohexanesulfonic acid	45.3873 ng/mL		
							Perfluorononanoic acid	29.4678 ng/mL		
							Perfluorooctanoic acid (PFOA)	30.4196 ng/mL		
					Perfluorooctanesulfonic acid (PFOS)	60.0996 ng/mL				
					LC537-IS_00024	100 uL	13C2-PFOA	10 ng/mL		
							13C4 PFOS	28.68 ng/mL		
					LC537-SU_00020	250 uL	13C2 PFDA	10 ng/mL		
							13C2 PFHxA	10 ng/mL		
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL		
							Perfluoroheptanoic acid	381.857 ng/mL		
							Perfluorohexanesulfonic acid	1134.68 ng/mL		
							Perfluorononanoic acid	736.695 ng/mL		
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL		
Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL									
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL		
							LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
							LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
							LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
							LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
LC537-PFOS_00006	0.4 mL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL							
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL		
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g		
...LC537-PFHpA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL		
...LC537 PFHpA_00002	04/01/18	Aldrich, Lot BCM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g		
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537 PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL		
...LC537 PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g		
...LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL		
...LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g		
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL		
...LC537 PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g		
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL		
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g		
.LC537-IS_00024	03/19/17	11/03/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL		
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL		
..LCM2PFOA_00003	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	50 ug/mL		
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-SU_00020	04/07/17	10/07/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
<b>LC537-L6_00014</b>	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	265 uL	Perfluorobutanesulfonic acid (PFBS)	178.398 ng/mL
							Perfluoroheptanoic acid	20.2384 ng/mL
							Perfluorohexanesulfonic acid	60.1382 ng/mL
							Perfluorononanoic acid	39.0448 ng/mL
							Perfluorooctanoic acid (PFOA)	40.3059 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	79.632 ng/mL
					LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHpA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluorooctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHpA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537 PFHpA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
..LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537 PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537 PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
..LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537 PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
..LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
....LC537 PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
<b>LC537-MSP_00014</b>	03/14/17	09/14/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00013	200 uL	Perfluorobutane Sulfonate	1795.2 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	1795.2 ng/mL
							Perfluoroheptanoic acid	203.657 ng/mL
							Perfluorohexanesulfonic acid	605.164 ng/mL
							Perfluorononanoic acid	392.904 ng/mL
							Perfluorooctanoic acid (PFOA)	405.594 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	801.328 ng/mL
.LC537SPIM_00013	03/14/17	09/14/16	Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutane Sulfonate	89760 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	89760 ng/mL
					LC537-PFHpA_00010	100 uL	Perfluoroheptanoic acid	10182.9 ng/mL
					LC537-PFHxS_00008	300 uL	Perfluorohexanesulfonic acid	30258.2 ng/mL
					LC537-PFNA_00008	200 uL	Perfluorononanoic acid	19645.2 ng/mL
					LC537-PFOA_00009	98 uL	Perfluorooctanoic acid (PFOA)	20279.7 ng/mL
					LC537-PFOS_00006	400 uL	Perfluorooctanesulfonic acid (PFOS)	40066.4 ng/mL
..LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutane Sulfonate	2040 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2040 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_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFHpA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
...LC537 PFHpA_00002	04/01/18		Aldrich, Lot BCM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
..LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537 PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
...LC537 PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
..LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537 PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
...LC537 PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
..LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537 PFOA_00002	0.0145 g	Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
...LC537 PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.999 g/g
..LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
...LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
<b>LC537-SU_00026</b>	06/14/17	12/16/16	Methanol, Lot 104453	20000 uL	LC537-SU_00025	10000 uL	13C2 PFDA	0.2 ug/mL
.LC537-SU_00025	06/14/17	12/14/16	Methanol, Lot 104453	10000 uL	LCMPFDA_00008	80 uL	13C2 PFHxA	0.2 ug/mL
					LCMPFHxA_00009	80 uL	13C2 PFDA	0.4 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFHxA	0.4 ug/mL
							13C2 PFDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL



Reagent

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**LC537\_PFB\_00002**

#: 4/1/15 SPV

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

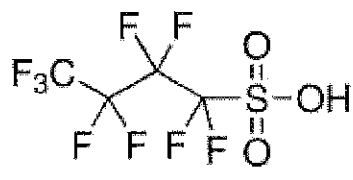
Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

### Certificate of Analysis

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

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



PFBS

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

Jamie Gleason, Manager  
Quality Control  
Milwaukee, Wisconsin US

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

Reagent

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**LC537\_PFB2\_00001**



*The Power to Question*

# CERTIFICATE OF ANALYSIS

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

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

Test Conditions: Refractive Index: n<sub>20/D</sub>

Reagent

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**LC537\_PFHpA\_00002**

R: 4/1/15 4V

**Certificate of Analysis**

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

PFHpA

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

Dr. Claudia Geitner  
Manager Quality Control  
Buchs, Switzerland

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

Reagent

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**LC537\_PFHxS\_00002**

r: 4/1/15 stw

### Certificate of Analysis

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

**Product Number:** 50929

**Batch Number:** BCBL3545V

**Brand:** Aldrich

**CAS Number:** 3871-99-6

**Formula:** C<sub>6</sub>F<sub>13</sub>KO<sub>3</sub>S

**Formula Weight:** 438.20

**Quality Release Date:** 20 JUN 2013

PFH<sub>13</sub>S-K

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

Dr. Claudia Geitner  
Manager Quality Control  
Buchs, Switzerland

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

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

stw 4/1/15

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



Reagent

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**LC537\_PENA\_00002**

R: 4/1/15 SKV



### Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

**Customer service:**

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

PFNA

Reagent

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**LC537\_PFOA\_00002**

3/21/15

# 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: C<sub>8</sub>HF<sub>15</sub>O<sub>2</sub>  
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

identity (GC-MS)  
Assay (GCMS)  
Date of Analysis

complying  
99.4 %  
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 aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance is maintained and proper records of all its handlings are kept. Special care has to be taken to avoid any contamination or adulteration of the substance.
- We herewith confirm that the delivery is effected according to the technical delivery conditions agreed.
- Particular properties of the products or the suitability for a particular area of application are not assured.
- We guarantee a proper quality within our General Conditions of Sales.

Sigma-Aldrich Laborchemikalien GmbH  
Quality Management SA-LC

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## 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

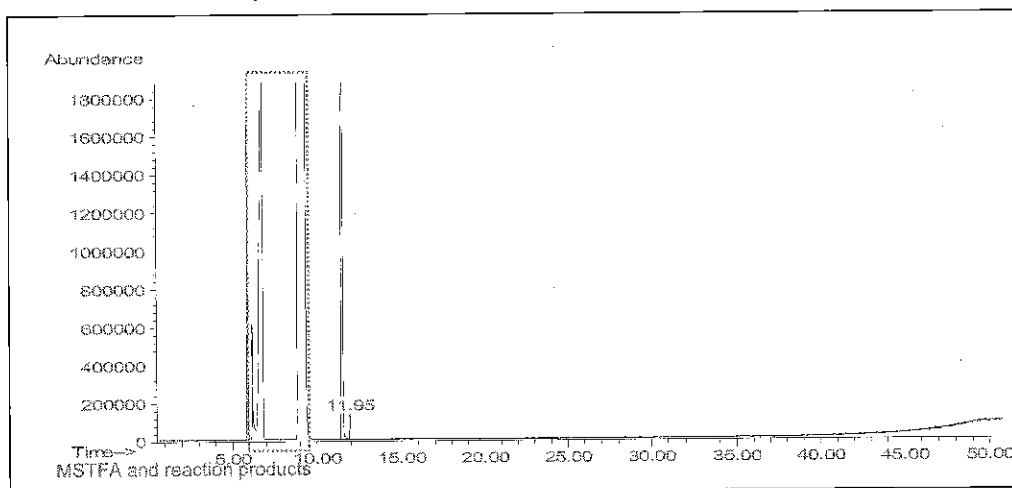
**Mass range:** 10-600 amu (Scan mode)

**Evaluation:** Purity: Total Ion Chromatogram  
(MSTFA and reaction products blinded out in report)

Identity: Mass spectrum complies

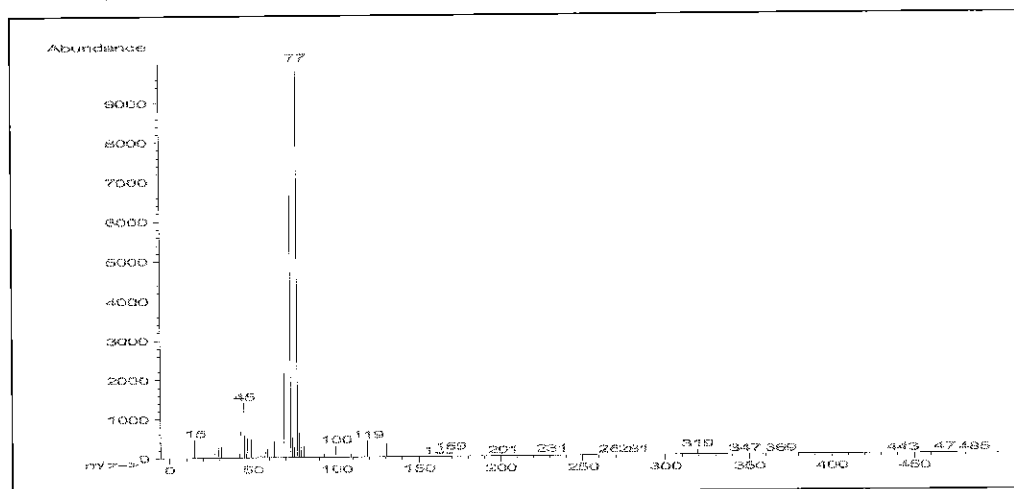
**Operator:** Ahrens / 2013-11-13

### 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

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**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.

[www.alfa.com](http://www.alfa.com)

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+49 721 84007 280  
Fax: 00800 4577 4577 or  
+49 721 84007 300  
Email: [Eurosales@alfa.com](mailto:Eurosales@alfa.com)

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Fax: +44 (0)1524-850608  
Email: [UKsales@alfa.com](mailto:UKsales@alfa.com)

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Fax: 0800 10 20 67 or  
+33 (0)3 8862 6864  
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Email: [saleskorea@alfa-asia.com](mailto:saleskorea@alfa-asia.com)

Reagent

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**LC537\_PFOs\_00002**



F: 4/115 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 - <i>ex date</i>

Article/Product: 33829	Batch : SZBC222XV
Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®	
	PFOS-K <sup>+</sup>

### 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)	98.00 %
Date of Analysis	10.Aug.2012

$$\text{PW-Correction: } \frac{538.22 - 39.10 + 1.01}{538.22} = \frac{500.13}{538.22} = 0.92923$$
Purity = 91.06%

#### 3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH  
Quality Management SA-LC

Reagent

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**LC537\_PFOs2\_00001**

Certificate of Analysis

Inv 820  
12LCMS 0579

Product Name: HEPTADEC AFLUORO OCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT  
98 %  
Product Number: 365289  
Product Brand: Aldrich  
Molecular Formula: C<sub>16</sub>H<sub>20</sub>F<sub>17</sub>NO<sub>3</sub>S  
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

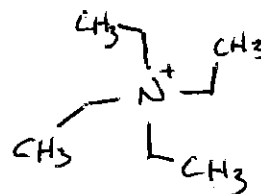
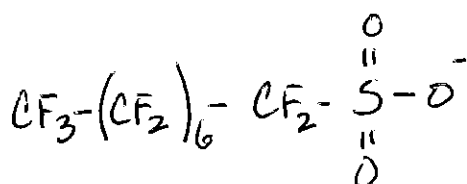
$$\text{Mw correction} = \frac{500.125}{629.37} = 0.7946$$

~~79.46%~~ det 7-26-12

*E. Schwarzler*

Purity + Mw Correction = 77.87%

Edeltraud Schwarzler, Manager  
Quality Control  
Buchs, Switzerland



	<u>C<sub>8</sub>F<sub>17</sub>SO<sub>3</sub>H</u>	<u>C<sub>8</sub>H<sub>20</sub>N</u>
C = 12.011	96.088	96.088
F = 18.998	322.966	-
S = 32.066	32.066	-
O = 15.999	47.997	-
H = 1.008	1.008	20.160
N = 14.007	-	14.007
	<u>500.125</u>	<u>130.255</u> →

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**Certificate of Origin**

**Product Name:** Heptadecafluorooctanesulfonic acid tetraethylammonium salt  
 98 %  
**Product Number:** 365289  
**Product Brand:** Aldrich  
**Lot:** BCBF5116V  
**Molecular Formula:** C<sub>16</sub>H<sub>20</sub>F<sub>17</sub>NO<sub>3</sub>S  
**Molecular Mass:** 629.37  
**CAS Number:** 56773-42-3  
**Date of Issue:** 30-MAR-11

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**Country of Origin** China

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

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

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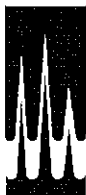
For further questions please contact your local Sigma-Aldrich representative.

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

Reagent

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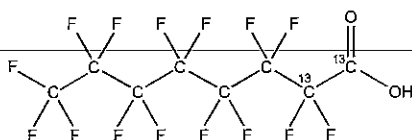
**LCM2PFOA\_00003**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2PFOA **LOT NUMBER:** M2PFOA0312  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]octanoic acid  
**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>HF<sub>15</sub>O<sub>2</sub> **MOLECULAR WEIGHT:** 416.05  
**CONCENTRATION:** 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99%<sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 03/19/2012 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 03/19/2017  
**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: 01/09/2013  
(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  $x_1, x_2, \dots, x_n$  on which it depends is:

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

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

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

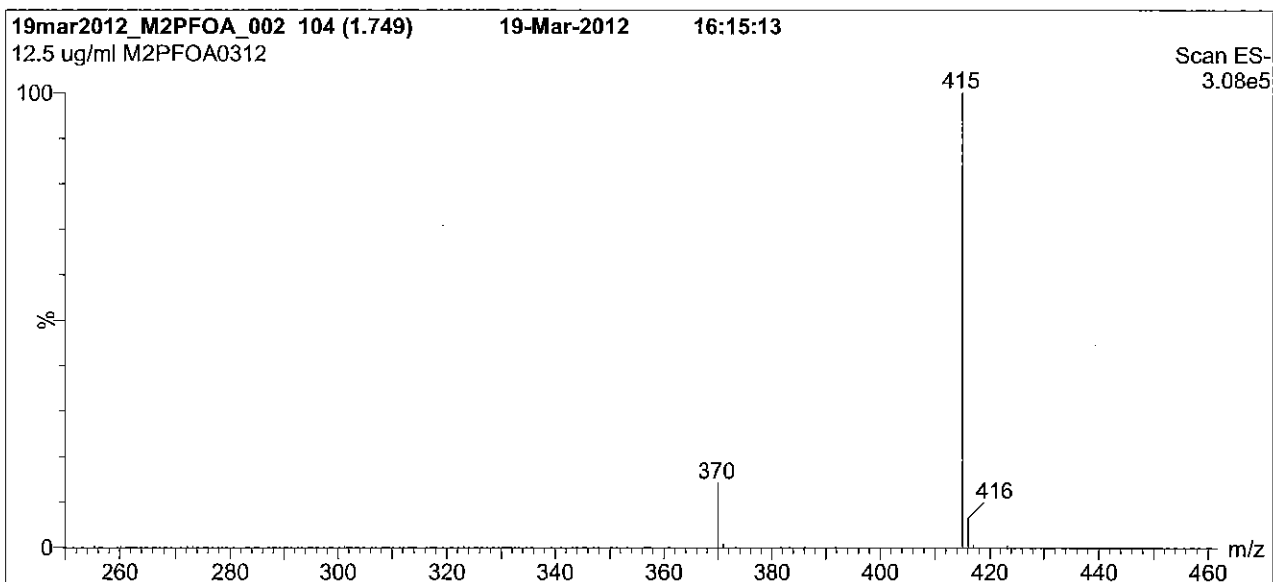
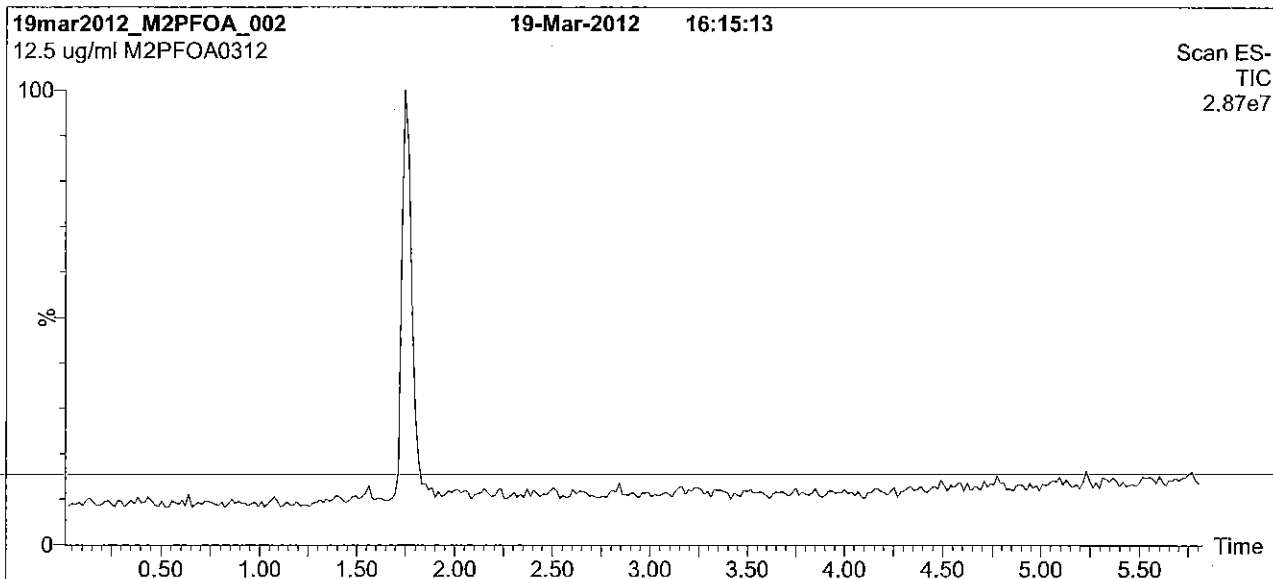
#### **QUALITY MANAGEMENT:**

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).



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto: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<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 6.5 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

Flow: 300  $\mu$ l/min

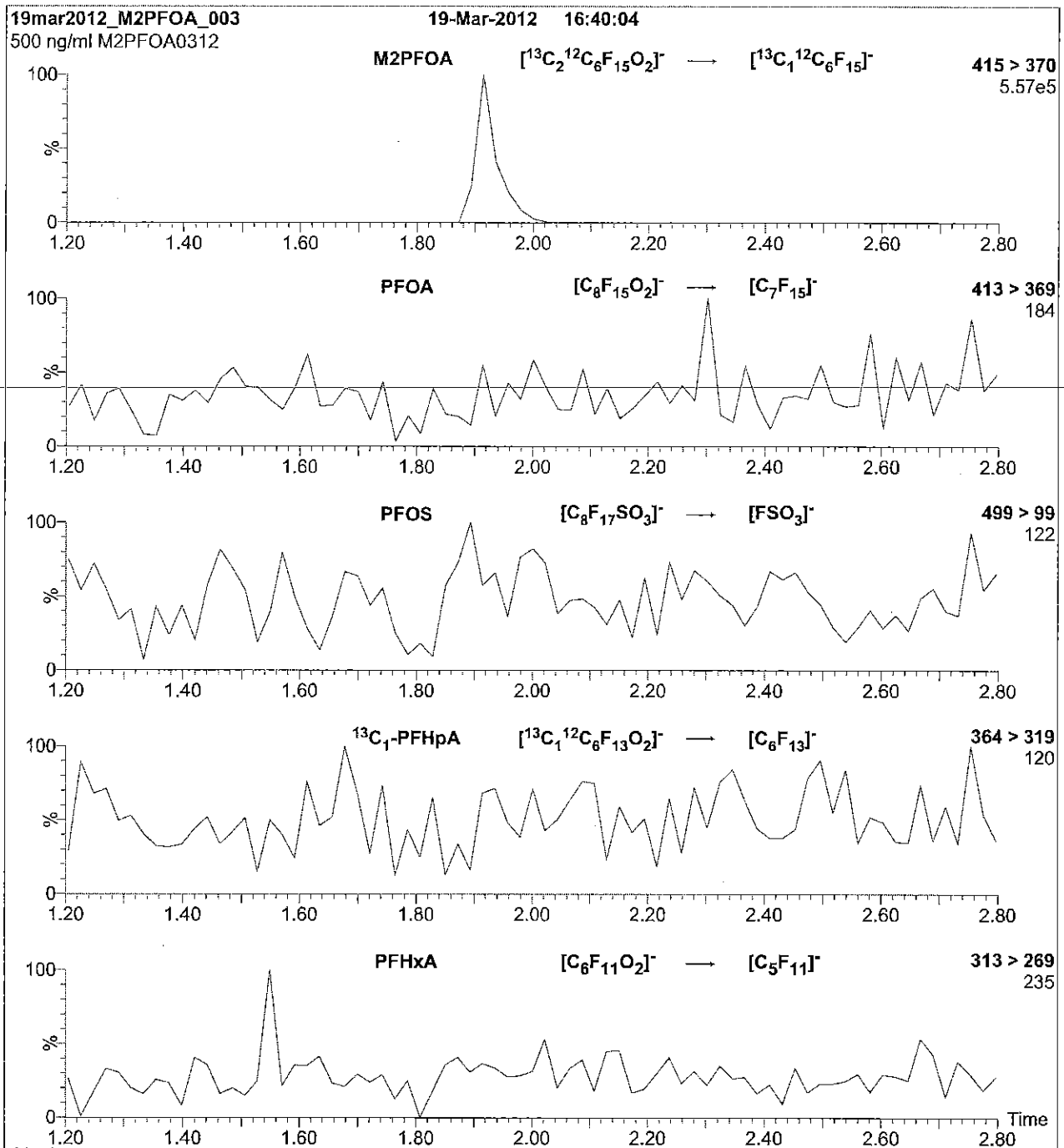
**MS Parameters**

Experiment: Full Scan (250 - 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  $\mu\text{l}$  (500 ng/ml M2PFOA)

Mobile phase: Isocratic 70% (80:20 MeOH:ACN) / 30%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

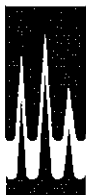
**MS Parameters**

Collision Gas (mbar) =  $3.35\text{e-}3$   
Collision Energy (eV) = 11

Reagent

---

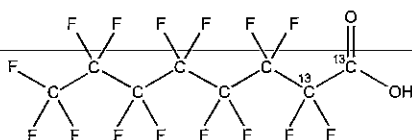
**LCM2PFOA\_00004**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2PFOA **LOT NUMBER:** M2PFOA0312  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]octanoic acid  
**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>HF<sub>15</sub>O<sub>2</sub> **MOLECULAR WEIGHT:** 416.05  
**CONCENTRATION:** 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99%<sup>13</sup>C  
(1,2-<sup>13</sup>C<sub>2</sub>)  
**LAST TESTED:** (mm/dd/yyyy) 03/19/2012  
**EXPIRY DATE:** (mm/dd/yyyy) 03/19/2017  
**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: 01/09/2013

(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  $x_1, x_2, \dots, x_n$  on which it depends is:

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

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

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

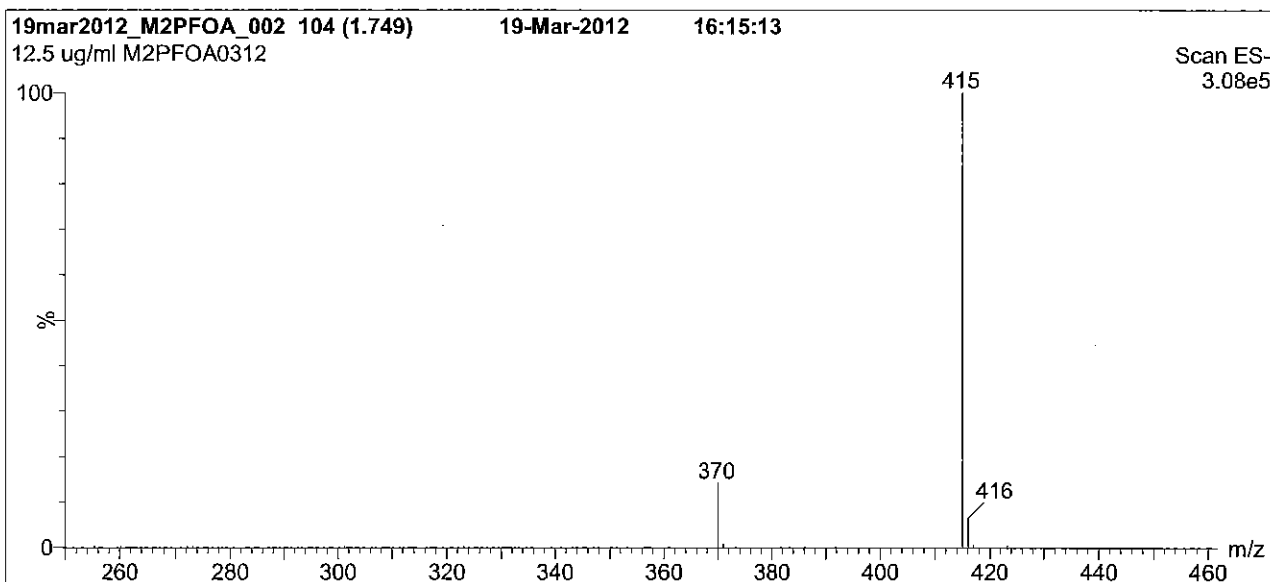
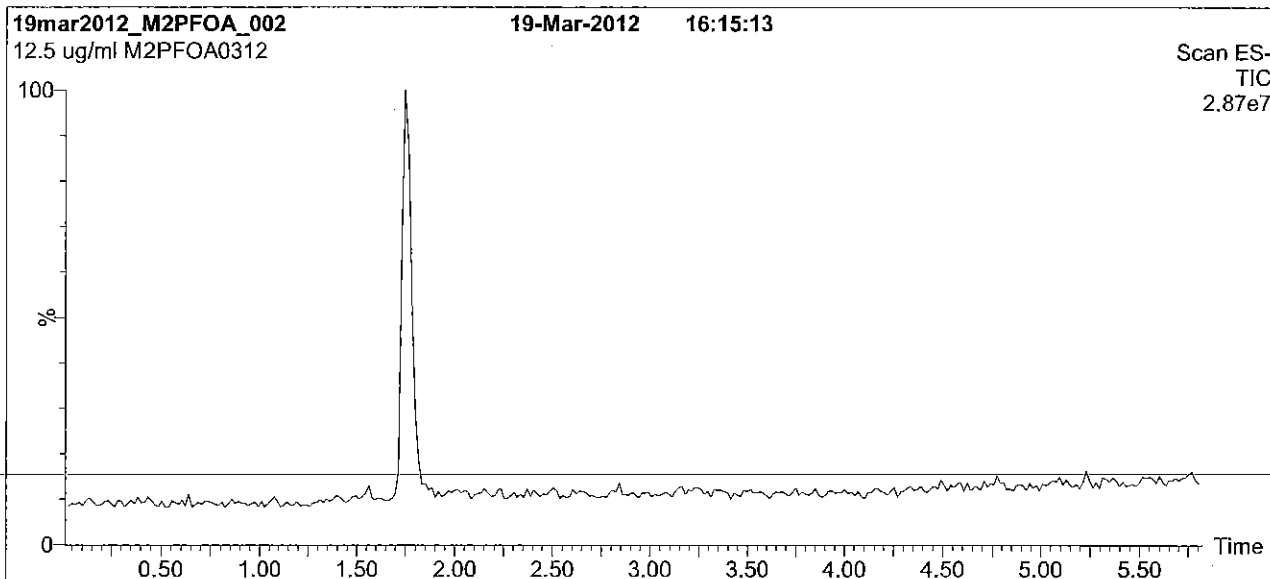
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**Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

**Column:** Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
Start: 60% (80:20 MeOH:ACN) / 40% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 6.5 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

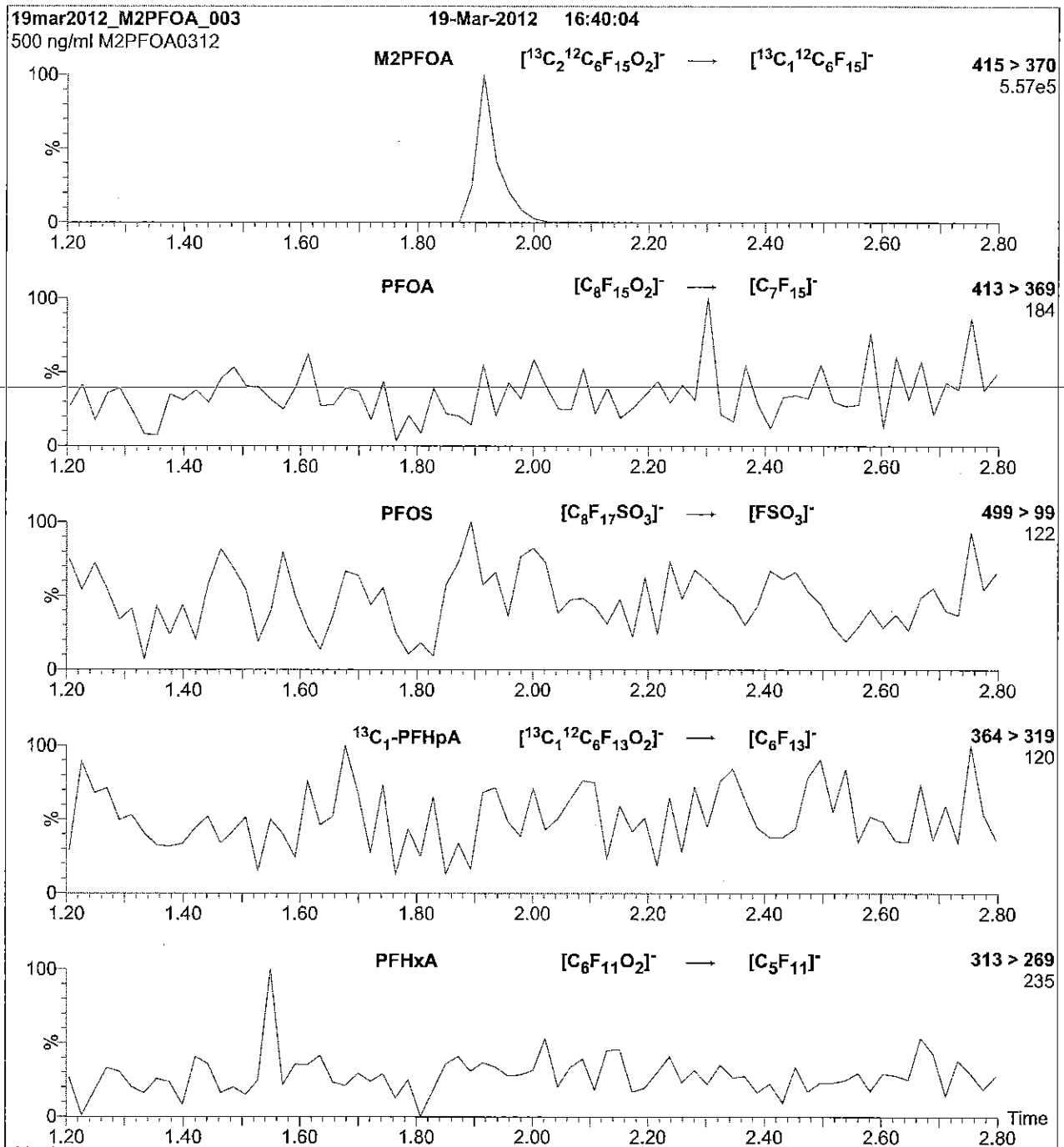
**Flow:** 300  $\mu$ l/min

**MS Parameters**

**Experiment:** Full Scan (250 - 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  $\mu\text{l}$  (500 ng/ml M2PFOA)

Mobile phase: Isocratic 70% (80:20 MeOH:ACN) / 30%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

Collision Gas (mbar) =  $3.35\text{e-}3$   
Collision Energy (eV) = 11

Reagent

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**LCMPFDA\_00008**



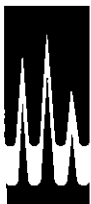
605243

ID: LCMPFDA\_00008

Exp: 08/19/20 Pptd: CBW

13C2-Perfluorodecanoic acid

Rec. 3/29/16 JEB ✓

**WELLINGTON**  
LABORATORIES**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION**PRODUCT CODE:**

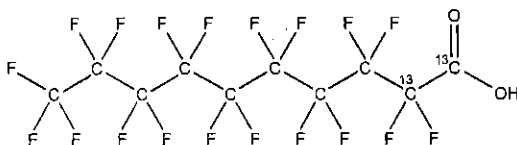
MPFDA

**LOT NUMBER:**

MPFDA0815

**COMPOUND:**Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]decanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>HF<sub>19</sub>O<sub>2</sub>**MOLECULAR WEIGHT:**

516.07

**CONCENTRATION:**

50 ± 2.5 µg/ml

**SOLVENT(S):**

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

**ISOTOPIC PURITY:**≥99% <sup>13</sup>C**LAST TESTED:** (mm/dd/yyyy)

08/19/2015

(1,2-<sup>13</sup>C<sub>2</sub>)**EXPIRY DATE:** (mm/dd/yyyy)

08/19/2020

**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 <sup>13</sup>C<sub>1</sub>-PFNA.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

  
B.G. Chittim

Date: 08/21/2015

(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.

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

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

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

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### **EXPIRY DATE / PERIOD OF VALIDITY:**

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

### **LIMITED WARRANTY:**

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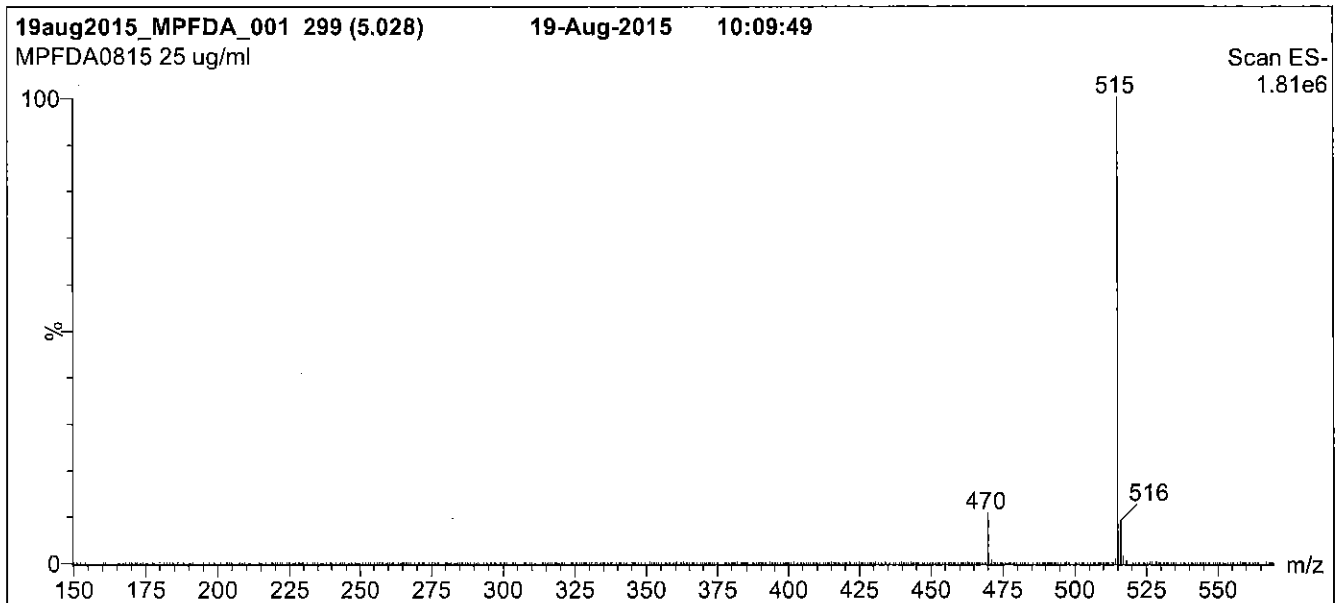
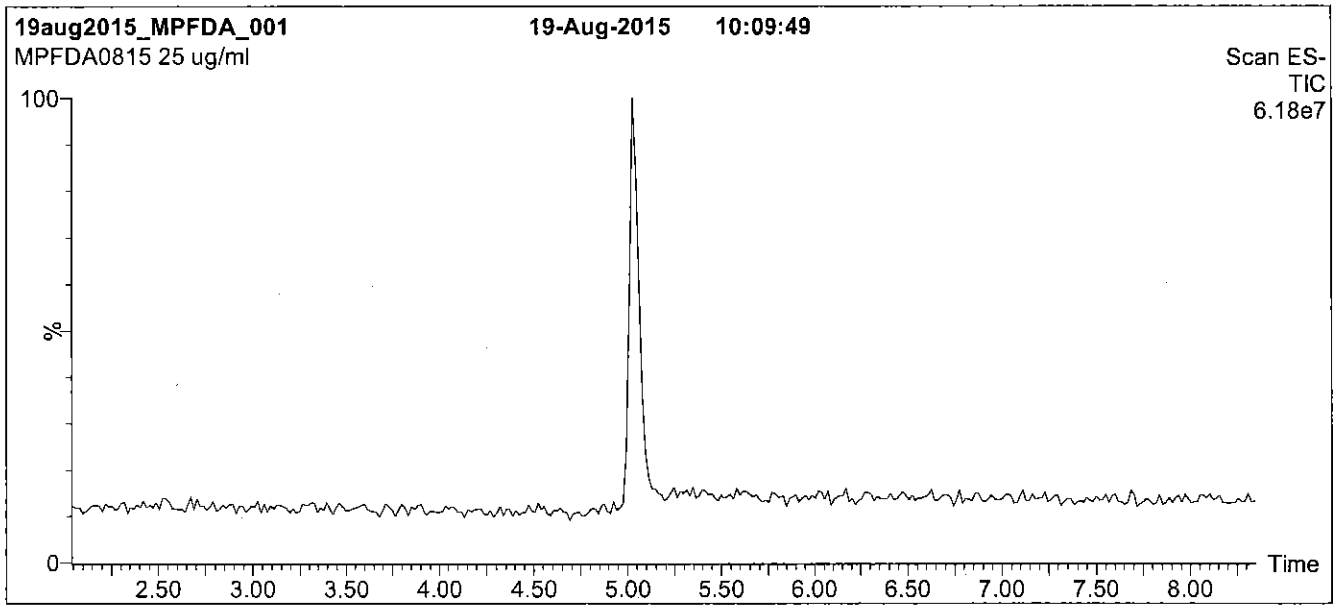
### **QUALITY MANAGEMENT:**

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**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<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

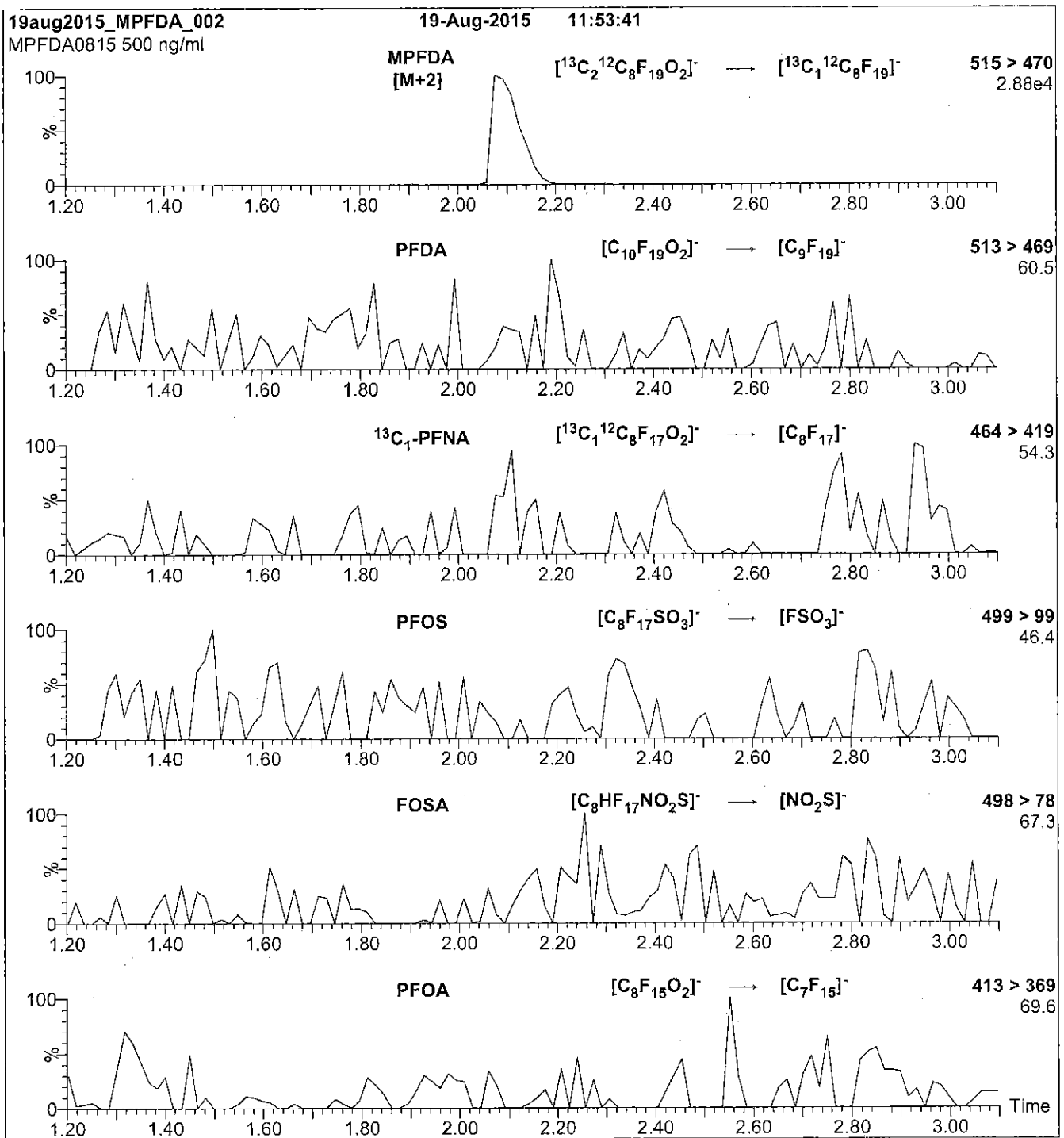
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 15.00  
Cone Gas Flow (l/hr) = 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  $\mu$ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

Flow: 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.35e-3  
Collision Energy (eV) = 13

Reagent

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**LCMPFHxA\_00009**



605244  
 ID: LCMPFHxA\_00009  
 Exp: 04/09/20 Prpd: CBW  
<sup>13</sup>C<sub>2</sub>-Perfluorohexanoic ac

Rec. 3/29/16 JRB ✓



# WELLINGTON LABORATORIES

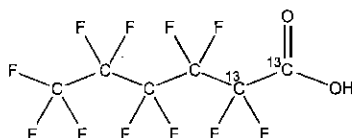
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFHxA  
**COMPOUND:** Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]hexanoic acid

**LOT NUMBER:** MPFHxA0415

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>4</sub>HF<sub>11</sub>O<sub>2</sub>  
**CONCENTRATION:** 50 ± 2.5 µg/ml

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

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 04/09/2015  
**EXPIRY DATE:** (mm/dd/yyyy) 04/09/2020

**ISOTOPIC PURITY:** ≥99%<sup>13</sup>C  
 (1,2-<sup>13</sup>C<sub>2</sub>)

**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

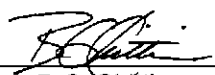
**DOCUMENTATION/ DATA ATTACHED:**

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: 04/14/2015  
 (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

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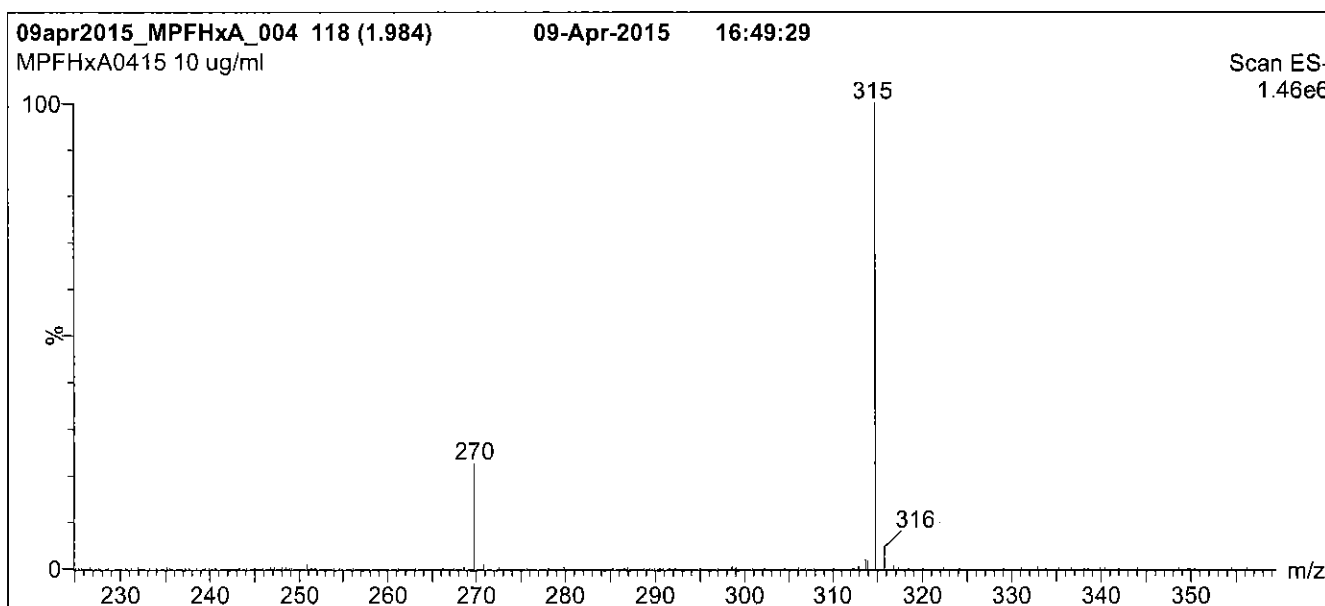
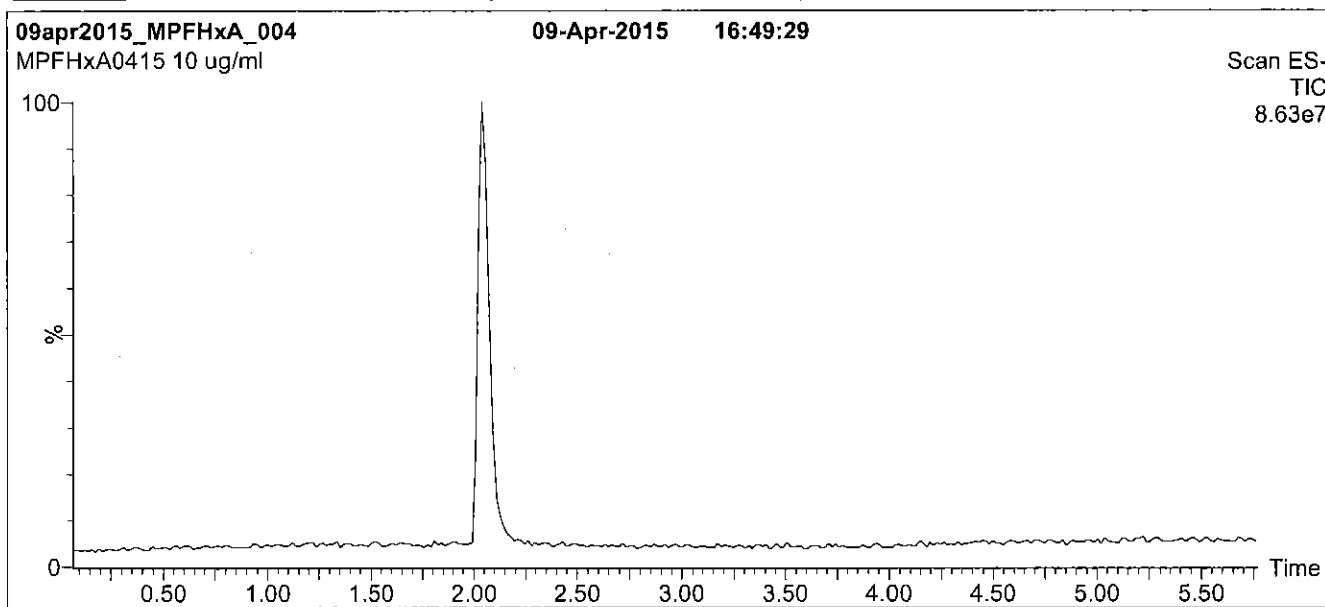
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**Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)**



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 2 min  
before returning to initial conditions over 0.5 min.  
Time: 10 min

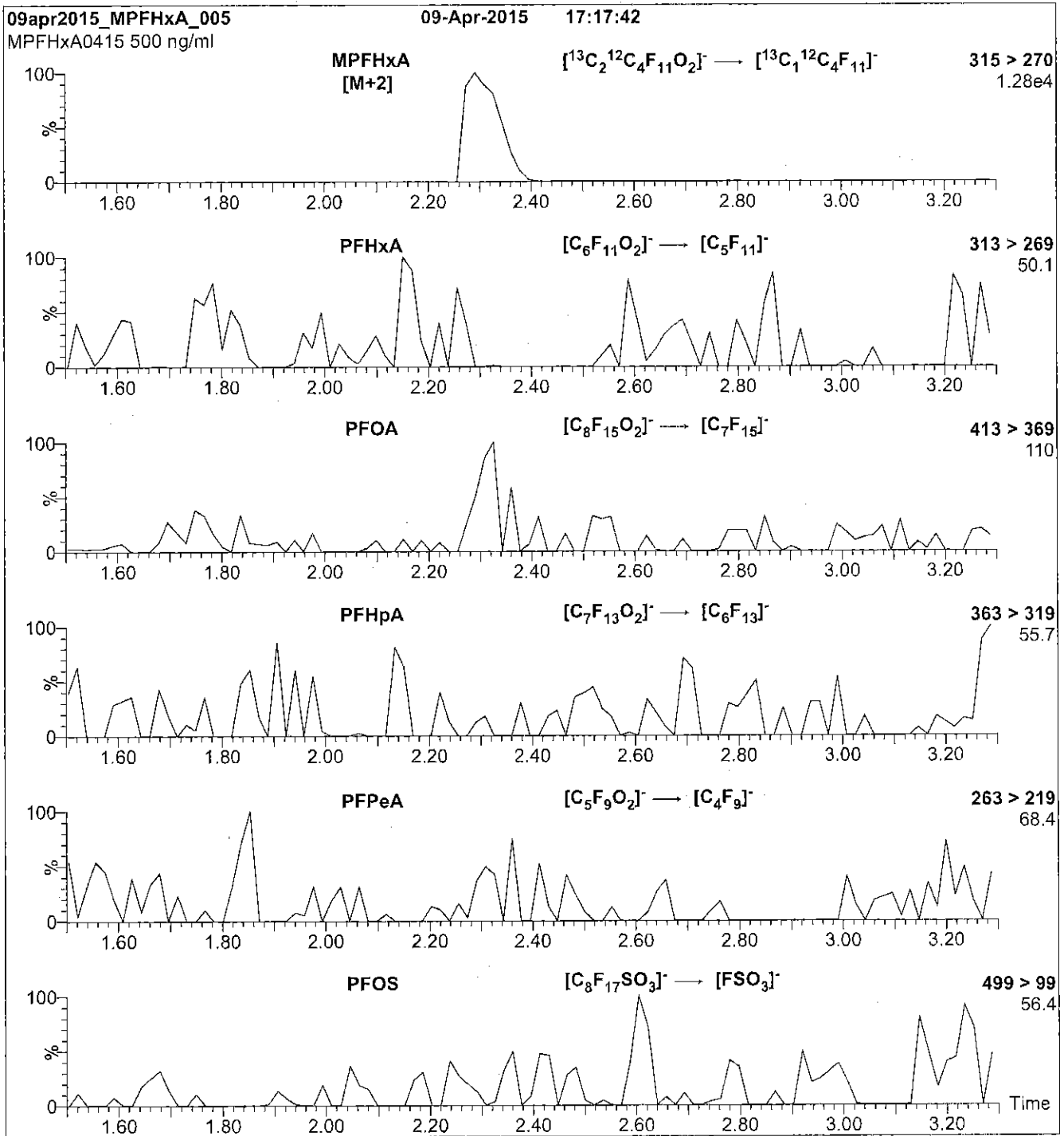
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
Capillary Voltage (kV) = 2.00  
Cone Voltage (V) = 15.00  
Cone Gas Flow (l/hr) = 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  $\mu$ l (500 ng/ml MPFHxA)

**Mobile phase:** Isocratic 80% (80:20 MeOH:ACN) / 20% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)

**Flow:** 300  $\mu$ l/min

**MS Parameters**

Collision Gas (mbar) = 3.20e-3  
Collision Energy (eV) = 10



Reagent

---

**LCMPFOS\_00013**

605227  
ID: LCMFOS\_00012  
Exp: 01/22/21 Prpd: CBW  
13C4-Perfluorooctanesulfo

Rec 3/29/16 JRB ✓

606228  
ID: LCMFOS\_00013  
Exp: 01/22/21 Prpd: CBW  
13C4-Perfluorooctanesulfo

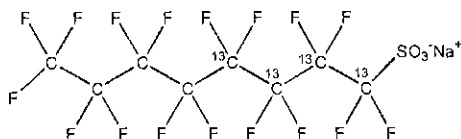


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFOS **LOT NUMBER:** MPFOS0116  
**COMPOUND:** Sodium perfluoro-1-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]octanesulfonate

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 526.08  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
47.8 ± 2.4 µg/ml (MPFOS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
(1,2,3,4-<sup>13</sup>C<sub>4</sub>)  
**LAST TESTED:** (mm/dd/yyyy) 01/22/2016  
**EXPIRY DATE:** (mm/dd/yyyy) 01/22/2021  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

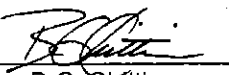
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-<sup>13</sup>C<sub>3</sub>]heptanesulfonate.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**   
B.G. Chittim **Date:** 02/01/2016  
(mm/dd/yyyy)

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

### **INTENDED USE:**

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

### **HAZARDS:**

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

### **SYNTHESIS / CHARACTERIZATION:**

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

### **HOMOGENEITY:**

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

### **UNCERTAINTY:**

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

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

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

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

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

### **TRACEABILITY:**

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

### **EXPIRY DATE / PERIOD OF VALIDITY:**

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

### **LIMITED WARRANTY:**

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

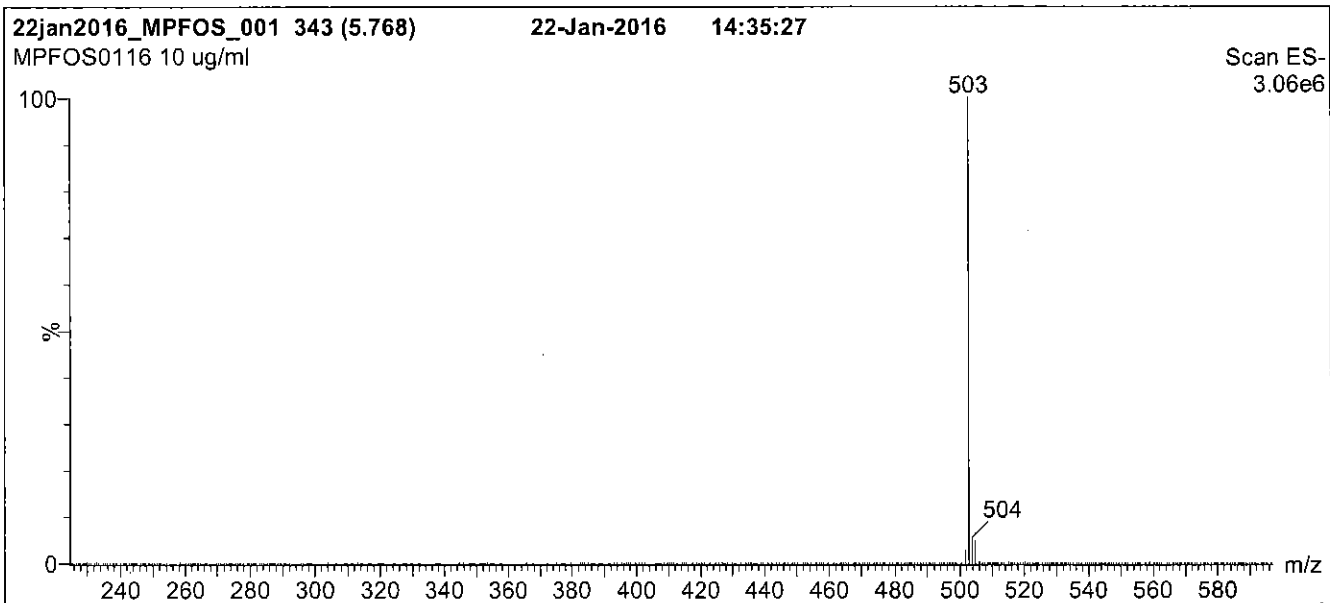
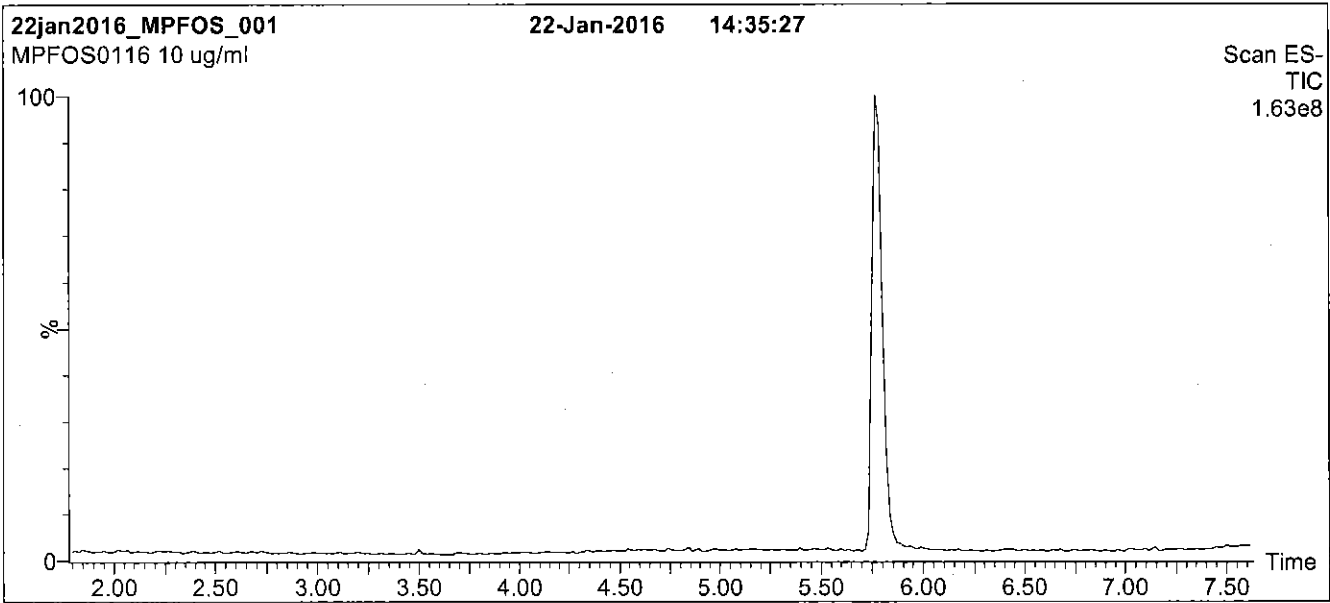
### **QUALITY MANAGEMENT:**

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



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto: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<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 55% (80:20 MeOH:ACN) / 45% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc buffer)  
 Ramp to 90% organic over 7 min and hold for 2 min  
 before returning to initial conditions in 0.5 min.  
 Time: 10 min

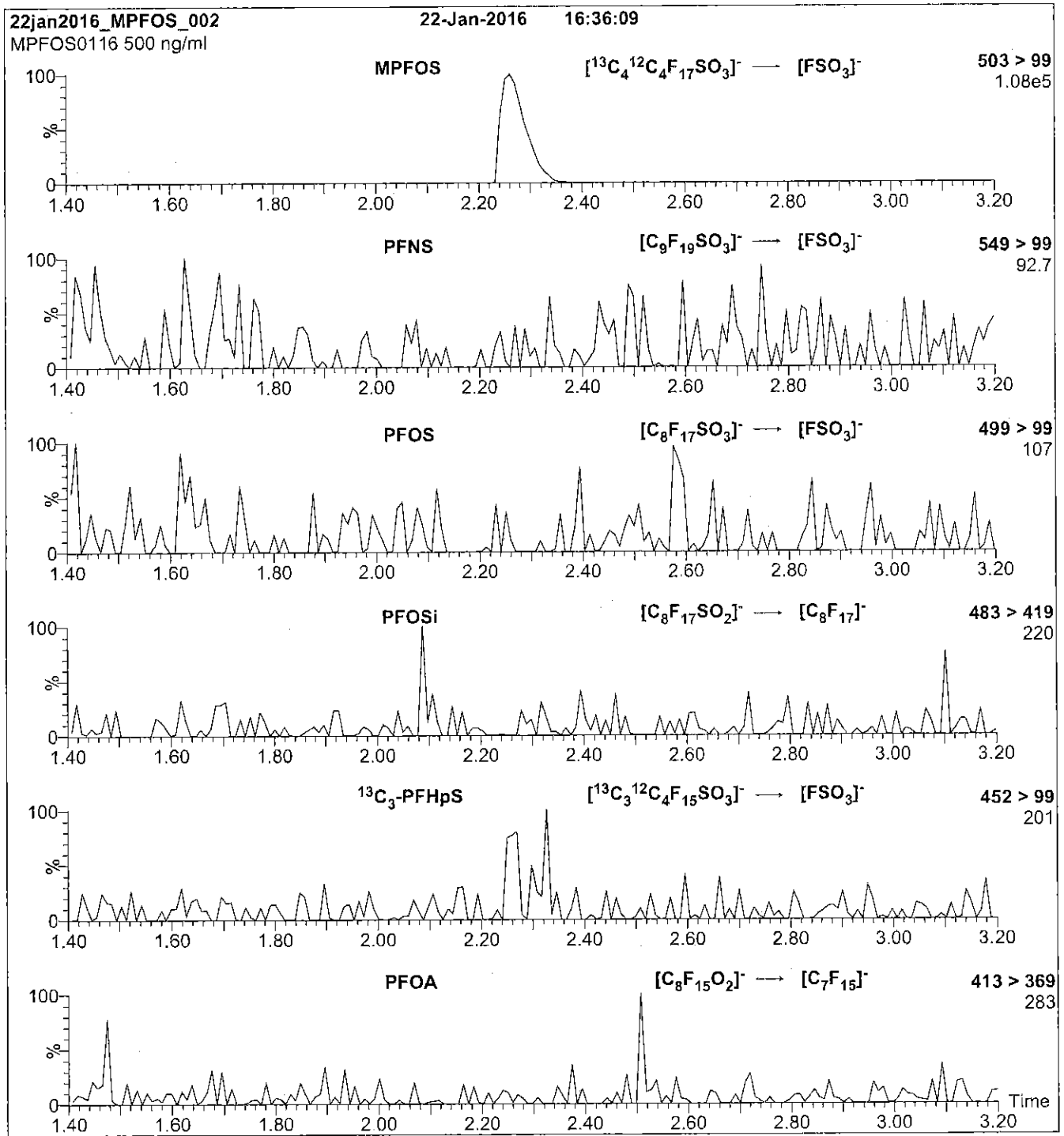
**Flow:** 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)  
 Capillary Voltage (kV) = 2.00  
 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  $\mu\text{l}$  (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
 (both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**MS Parameters**

Collision Gas (mbar) = 3.70e-3  
 Collision Energy (eV) = 40

Reagent

---

**LCMPFOS\_00018**

R: SBC 9/22/16



738686  
ID: LCMFOS\_00018  
Exp: 08/03/21 Prod: SBC  
13C4-Perfluorooctanesulfo

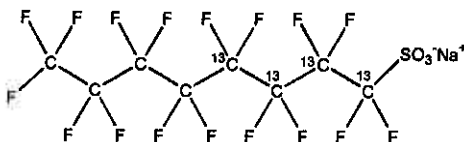


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** MPFOS **LOT NUMBER:** MPFOS0816  
**COMPOUND:** Sodium perfluoro-1-[1,2,3,4-<sup>13</sup>C]<sub>4</sub>octanesulfonate

**STRUCTURE:** **CAS #:** Not available



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 526.08  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol  
47.8 ± 2.4 µg/ml (MPFOS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 08/03/2016 (1,2,3,4-<sup>13</sup>C)  
**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-<sup>13</sup>C]<sub>3</sub>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

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### **UNCERTAINTY:**

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

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

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

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

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

### **TRACEABILITY:**

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

### **EXPIRY DATE / PERIOD OF VALIDITY:**

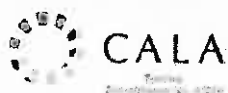
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

### **LIMITED WARRANTY:**

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

### **QUALITY MANAGEMENT:**

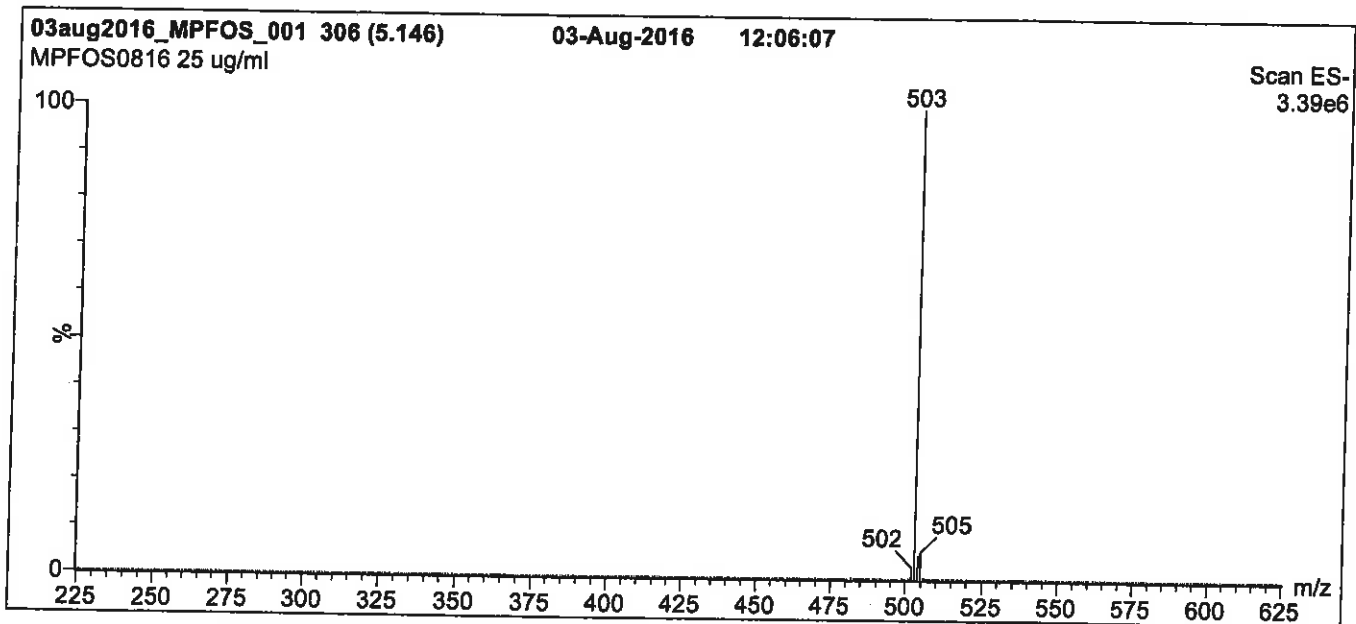
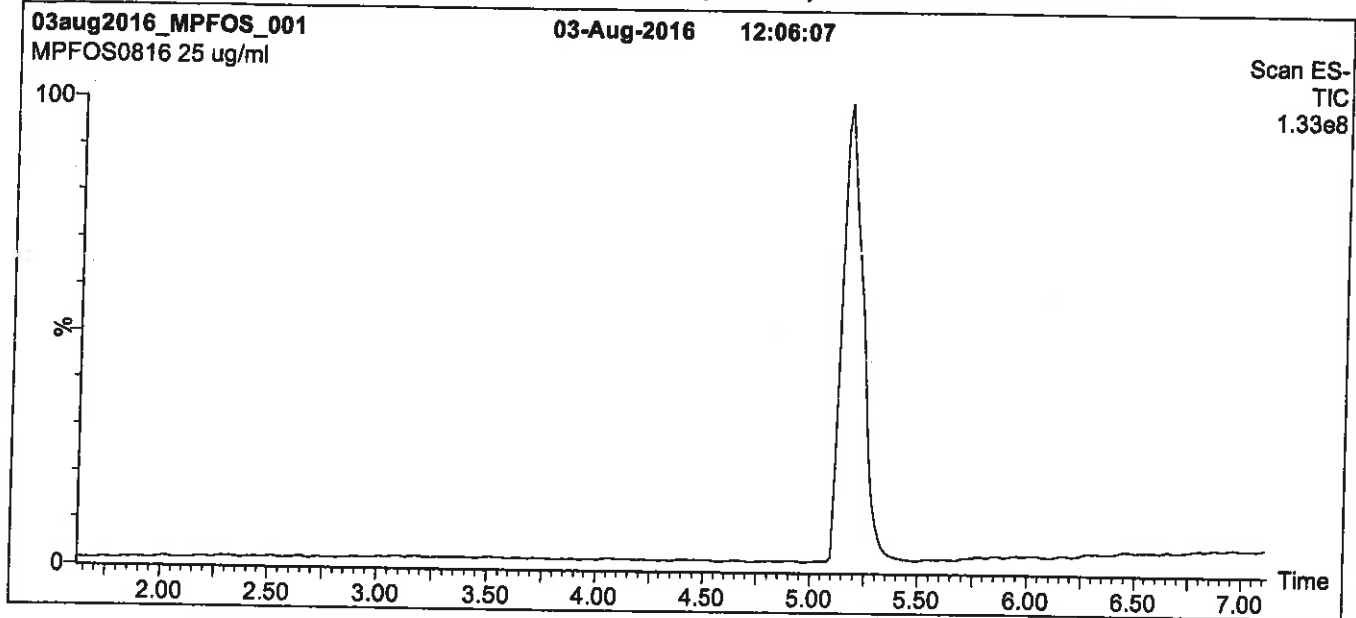
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto: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<sub>18</sub>  
 1.7  $\mu$ m, 2.1 x 100 mm

**Mobile phase:** Gradient  
 Start: 45% (80:20 MeOH:ACN) / 55% H<sub>2</sub>O  
 (both with 10 mM NH<sub>4</sub>OAc 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

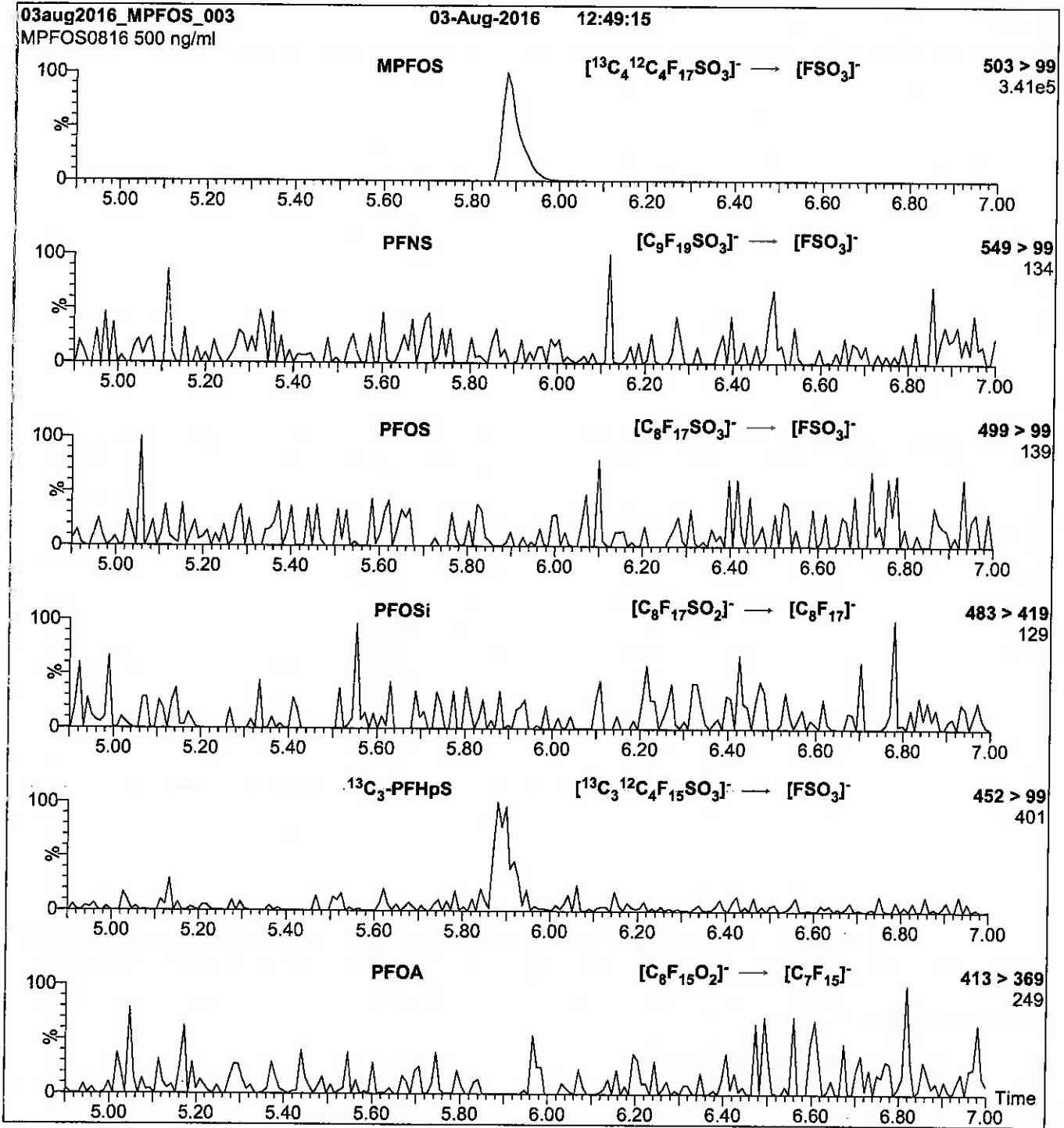
**Flow:** 300  $\mu$ l/min

**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  $\mu\text{l}$  (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20%  $\text{H}_2\text{O}$   
(both with 10 mM  $\text{NH}_4\text{OAc}$  buffer)

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

**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.: 320-24442-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WI-CV-1RW35-1216	320-24442-1	100	92
WI-CV-1FB35-1216	320-24442-2	96	95
WI-CV-1RW36-1216	320-24442-3	99	92
WI-CV-1FB36-1216	320-24442-4	95	102
WI-CV-1RW37-1216	320-24442-5	113	115
WI-CV-1FB37-1216	320-24442-6	97	99
	MB 320-142683/1-A	103	104
	LCS 320-142683/2-A	111	113
	LCSD 320-142683/3-A	114	114

PFHxA = 13C2 PFHxA  
PFDA = 13C2 PFDA

QC LIMITS  
70-130  
70-130

# Column to be used to flag recovery values

FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 19DEC2016A6A\_150.d  
 Lab ID: LCS 320-142683/2-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	
Perfluorooctanoic acid (PFOA)	0.0811	0.0740	91	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.359	0.340	95	70-130	

# Column to be used to flag recovery and RPD values

FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Matrix: Water Level: Low Lab File ID: 19DEC2016A6A\_151.d

Lab ID: LCSD 320-142683/3-A Client ID: \_\_\_\_\_

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	0.160	0.158	99	6	30	70-130	
Perfluorooctanoic acid (PFOA)	0.0811	0.0751	93	1	30	70-130	
Perfluorobutanesulfonic acid (PFBS)	0.359	0.352	98	4	30	70-130	

# Column to be used to flag recovery and RPD values

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 19DEC2016A6A\_149.d Lab Sample ID: MB 320-142683/1-A  
 Matrix: Water Date Extracted: 12/17/2016 13:06  
 Instrument ID: A6 Date Analyzed: 12/22/2016 10:51  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-142683/2-A	19DEC2016A6 A 150.d	12/22/2016 11:21
	LCSD 320-142683/3-A	19DEC2016A6 A 151.d	12/22/2016 11:51
WI-CV-1RW35-1216	320-24442-1	19DEC2016A6 A 154.d	12/22/2016 13:19
WI-CV-1FB35-1216	320-24442-2	19DEC2016A6 A 155.d	12/22/2016 13:49
WI-CV-1RW36-1216	320-24442-3	19DEC2016A6 A 156.d	12/22/2016 14:19
WI-CV-1FB36-1216	320-24442-4	19DEC2016A6 A 163.d	12/22/2016 17:53
WI-CV-1RW37-1216	320-24442-5	19DEC2016A6 A 164.d	12/22/2016 18:22
WI-CV-1FB37-1216	320-24442-6	19DEC2016A6 A 165.d	12/22/2016 18:52

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A6 Calibration Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.1(mm) Calibration End Date: 12/05/2016 19:54  
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	965911	20.05	2046916	20.67		
UPPER LIMIT	1448867	20.55	3070374	21.17		
LOWER LIMIT	482956	19.55	1023458	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-140688/9 CCVL	1025187	20.05	2358079	20.67		
ICV 320-140688/11	877210	20.05	2015178	20.67		
CCV 320-143413/22 CCVIS	771348	20.00	1564962	20.61		
MB 320-142683/1-A	695779	20.00	2117564	20.62		
LCS 320-142683/2-A	637524	20.01	1783962	20.62		
LCSD 320-142683/3-A	618882	20.00	1665020	20.61		
320-24442-1	WI-CV-1RW35-1216	620647	20.01	1852452	20.62	
320-24442-2	WI-CV-1FB35-1216	541923	20.00	1552982	20.62	
320-24442-3	WI-CV-1RW36-1216	603664	20.00	1842118	20.62	
CCV 320-143413/34 CCVIS	773306	20.00	1768636	20.62		
CCV 320-143415/34 CCVIS	773306	20.00	1768636	20.62		
320-24442-4	WI-CV-1FB36-1216	659462	20.00	1855839	20.61	
320-24442-5	WI-CV-1RW37-1216	575835	20.00	1881707	20.62	
320-24442-6	WI-CV-1FB37-1216	664655	20.00	1980820	20.62	
CCV 320-143415/37 CCVIS	686789	20.01	1511069	20.62		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

# Column used to flag values outside QC limits



FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-143413/22 Date Analyzed: 12/22/2016 09:52  
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)  
 Lab File ID (Standard): 19DEC2016A6A\_147.d Heated Purge: (Y/N) N  
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	771348	20.00	1564962	20.61		
UPPER LIMIT	1079887	20.50	2190947	21.11		
LOWER LIMIT	539944	19.50	1095473	20.11		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-142683/1-A		695779	20.00	2117564	20.62	
LCS 320-142683/2-A		637524	20.01	1783962	20.62	
LCSD 320-142683/3-A		618882	20.00	1665020	20.61	
320-24442-1	WI-CV-1RW35-1216	620647	20.01	1852452	20.62	
320-24442-2	WI-CV-1FB35-1216	541923	20.00	1552982	20.62	
320-24442-3	WI-CV-1RW36-1216	603664	20.00	1842118	20.62	

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

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

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-143413/34 Date Analyzed: 12/22/2016 15:54  
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)  
 Lab File ID (Standard): 19DEC2016A6A\_159.d Heated Purge: (Y/N) N  
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	773306	20.00	1768636	20.62		
UPPER LIMIT	1082628	20.50	2476090	21.12		
LOWER LIMIT	541314	19.50	1238045	20.12		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-142683/1-A		695779	20.00	2117564	20.62	
LCS 320-142683/2-A		637524	20.01	1783962	20.62	
LCSD 320-142683/3-A		618882	20.00	1665020	20.61	
320-24442-1	WI-CV-1RW35-1216	620647	20.01	1852452	20.62	
320-24442-2	WI-CV-1FB35-1216	541923	20.00	1552982	20.62	
320-24442-3	WI-CV-1RW36-1216	603664	20.00	1842118	20.62	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-143415/34 Date Analyzed: 12/22/2016 15:54  
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)  
 Lab File ID (Standard): 19DEC2016A6A\_159.d Heated Purge: (Y/N) N  
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	773306	20.00	1768636	20.62		
UPPER LIMIT	1082628	20.50	2476090	21.12		
LOWER LIMIT	541314	19.50	1238045	20.12		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-24442-4	WI-CV-1FB36-1216	659462	20.00	1855839	20.61	
320-24442-5	WI-CV-1RW37-1216	575835	20.00	1881707	20.62	
320-24442-6	WI-CV-1FB37-1216	664655	20.00	1980820	20.62	

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

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

# Column used to flag values outside QC limits

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-143415/37 Date Analyzed: 12/22/2016 22:49  
 Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)  
 Lab File ID (Standard): 19DEC2016A6A\_173.d Heated Purge: (Y/N) N  
 Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	686789	20.01	1511069	20.62		
UPPER LIMIT	961505	20.51	2115497	21.12		
LOWER LIMIT	480752	19.51	1057748	20.12		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-24442-4	WI-CV-1FB36-1216	659462	20.00	1855839	20.61	
320-24442-5	WI-CV-1RW37-1216	575835	20.00	1881707	20.62	
320-24442-6	WI-CV-1FB37-1216	664655	20.00	1980820	20.62	

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

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

# Column used to flag values outside QC limits

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1RW35-1216 Lab Sample ID: 320-24442-1  
 Matrix: Water Lab File ID: 19DEC2016A6A\_154.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:10  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 254.9(mL) Date Analyzed: 12/22/2016 13:19  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.029	0.024	0.0092
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_154.d  
 Lims ID: 320-24442-A-1-A  
 Client ID: WI-CV-1RW35-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 13:19:52 ALS Bottle#: 9 Worklist Smp#: 29  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-1-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 14:50:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.602	17.589	0.013	1.000	1055	0.0233	0.9
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	720977	9.96	23335
* 5 13C2-PFOA	415.0 > 370.0	20.011	19.999	0.012		620647	10.0	15798
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.608	0.011		1852452	28.7	48195
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.409	0.009	1.000	501859	9.23	15833

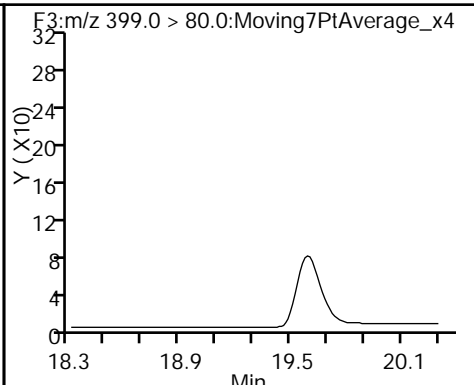
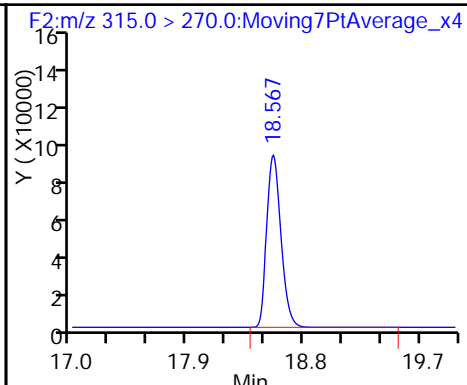
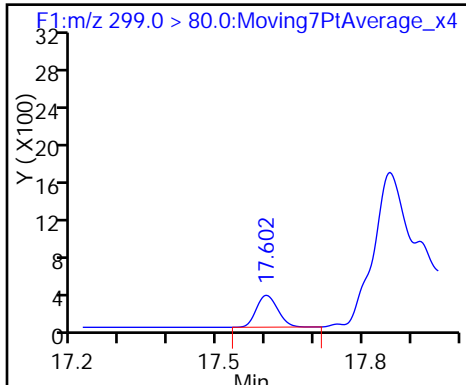
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_154.d  
Injection Date: 22-Dec-2016 13:19:52 Instrument ID: A6  
Lims ID: 320-24442-A-1-A Lab Sample ID: 320-24442-1  
Client ID: WI-CV-1RW35-1216  
Operator ID: CBW ALS Bottle#: 9 Worklist Smp#: 29  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_A6 Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

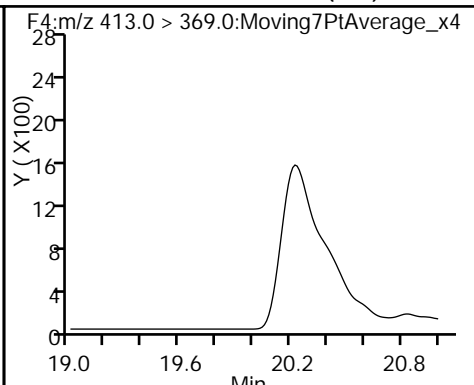
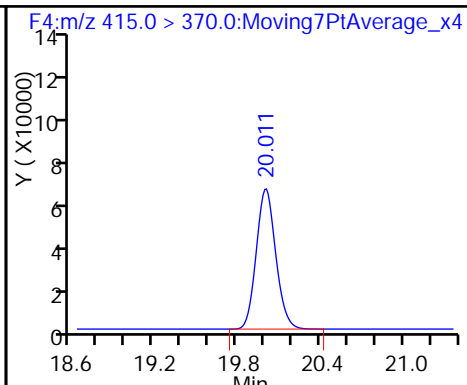
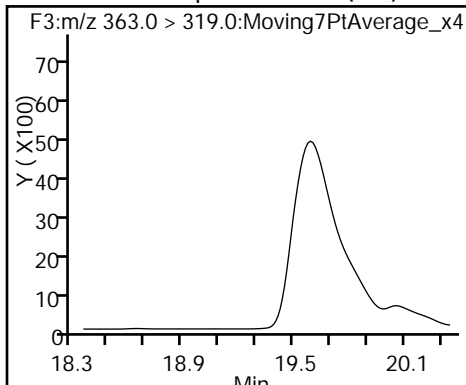
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

\* 5 13C2-PFOA

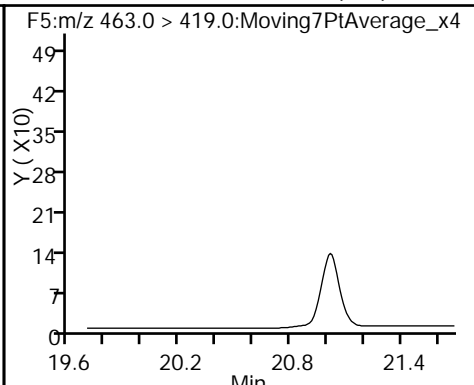
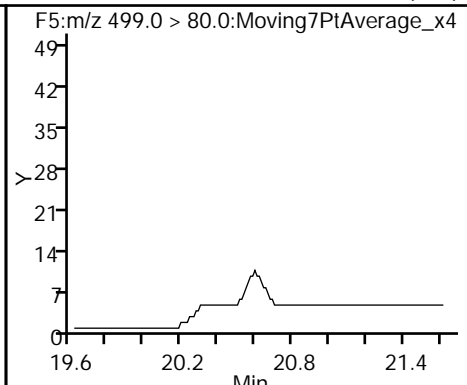
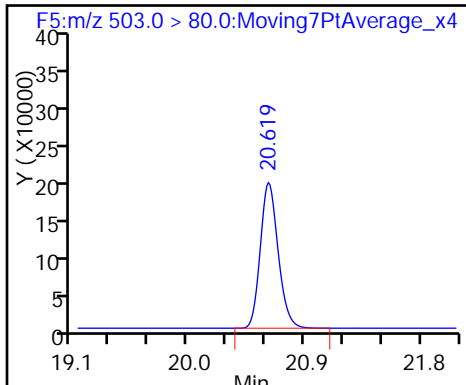
6 Perfluorooctanoic acid (ND)



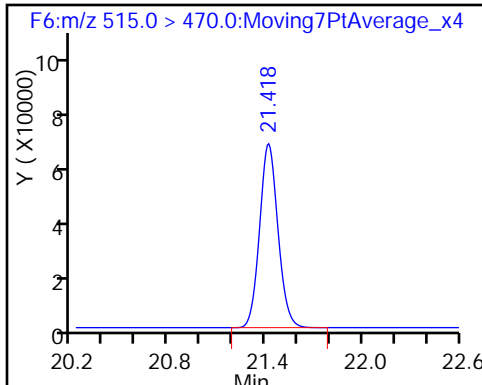
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_154.d  
 Lims ID: 320-24442-A-1-A  
 Client ID: WI-CV-1RW35-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 13:19:52 ALS Bottle#: 9 Worklist Smp#: 29  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-1-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 14:50:42

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.96	99.58
\$ 10 13C2 PFDA	10.0	9.23	92.28



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1FB35-1216 Lab Sample ID: 320-24442-2  
 Matrix: Water Lab File ID: 19DEC2016A6A\_155.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:11  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 260.8(mL) Date Analyzed: 12/22/2016 13:49  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0090
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_155.d  
 Lims ID: 320-24442-A-2-A  
 Client ID: WI-CV-1FB35-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 13:49:26 ALS Bottle#: 10 Worklist Smp#: 30  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-2-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 14:51:00

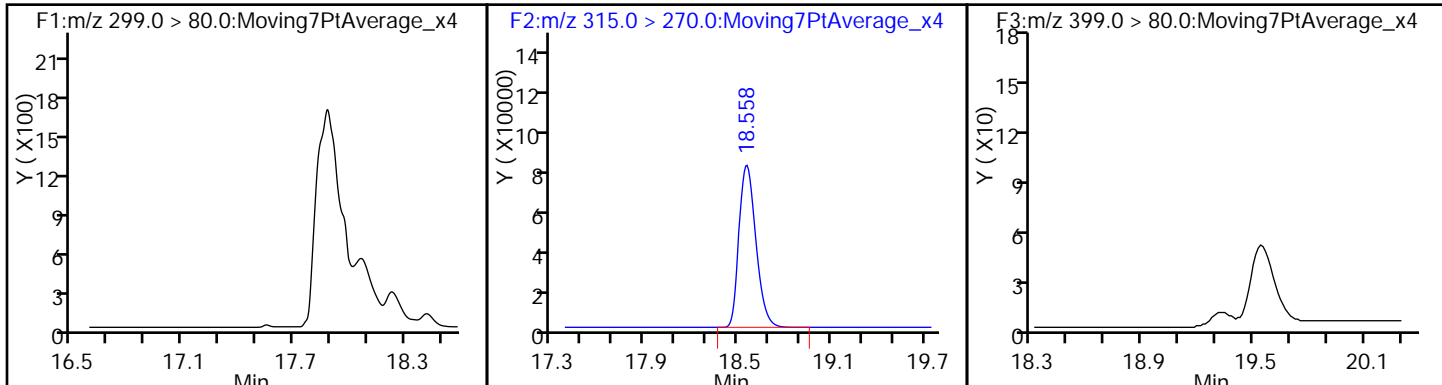
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.567	-0.009	1.000	609723	9.64	19963
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		541923	10.0	13895
* 8 13C4 PFOS	503.0 > 80.0	20.620	20.608	0.012		1552982	28.7	40154
\$ 10 13C2 PFDA	515.0 > 470.0	21.409	21.409	0.0	1.000	450936	9.50	14182

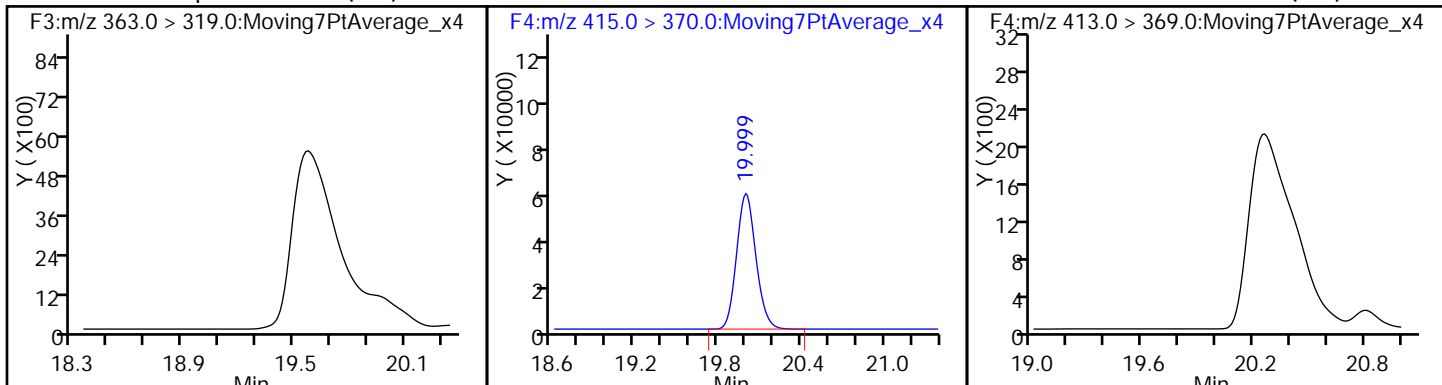
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_155.d  
Injection Date: 22-Dec-2016 13:49:26 Instrument ID: A6  
Lims ID: 320-24442-A-2-A Lab Sample ID: 320-24442-2  
Client ID: WI-CV-1FB35-1216  
Operator ID: CBW ALS Bottle#: 10 Worklist Smp#: 30  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_A6 Limit Group: LC 537 ICAL

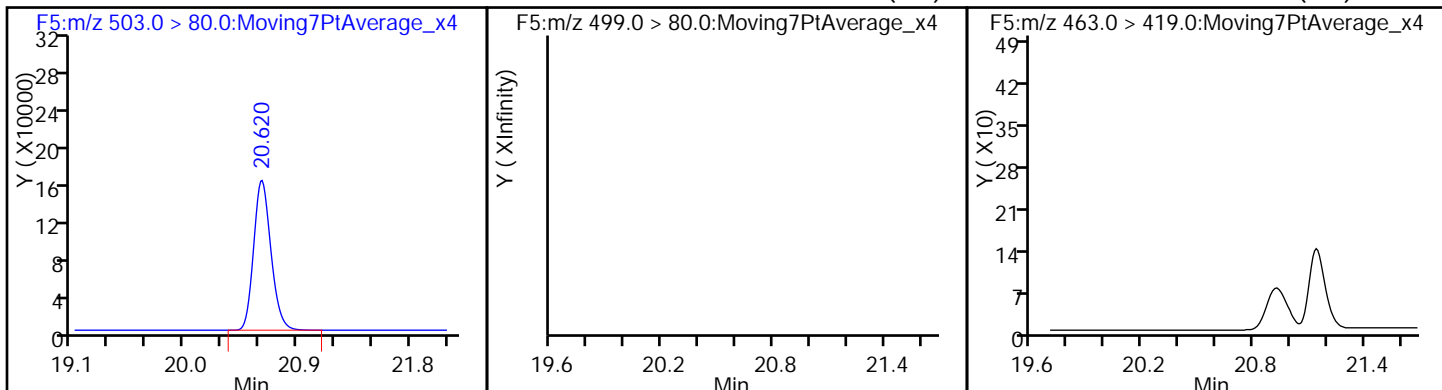
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



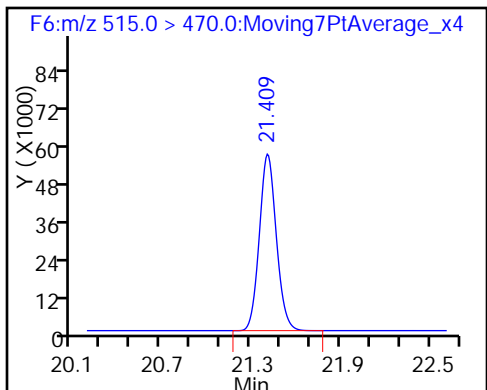
4 Perfluoroheptanoic acid (ND) \* 5 13C2-PFOA 6 Perfluorooctanoic acid (ND)



\* 8 13C4 PFOS 7 Perfluorooctane sulfonic acid (ND) 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_155.d  
 Lims ID: 320-24442-A-2-A  
 Client ID: WI-CV-1FB35-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 13:49:26 ALS Bottle#: 10 Worklist Smp#: 30  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-2-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 14:51:00

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.64	96.45
\$ 10 13C2 PFDA	10.0	9.50	94.96

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1RW36-1216 Lab Sample ID: 320-24442-3  
 Matrix: Water Lab File ID: 19DEC2016A6A\_156.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:24  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 249.2 (mL) Date Analyzed: 12/22/2016 14:19  
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_156.d  
 Lims ID: 320-24442-A-3-A  
 Client ID: WI-CV-1RW36-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 14:19:01 ALS Bottle#: 11 Worklist Smp#: 31  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-3-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 14:51:20

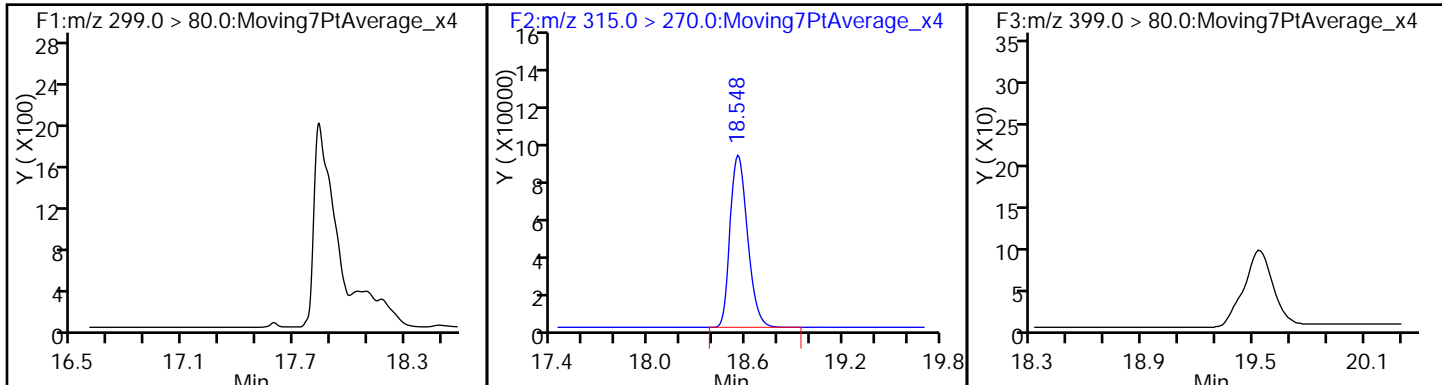
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.548	18.567	-0.019	1.000	695912	9.88	13155
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		603664	10.0	15456
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.608	0.011		1842118	28.7	38096
\$ 10 13C2 PFDA	515.0 > 470.0	21.409	21.409	0.0	1.000	484855	9.17	15298

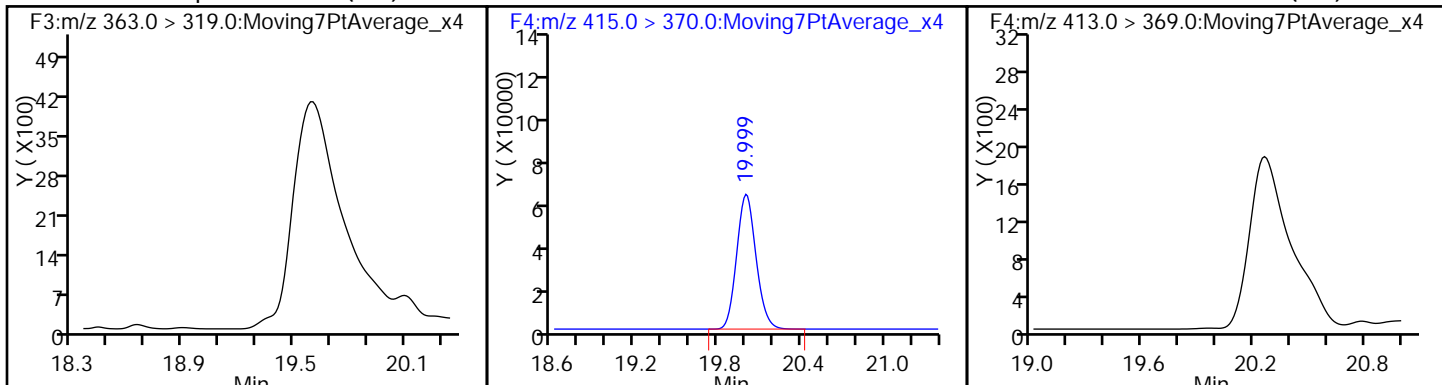
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_156.d  
Injection Date: 22-Dec-2016 14:19:01 Instrument ID: A6  
Lims ID: 320-24442-A-3-A Lab Sample ID: 320-24442-3  
Client ID: WI-CV-1RW36-1216  
Operator ID: CBW ALS Bottle#: 11 Worklist Smp#: 31  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_A6 Limit Group: LC 537 ICAL

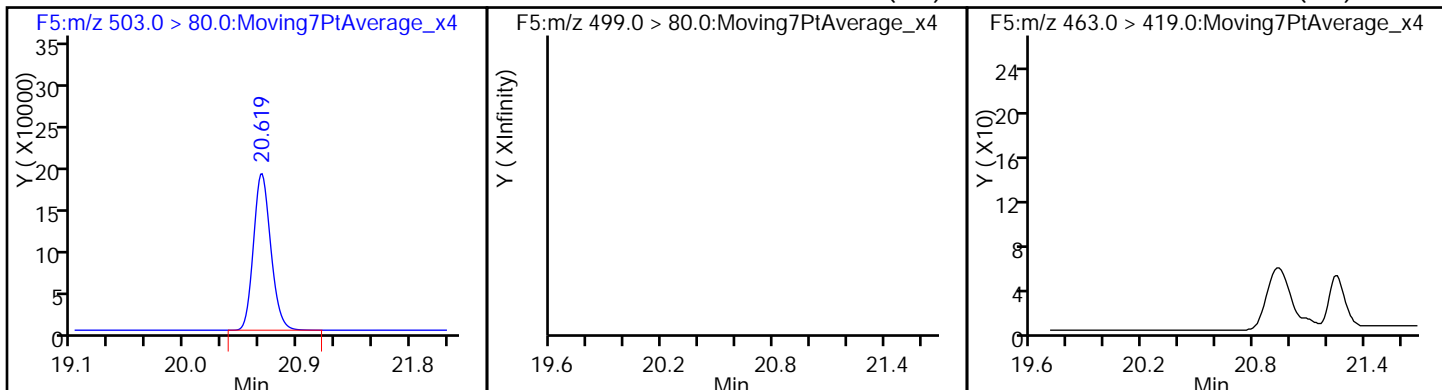
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



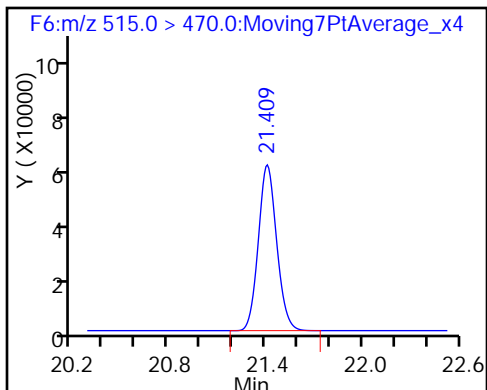
4 Perfluoroheptanoic acid (ND) \* 5 13C2-PFOA 6 Perfluorooctanoic acid (ND)



\* 8 13C4 PFOS 7 Perfluorooctane sulfonic acid (ND) 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_156.d  
 Lims ID: 320-24442-A-3-A  
 Client ID: WI-CV-1RW36-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 14:19:01 ALS Bottle#: 11 Worklist Smp#: 31  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-3-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 14:51:20

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.88	98.82
\$ 10 13C2 PFDA	10.0	9.17	91.66



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1FB36-1216 Lab Sample ID: 320-24442-4  
 Matrix: Water Lab File ID: 19DEC2016A6A\_163.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:25  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 278.9(mL) Date Analyzed: 12/22/2016 17:53  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143415 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	102		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_163.d  
 Lims ID: 320-24442-A-4-A  
 Client ID: WI-CV-1FB36-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 17:53:07 ALS Bottle#: 12 Worklist Smp#: 32  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-4-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:30 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:20:11

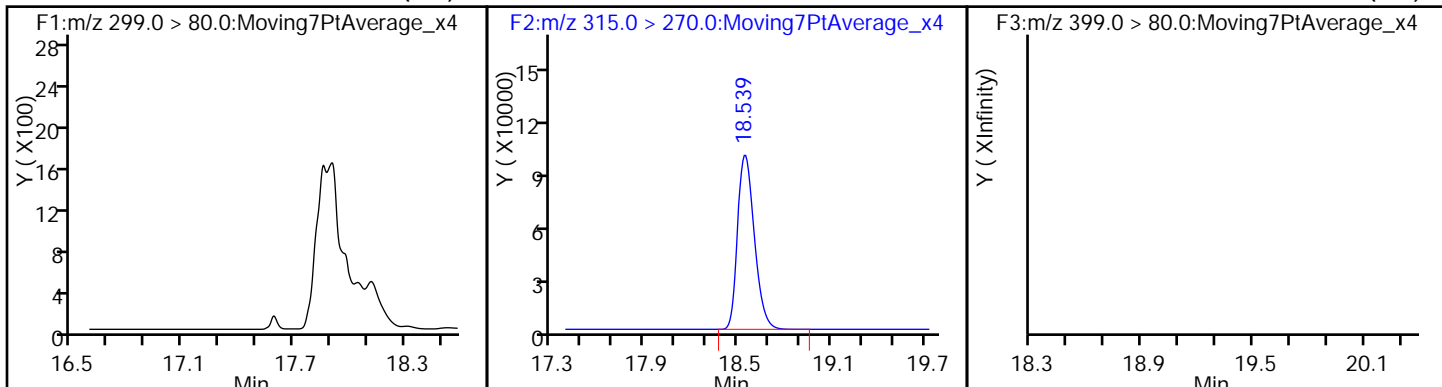
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.539	18.557	-0.018	1.000	730829	9.50	24063
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		659462	10.0	16677
* 8 13C4 PFOS	503.0 > 80.0	20.608	20.619	-0.011		1855839	28.7	47982
\$ 10 13C2 PFDA	515.0 > 470.0	21.409	21.418	-0.009	1.000	589809	10.2	18651

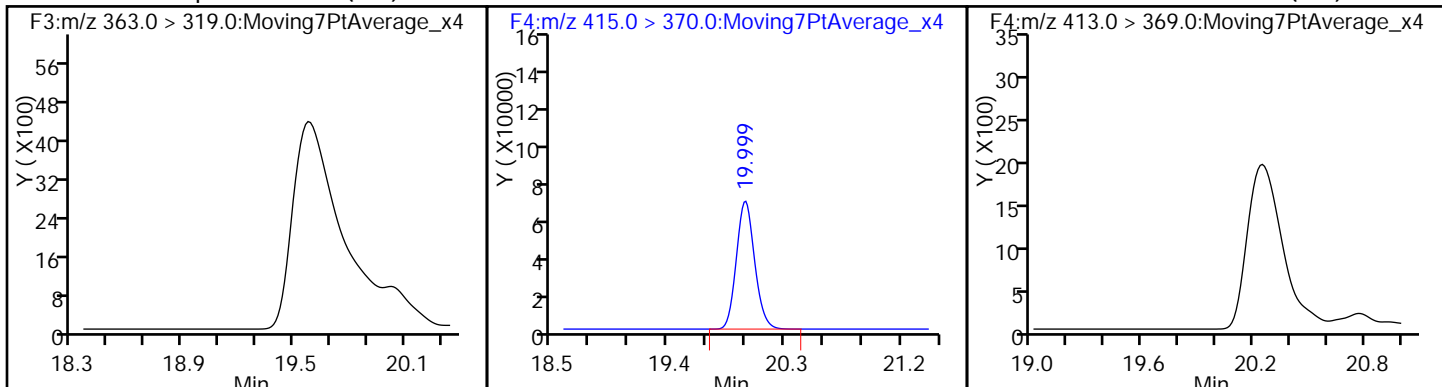
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_163.d  
Injection Date: 22-Dec-2016 17:53:07 Instrument ID: A6  
Lims ID: 320-24442-A-4-A Lab Sample ID: 320-24442-4  
Client ID: WI-CV-1FB36-1216  
Operator ID: CBW ALS Bottle#: 12 Worklist Smp#: 32  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_A6 Limit Group: LC 537 ICAL

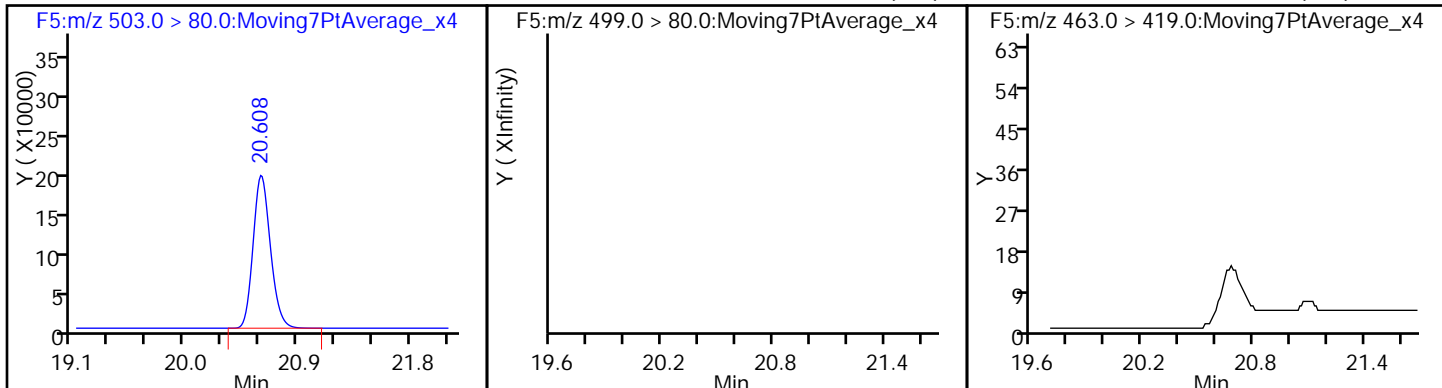
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



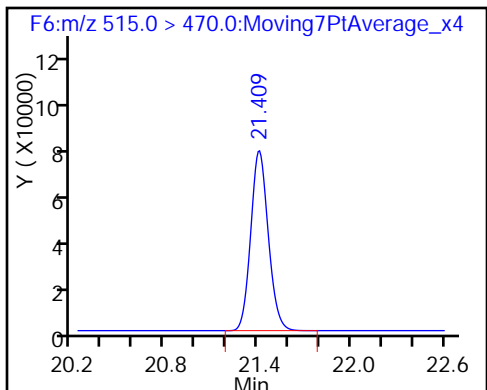
4 Perfluoroheptanoic acid (ND) \* 5 13C2-PFOA 6 Perfluorooctanoic acid (ND)



\* 8 13C4 PFOS 7 Perfluorooctane sulfonic acid (ND) 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_163.d  
 Lims ID: 320-24442-A-4-A  
 Client ID: WI-CV-1FB36-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 17:53:07 ALS Bottle#: 12 Worklist Smp#: 32  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-4-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:30 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:20:11

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.50	95.00
\$ 10 13C2 PFDA	10.0	10.2	102.07

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1RW37-1216 Lab Sample ID: 320-24442-5  
 Matrix: Water Lab File ID: 19DEC2016A6A\_164.d  
 Analysis Method: 537 Date Collected: 12/14/2016 09:14  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 255.7(mL) Date Analyzed: 12/22/2016 18:22  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143415 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0092
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	115		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_164.d  
 Lims ID: 320-24442-A-5-A  
 Client ID: WI-CV-1RW37-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 18:22:43 ALS Bottle#: 13 Worklist Smp#: 33  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-5-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:30 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:20:23

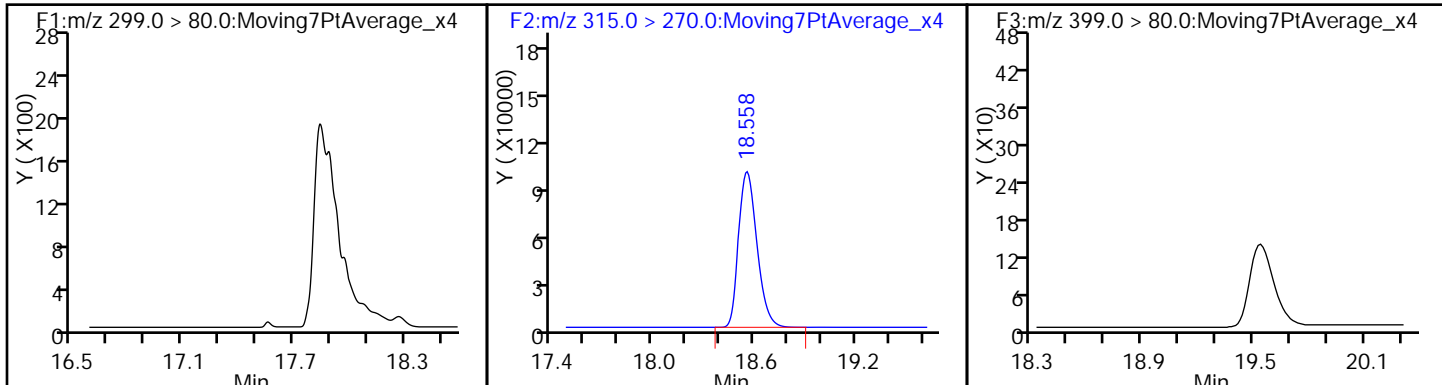
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.557	0.001	1.000	759405	11.3	11044
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		575835	10.0	14670
* 8 13C4 PFOS	503.0 > 80.0	20.620	20.619	0.001		1881707	28.7	48694
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.418	0.0	1.000	582568	11.5	18461

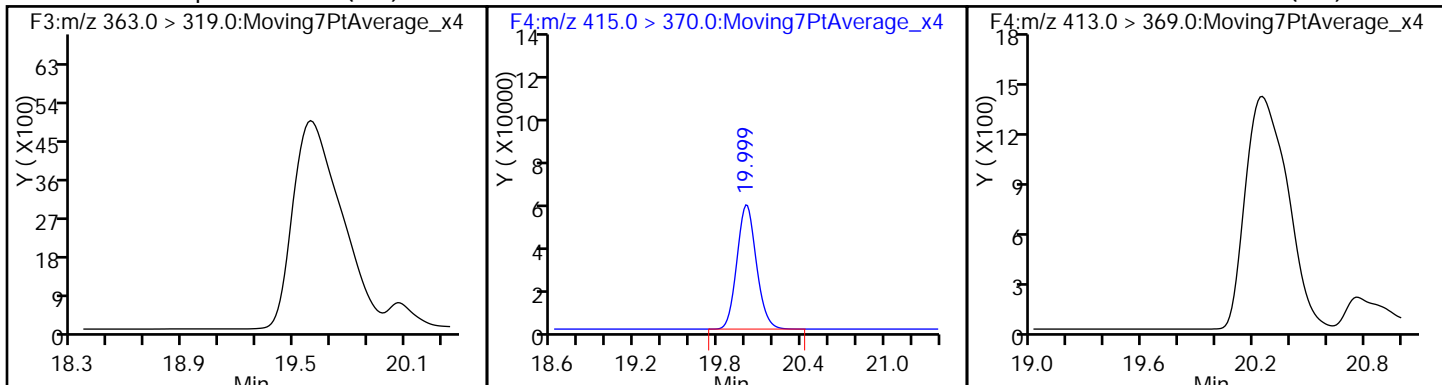
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_164.d  
Injection Date: 22-Dec-2016 18:22:43 Instrument ID: A6  
Lims ID: 320-24442-A-5-A Lab Sample ID: 320-24442-5  
Client ID: WI-CV-1RW37-1216  
Operator ID: CBW ALS Bottle#: 13 Worklist Smp#: 33  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_A6 Limit Group: LC 537 ICAL

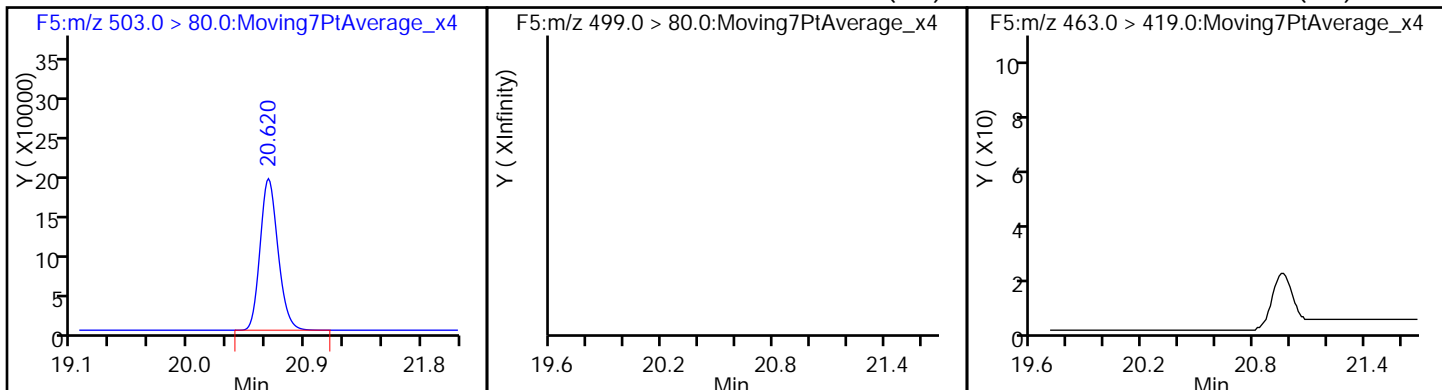
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



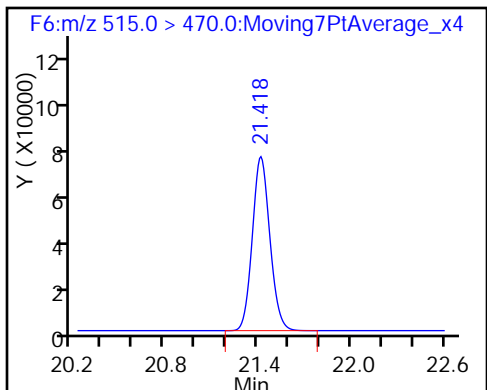
4 Perfluoroheptanoic acid (ND) \* 5 13C2-PFOA 6 Perfluorooctanoic acid (ND)



\* 8 13C4 PFOS 7 Perfluorooctane sulfonic acid (ND) 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_164.d  
 Lims ID: 320-24442-A-5-A  
 Client ID: WI-CV-1RW37-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 18:22:43 ALS Bottle#: 13 Worklist Smp#: 33  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-5-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:30 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:20:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.3	113.05
\$ 10 13C2 PFDA	10.0	11.5	115.45



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1FB37-1216 Lab Sample ID: 320-24442-6  
 Matrix: Water Lab File ID: 19DEC2016A6A\_165.d  
 Analysis Method: 537 Date Collected: 12/14/2016 09:15  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 259.4 (mL) Date Analyzed: 12/22/2016 18:52  
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143415 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0091
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	99		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_165.d  
 Lims ID: 320-24442-A-6-A  
 Client ID: WI-CV-1FB37-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 18:52:20 ALS Bottle#: 14 Worklist Smp#: 36  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-6-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:30 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:20:35

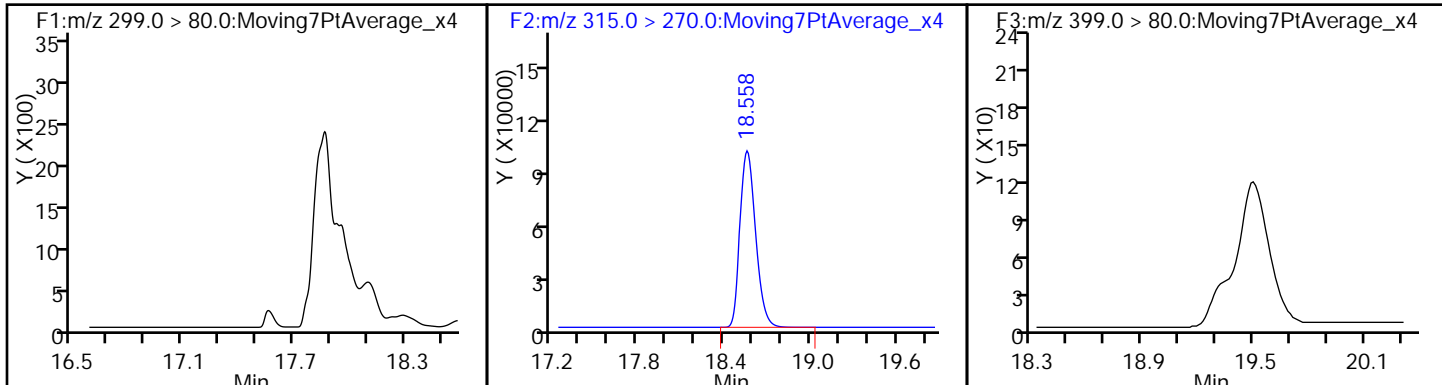
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.557	0.001	1.000	755289	9.74	24792
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		664655	10.0	16883
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.619	0.0		1980820	28.7	34127
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.418	0.0	1.000	577038	9.91	18178

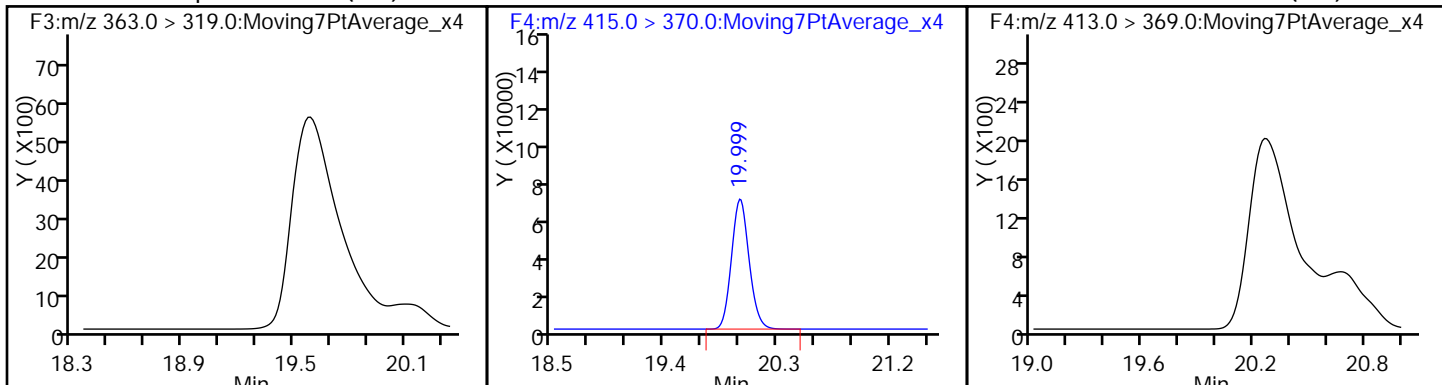
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_165.d  
Injection Date: 22-Dec-2016 18:52:20 Instrument ID: A6  
Lims ID: 320-24442-A-6-A Lab Sample ID: 320-24442-6  
Client ID: WI-CV-1FB37-1216  
Operator ID: CBW ALS Bottle#: 14 Worklist Smp#: 36  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL

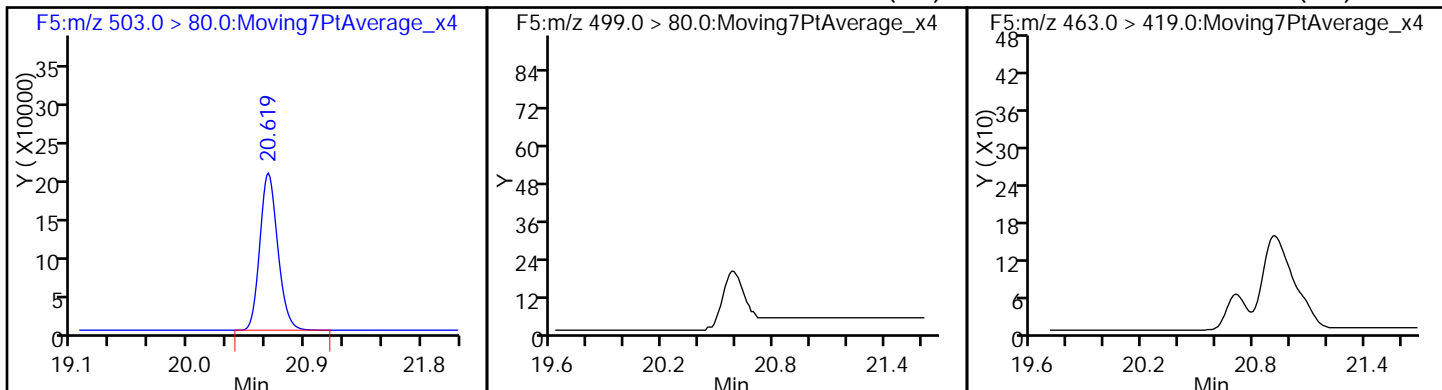
1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA 3 Perfluorohexanesulfonic acid (ND)



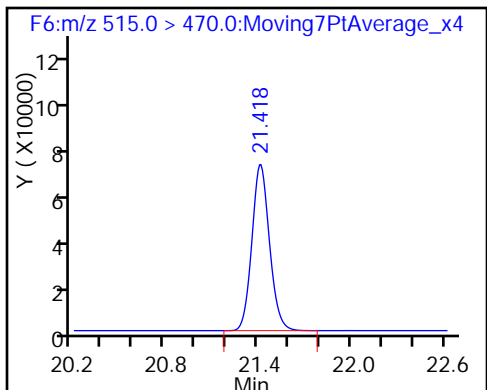
4 Perfluoroheptanoic acid (ND) \* 5 13C2-PFOA 6 Perfluorooctanoic acid (ND)



\* 8 13C4 PFOS 7 Perfluorooctane sulfonic acid (ND) 9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_165.d  
 Lims ID: 320-24442-A-6-A  
 Client ID: WI-CV-1FB37-1216  
 Sample Type: Client  
 Inject. Date: 22-Dec-2016 18:52:20 ALS Bottle#: 14 Worklist Smp#: 36  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-24442-a-6-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:30 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:20:35

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.74	97.41
\$ 10 13C2 PFDA	10.0	9.91	99.08

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

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1 Analy Batch No.: 140688

SDG No.: \_\_\_\_\_

Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-140688/2	05DEC2016A6A_004.d
Level 2	STD 320-140688/3	05DEC2016A6A_005.d
Level 3	STD 320-140688/4	05DEC2016A6A_006.d
Level 4	STD 320-140688/5	05DEC2016A6A_007.d
Level 5	STD 320-140688/6	05DEC2016A6A_008.d
Level 6	STD 320-140688/7	05DEC2016A6A_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R <sup>2</sup> OR COD	#	MIN R <sup>2</sup> OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.7247 0.6563	0.6525	0.7178	0.7256	0.7321	Ave		0.7015			5.2		30.0				
Perfluorohexanesulfonic acid	0.8344 0.8930	0.7757	0.9290	0.9478	1.0082	Ave		0.8980			9.3		30.0				
Perfluoroheptanoic acid	1.4137 1.1078	1.1891	1.2161	1.1975	1.1665	Ave		1.2151			8.6		30.0				
Perfluorooctanoic acid (PFOA)	0.9720 1.0610	0.9049	1.0674	1.1235	1.1136	Ave		1.0404			8.2		30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8855 1.0951	0.9020	1.0711	1.0966	1.2136	Ave		1.0440			12.1		30.0				
Perfluorononanoic acid	0.9735 1.1655	0.9961	1.1929	1.2321	1.2453	Ave		1.1342			10.5		30.0				
13C2 PFHxA	1.0366 1.2091	1.0515	1.1929	1.2298	1.2791	Ave		1.1665			8.5		30.0				
13C2 PFDA	0.8084 0.9456	0.7439	0.8674	0.9054	0.9868	Ave		0.8763			10.2		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.: 320-24442-1 Analy Batch No.: 140688

SDG No.: \_\_\_\_\_

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-140688/2	05DEC2016A6A_004.d
Level 2	STD 320-140688/3	05DEC2016A6A_005.d
Level 3	STD 320-140688/4	05DEC2016A6A_006.d
Level 4	STD 320-140688/5	05DEC2016A6A_007.d
Level 5	STD 320-140688/6	05DEC2016A6A_008.d
Level 6	STD 320-140688/7	05DEC2016A6A_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	437563 7753569	1227165	2489398	4401661	6630132	8.76 178	22.9	45.1	90.9	135
Perfluorohexanesulfonic acid	PFOS	Ave	169827 3556638	491809	1086082	1938237	3077974	2.95 60.1	7.72	15.2	30.6	45.4
Perfluoroheptanoic acid	13PF OA	Ave	126557 2032288	324913	658044	1121930	1727957	0.994 20.2	2.60	5.12	10.3	15.3
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	173304 3876381	492431	1150281	2096404	3285195	1.98 40.3	5.17	10.2	20.5	30.4
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	238662 5775285	757269	1658139	2969550	4906017	3.91 79.6	10.2	20.1	40.6	60.1
Perfluorononanoic acid	13PF OA	Ave	168128 4124664	525061	1245341	2227031	3558831	1.92 39.0	5.01	9.87	19.9	29.5
13C2 PFHxA	13PF OA	Ave	933751 1095977	1106485	1261522	1117585	1240474	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	728204 857144	782778	917302	822787	957025	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1 Analy Batch No.: 140688

SDG No.: \_\_\_\_\_

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

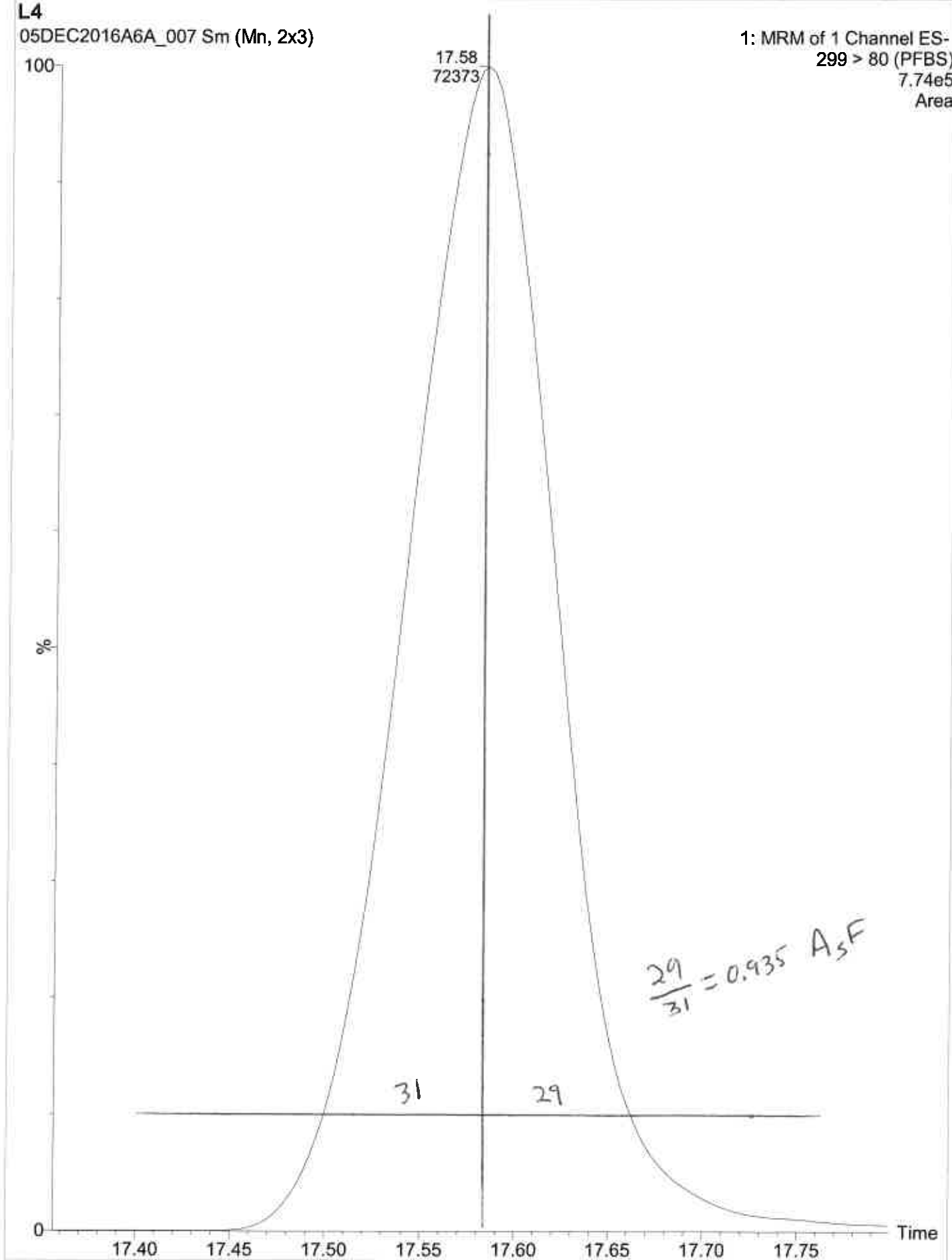
LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-140688/2	05DEC2016A6A_004.d
Level 2	STD 320-140688/3	05DEC2016A6A_005.d
Level 3	STD 320-140688/4	05DEC2016A6A_006.d
Level 4	STD 320-140688/5	05DEC2016A6A_007.d
Level 5	STD 320-140688/6	05DEC2016A6A_008.d
Level 6	STD 320-140688/7	05DEC2016A6A_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	3.3	-7.0	2.3	3.4	4.4	-6.4	50	50	50	50	50	50
Perfluorohexanesulfonic acid	-7.1	-13.6	3.4	5.5	12.3	-0.6	50	50	50	50	50	50
Perfluoroheptanoic acid	16.3	-2.1	0.1	-1.5	-4.0	-8.8	50	50	50	50	50	50
Perfluorooctanoic acid (PFOA)	-6.6	-13.0	2.6	8.0	7.0	2.0	50	50	50	50	50	50
Perfluorooctanesulfonic acid (PFOS)	-15.2	-13.6	2.6	5.0	16.2	4.9	50	50	50	50	50	50
Perfluorononanoic acid	-14.2	-12.2	5.2	8.6	9.8	2.8	50	50	50	50	50	50
13C2 PFHxA	-11.1	-9.9	2.3	5.4	9.7	3.7	30	30	30	30	30	30
13C2 PFDA	-7.7	-15.1	-1.0	3.3	12.6	7.9	30	30	30	30	30	30

L4

05DEC2016A6A\_007 Sm (Mn, 2x3)

1: MRM of 1 Channel ES-  
299 > 80 (PFBS)  
7.74e5  
Area

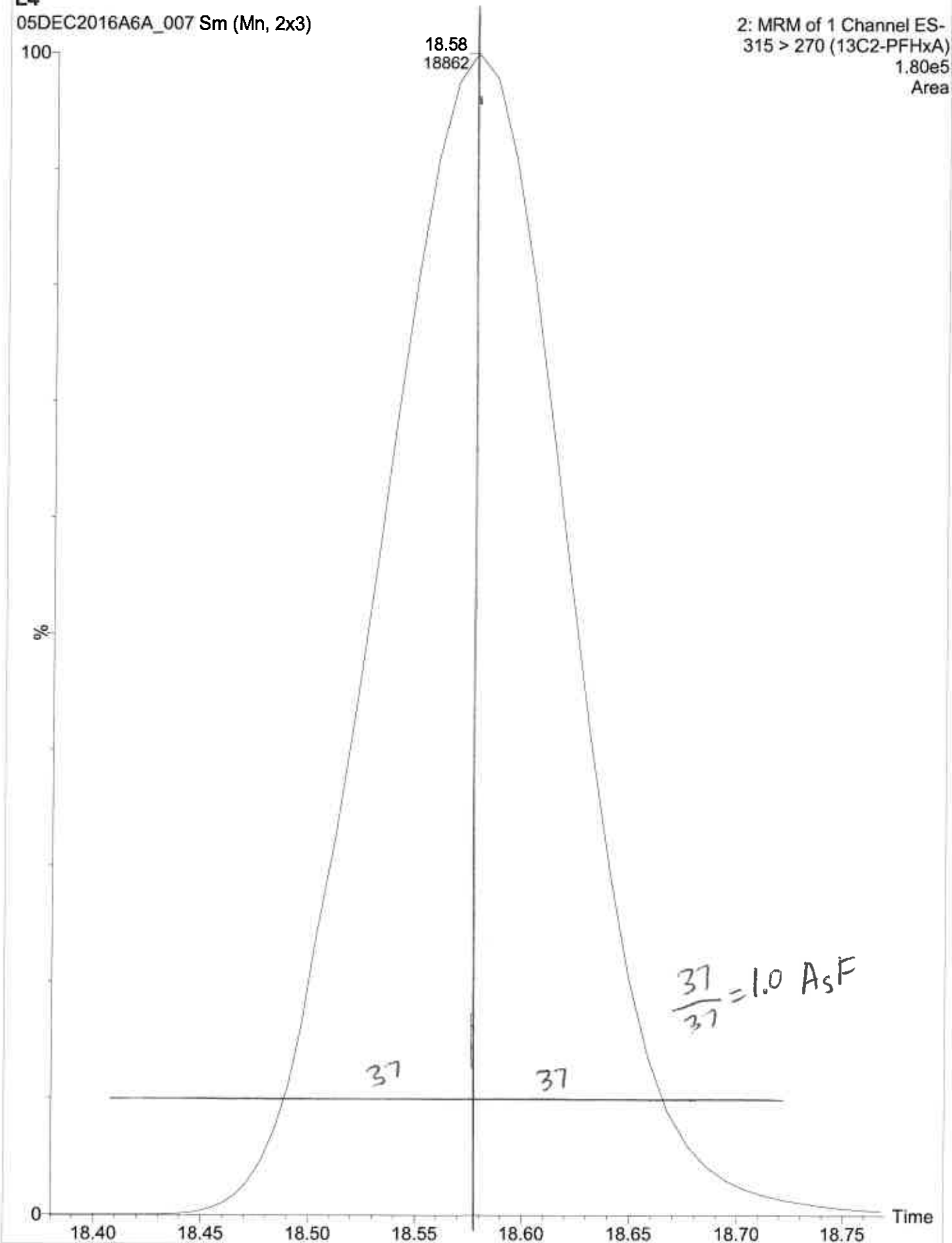




L4

05DEC2016A6A\_007 Sm (Mn, 2x3)

2: MRM of 1 Channel ES-  
315 > 270 (13C2-PFHxA)  
1.80e5  
Area



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_004.d  
 Lims ID: STD L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 05-Dec-2016 17:26:03 ALS Bottle#: 1 Worklist Smp#: 2  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: STD L1 L1  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:34 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 10:00:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.576	17.581	-0.005	1.000	437563	9.05	466
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	933751	8.89	30467
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.342	-0.010	1.000	169827	2.74	4140
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.378	-0.010	1.000	126557	1.16	45.1 M
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		900764	10.0	23392
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	173304	1.85	35.0 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	238662	3.32	2941
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		1976615	28.7	40886
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.748	-0.010	1.000	168128	1.65	6043
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	728204	9.23	22953

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L1\_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_004.d

Injection Date: 05-Dec-2016 17:26:03

Instrument ID: A6

Lims ID: STD L1

Client ID:

Operator ID: CBW

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

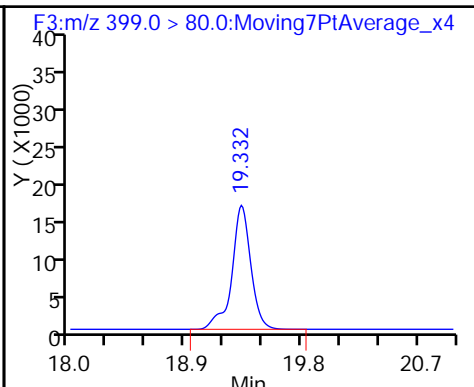
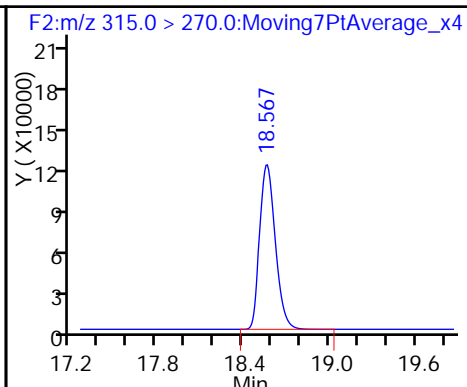
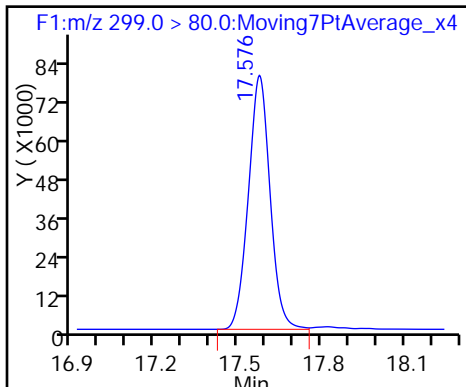
Method: 537\_\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

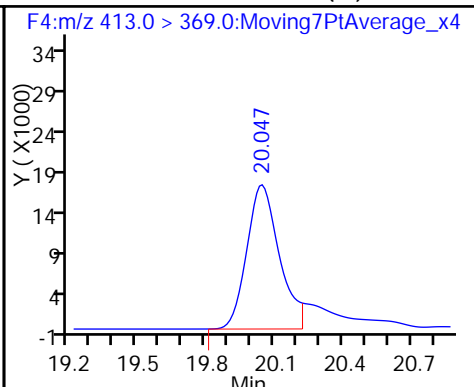
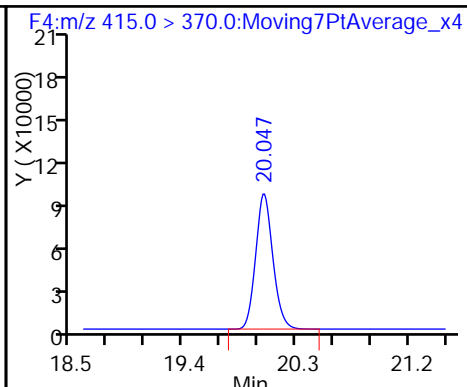
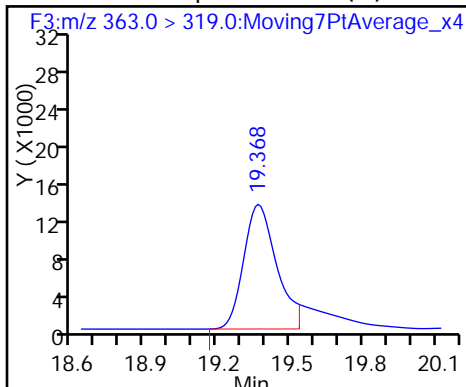
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

\* 5 13C2-PFOA

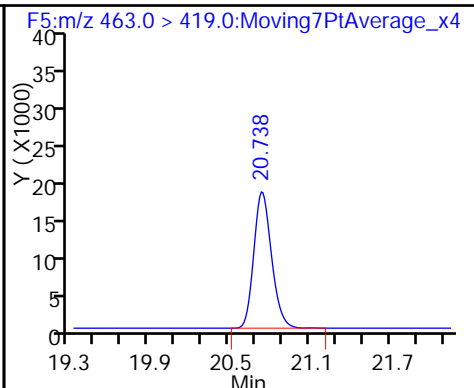
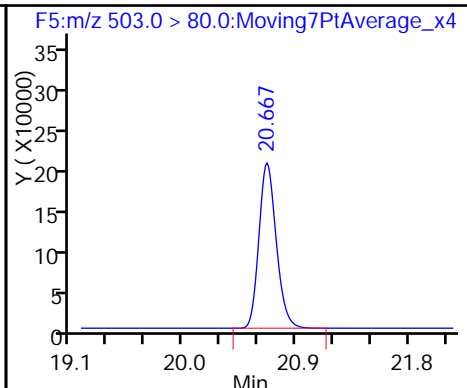
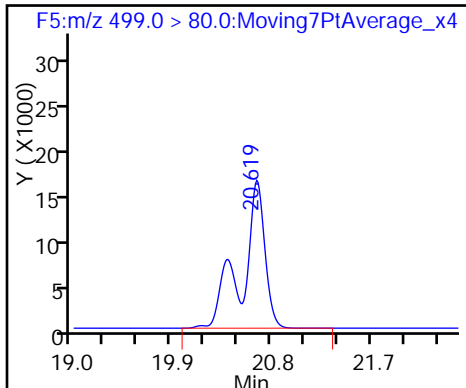
6 Perfluorooctanoic acid (M)



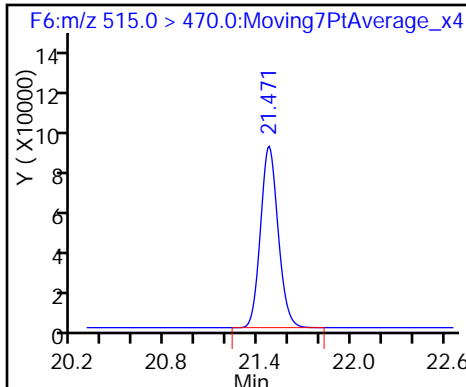
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

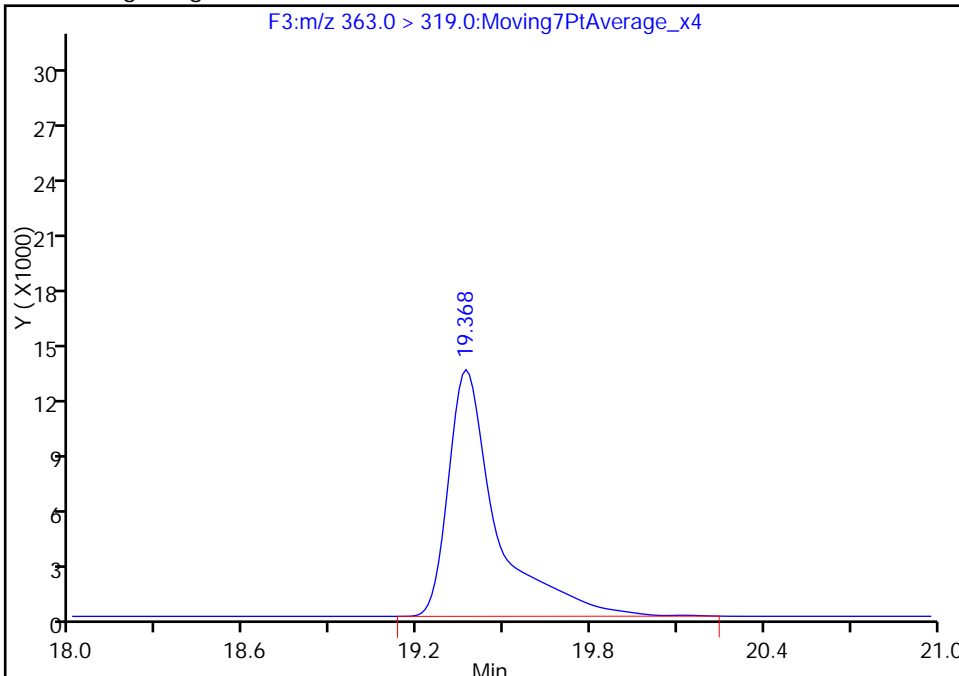
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_004.d  
Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6  
Lims ID: STD L1  
Client ID:  
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

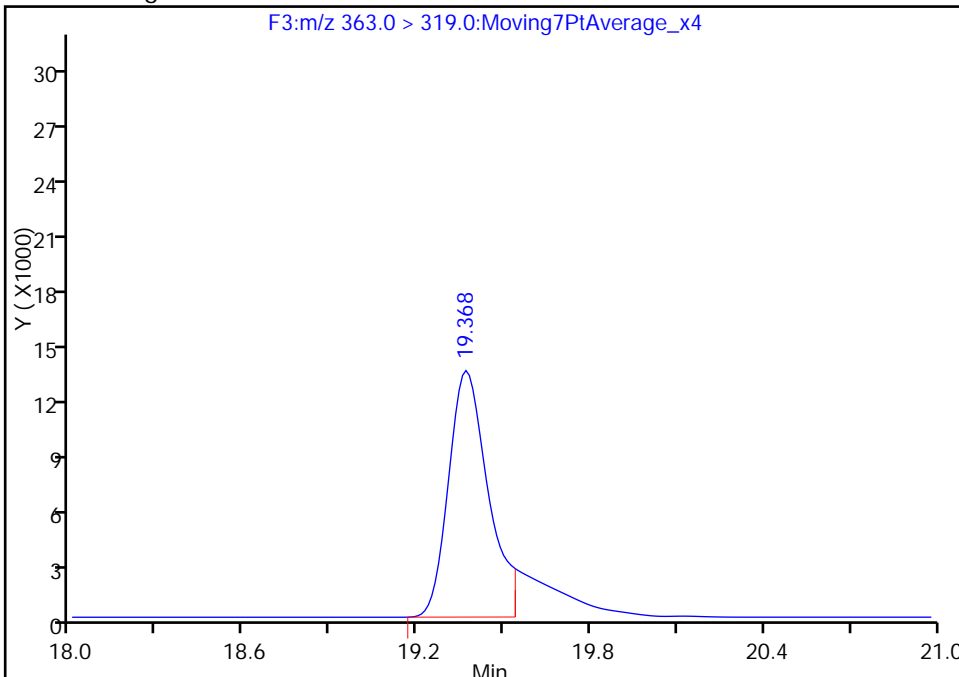
RT: 19.37  
Area: 155591  
Amount: 1.476072  
Amount Units: ng/ml

Processing Integration Results



RT: 19.37  
Area: 126557  
Amount: 1.156251  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:00:02  
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

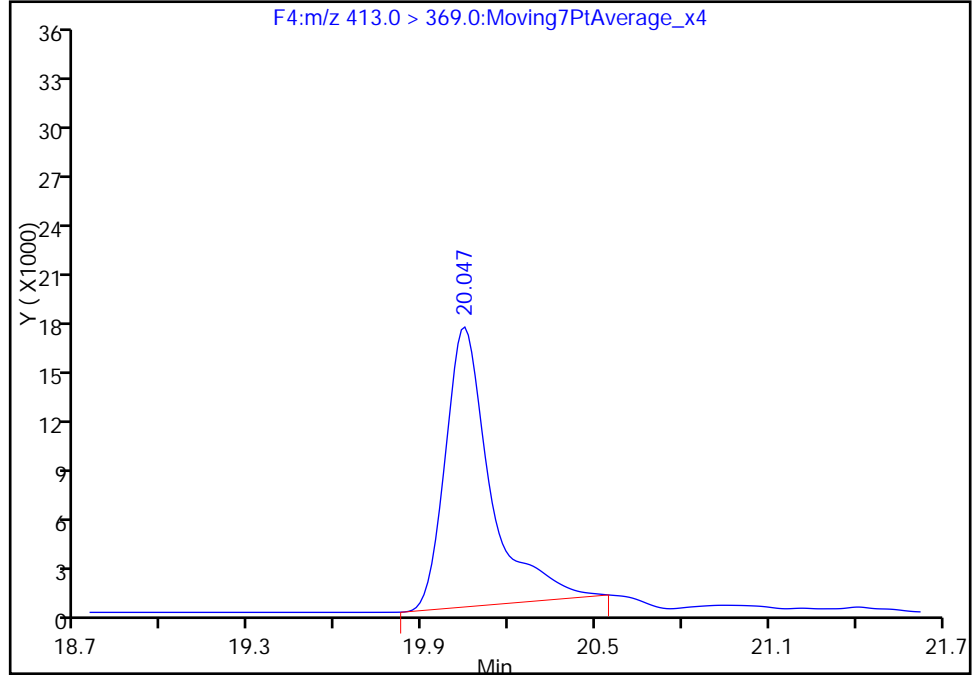
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_004.d  
Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6  
Lims ID: STD L1  
Client ID:  
Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

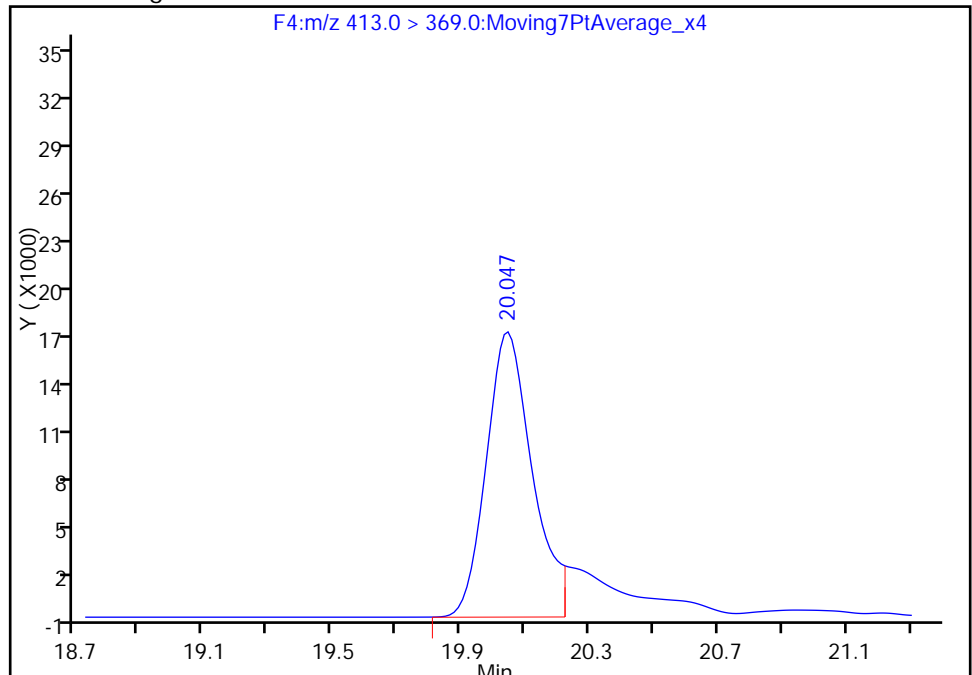
RT: 20.05  
Area: 186490  
Amount: 1.959453  
Amount Units: ng/ml

Processing Integration Results



RT: 20.05  
Area: 173304  
Amount: 1.849212  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:00:02  
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_005.d  
 Lims ID: STD L2  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 05-Dec-2016 17:55:38 ALS Bottle#: 2 Worklist Smp#: 3  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: STD L2 L2  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:35 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 09:58:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	1227165	21.3	5055
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1106485	9.01	35678
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	491809	6.67	11495
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	324913	2.54	155 M
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		1052273	10.0	27645
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	492431	4.50	100 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	757269	8.83	8449
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2356620	28.7	30757
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	525061	4.40	13911
\$ 10 13C2 PFDA	515.0 > 470.0	21.480	21.474	0.006	1.000	782778	8.49	24678

### QC Flag Legend

Review Flags

M - Manually Integrated

### Reagents:

LC537-L2\_00014

Amount Added: 1.00

Units: mL



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_005.d

Injection Date: 05-Dec-2016 17:55:38

Instrument ID: A6

Lims ID: STD L2

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

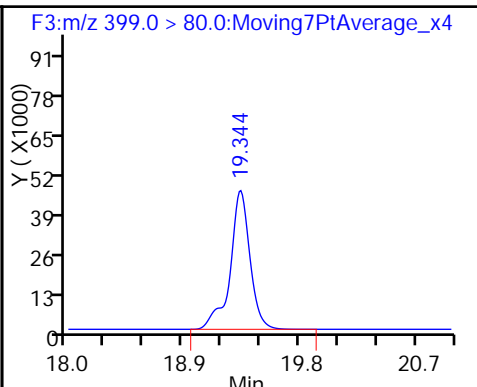
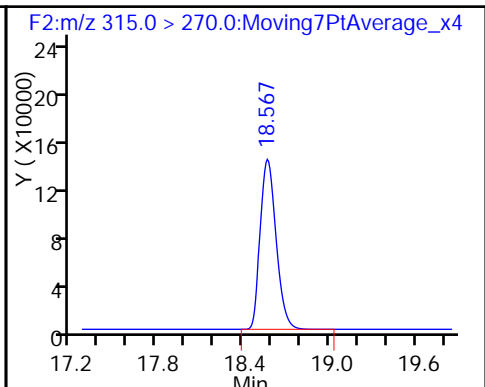
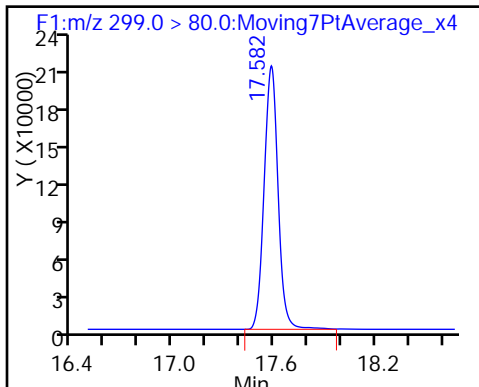
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

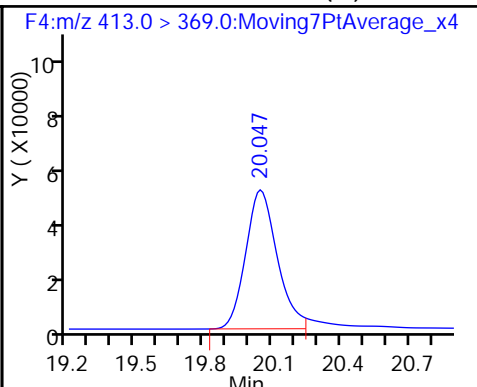
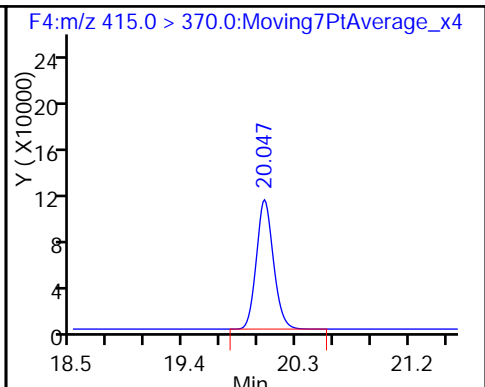
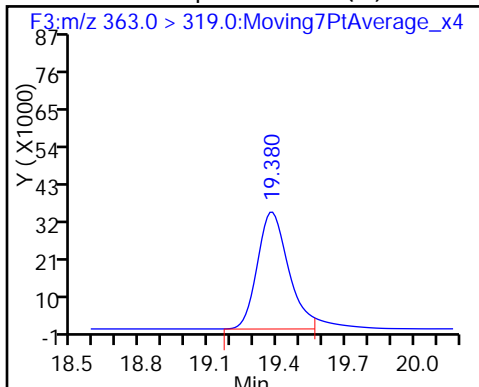
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

\* 5 13C2-PFOA

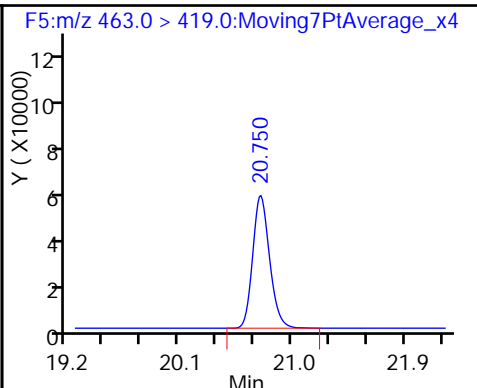
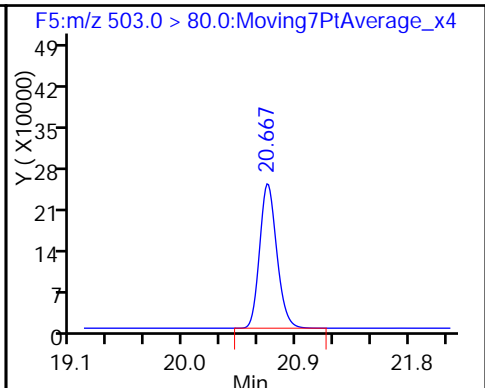
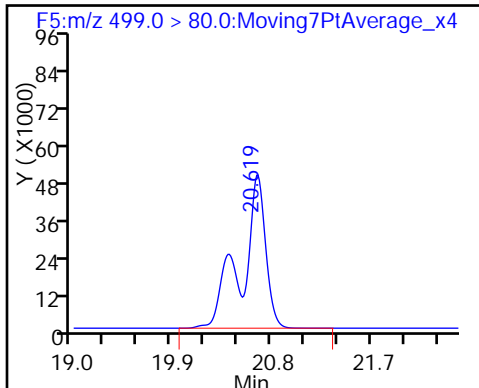
6 Perfluorooctanoic acid (M)



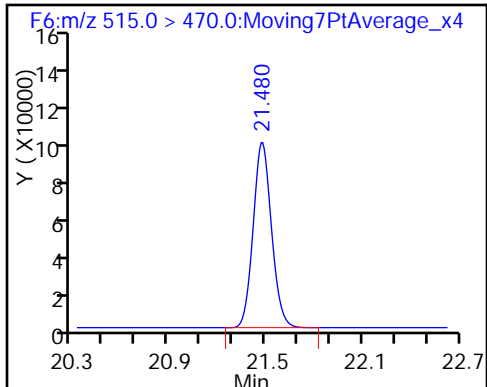
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

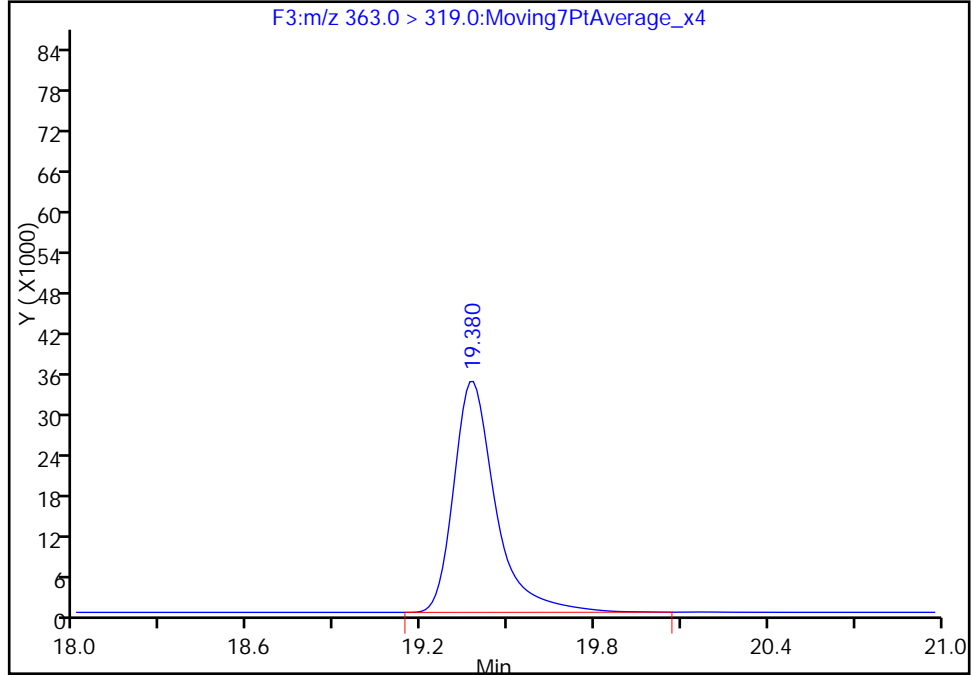
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_005.d  
Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6  
Lims ID: STD L2  
Client ID:  
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F3:M/RM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

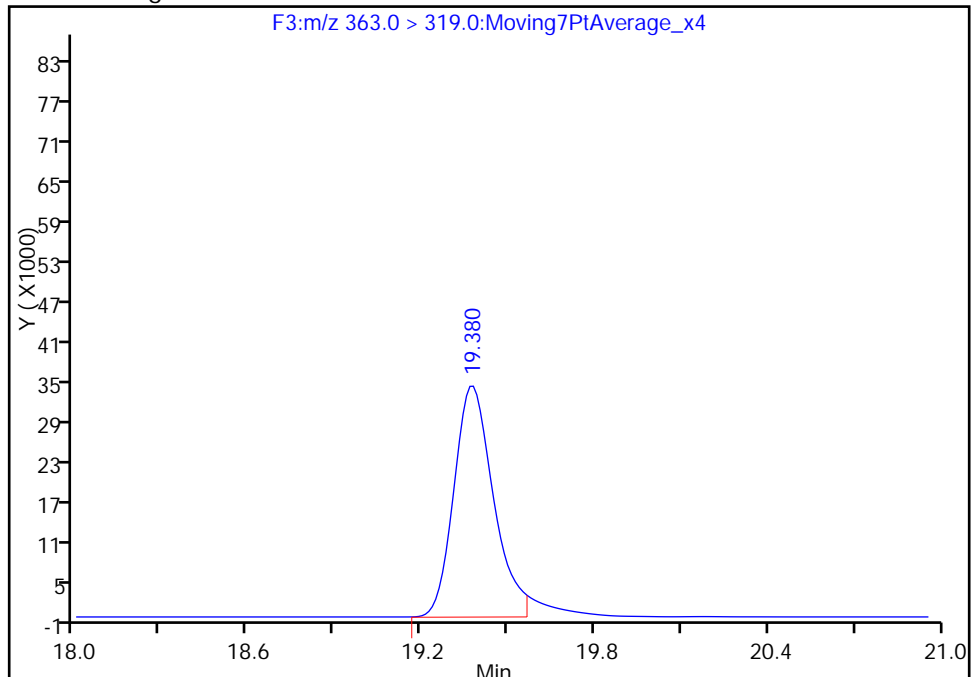
RT: 19.38  
Area: 344811  
Amount: 2.670013  
Amount Units: ng/ml

Processing Integration Results



RT: 19.38  
Area: 324913  
Amount: 2.541065  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:03:30  
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

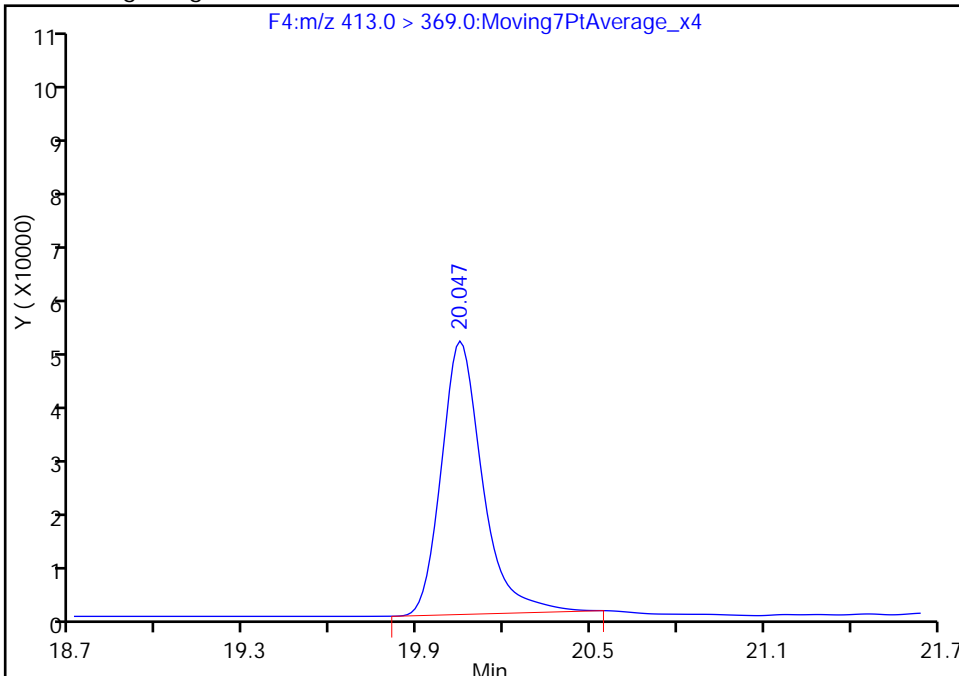
Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_005.d  
Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6  
Lims ID: STD L2  
Client ID:  
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

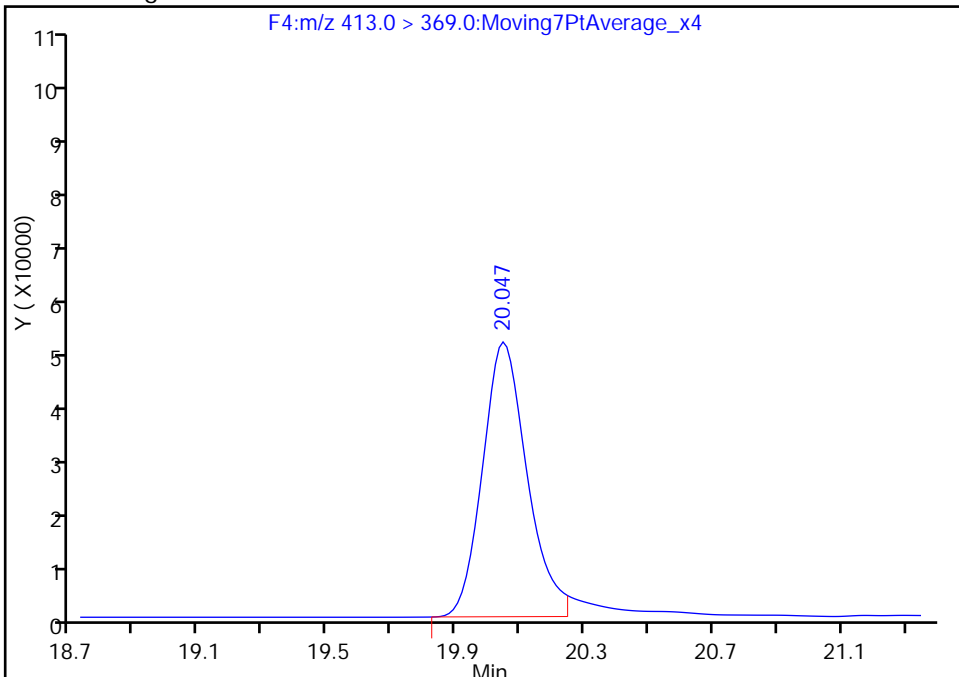
RT: 20.05  
Area: 504990  
Amount: 4.595586  
Amount Units: ng/ml

Processing Integration Results



RT: 20.05  
Area: 492431  
Amount: 4.497863  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:03:30  
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_006.d  
 Lims ID: STD L3  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 05-Dec-2016 18:25:13 ALS Bottle#: 3 Worklist Smp#: 4  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: STD L3 L3  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:36 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 09:58:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	2489398	46.2	1804
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1261522	10.2	40506
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	1086082	15.7	25400
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	658044	5.12	4774
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		1057506	10.0	27287
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	1150281	10.5	429
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1658139	20.7	19019
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2205243	28.7	57142
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	1245341	10.4	13210
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	917302	9.90	28753

Reagents:

LC537-L3\_00016 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_006.d

Injection Date: 05-Dec-2016 18:25:13

Instrument ID: A6

Lims ID: STD L3

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

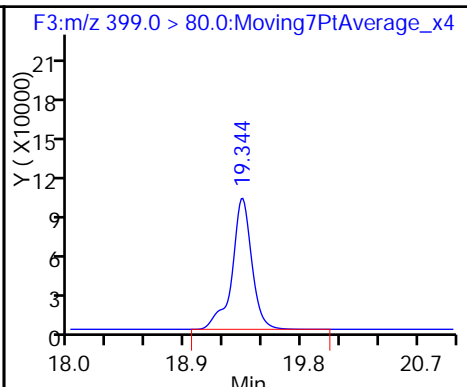
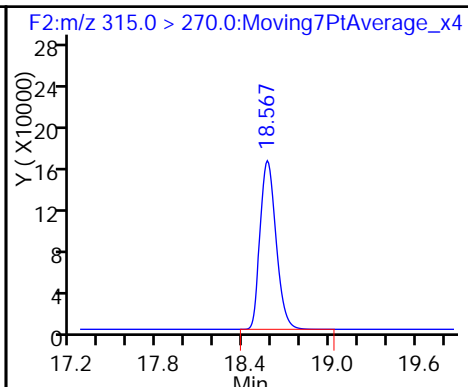
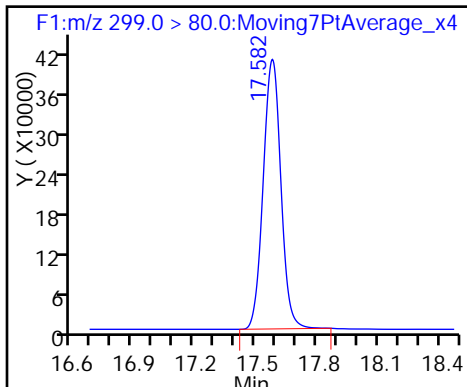
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

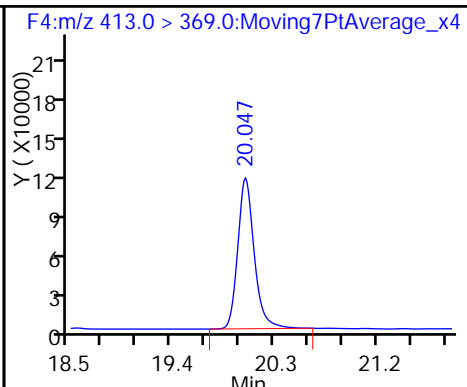
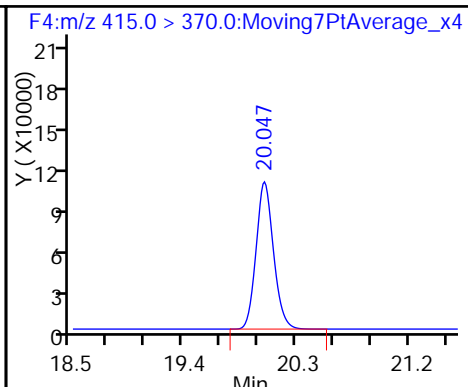
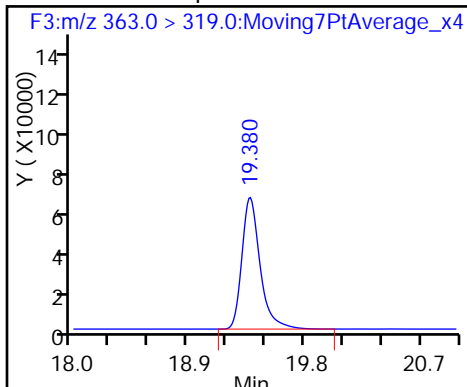
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

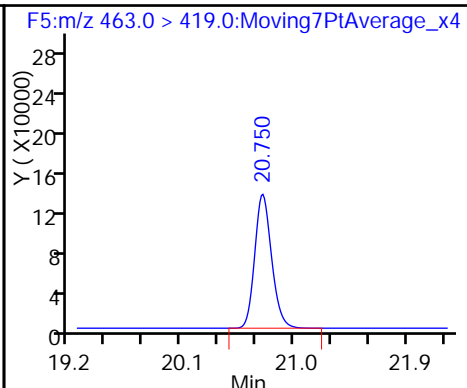
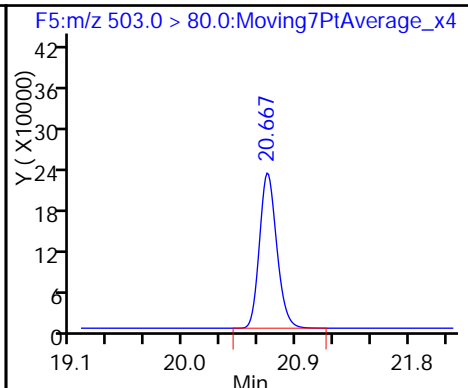
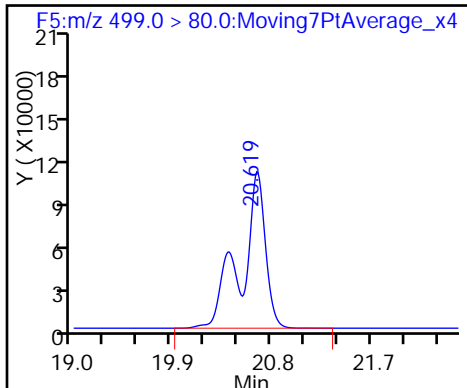
6 Perfluorooctanoic acid



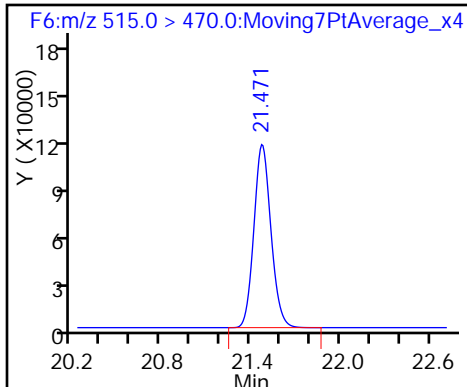
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_007.d  
 Lims ID: STD L4  
 Client ID:  
 Sample Type: ICISAV Calib Level: 4  
 Inject. Date: 05-Dec-2016 18:54:48 ALS Bottle#: 4 Worklist Smp#: 5  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: STD L4 L4  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:37 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 13:43:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.579	17.581	-0.002	1.000	4401661	94.0	2768
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1117585	10.5	28676
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	1938237	32.3	25196
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	1121930	10.2	12796
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		908727	10.0	23744
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	2096404	22.2	516
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	2969550	42.6	9704
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		1914415	28.7	28032
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	2227031	21.6	23494
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	822787	10.3	25796

Reagents:

LC537-L4\_00015 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_007.d

Injection Date: 05-Dec-2016 18:54:48

Instrument ID: A6

Lims ID: STD L4

Client ID:

Operator ID: CBW

ALS Bottle#: 4

Worklist Smp#: 5

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

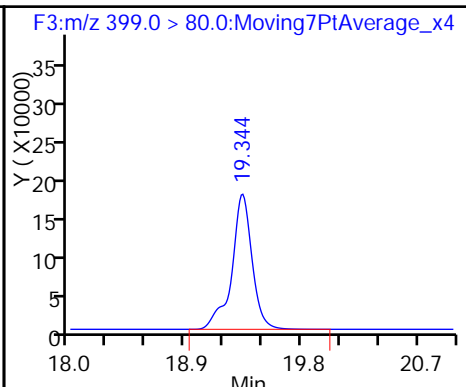
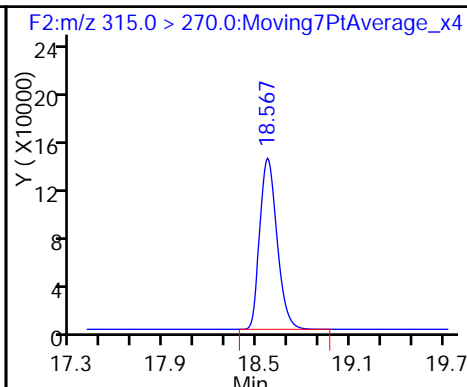
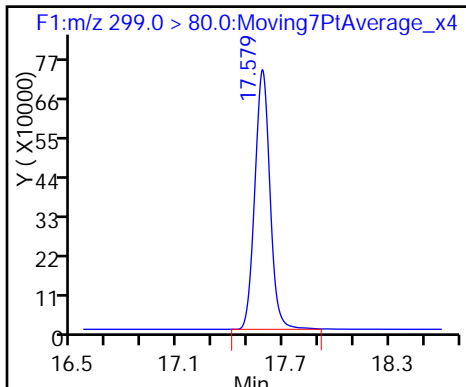
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

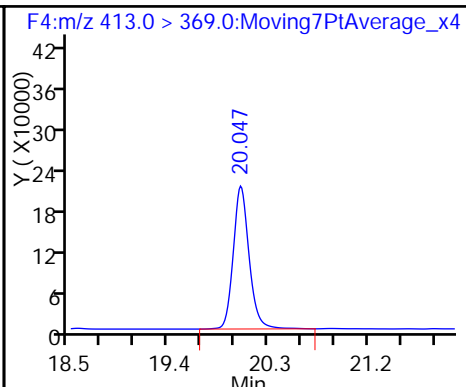
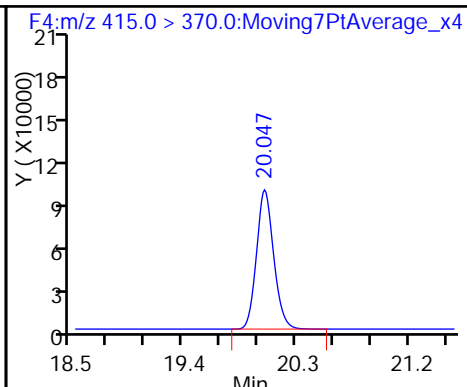
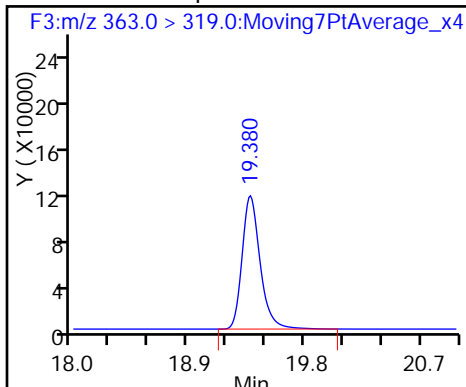
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

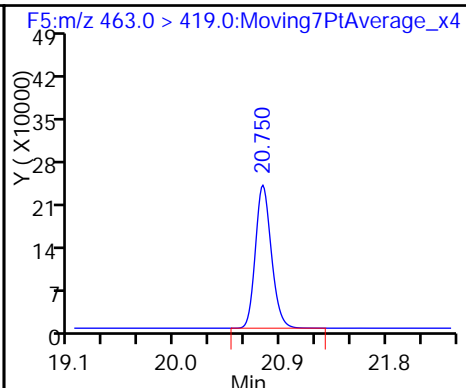
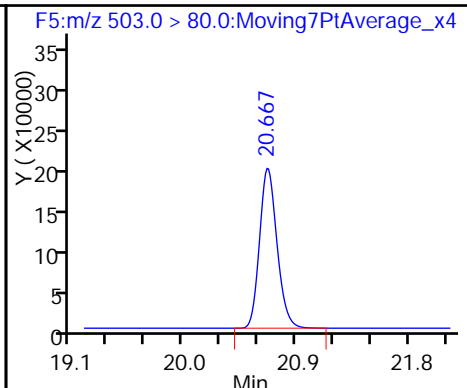
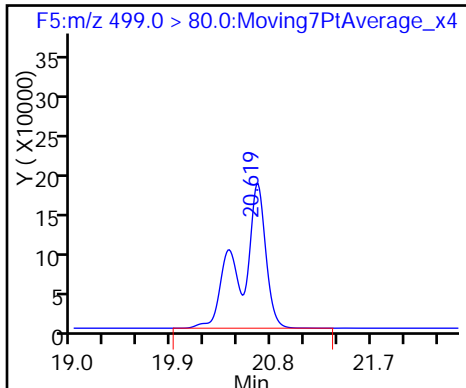
6 Perfluorooctanoic acid



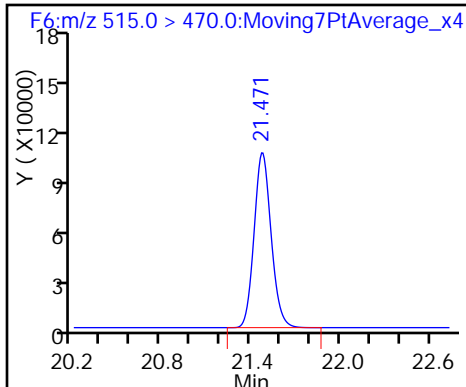
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_008.d  
 Lims ID: STD L5  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 05-Dec-2016 19:24:23 ALS Bottle#: 5 Worklist Smp#: 6  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: STD L5 L5  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:38 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	6630132	140.5	3208
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1240474	11.0	39454
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	3077974	51.0	14553
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	1727957	14.7	6886
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		969779	10.0	24964
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	3285195	32.6	1114
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.620	20.619	0.001	1.000	4906017	69.9	10146
* 8 13C4 PFOS	503.0 > 80.0	20.679	20.669	0.010		1929192	28.7	32805
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	3558831	32.4	16307
\$ 10 13C2 PFDA	515.0 > 470.0	21.480	21.474	0.006	1.000	957025	11.3	30231

Reagents:

LC537-L5\_00017 Amount Added: 1.00 Units: mL



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_008.d

Injection Date: 05-Dec-2016 19:24:23

Instrument ID: A6

Lims ID: STD L5

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 6

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

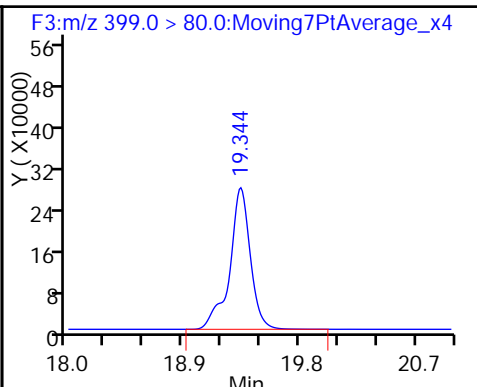
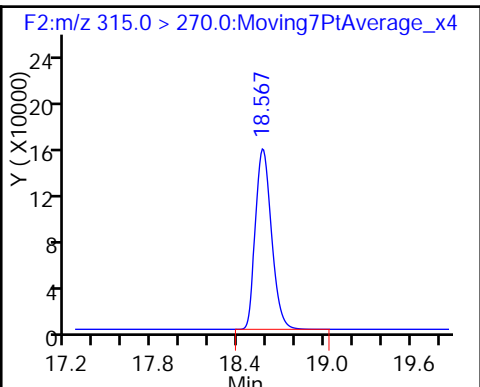
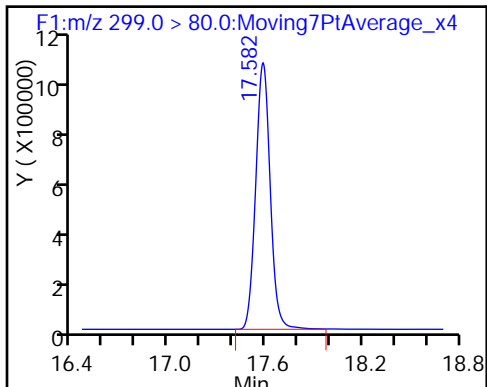
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

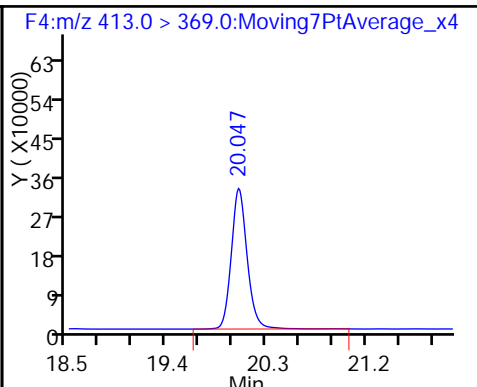
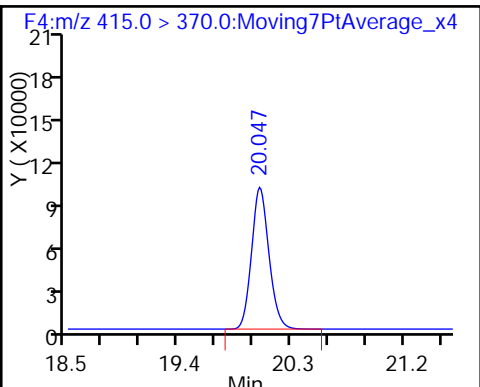
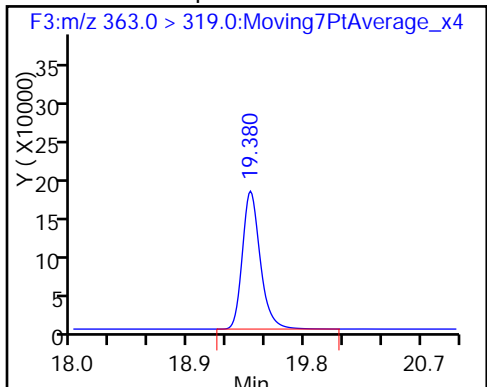
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

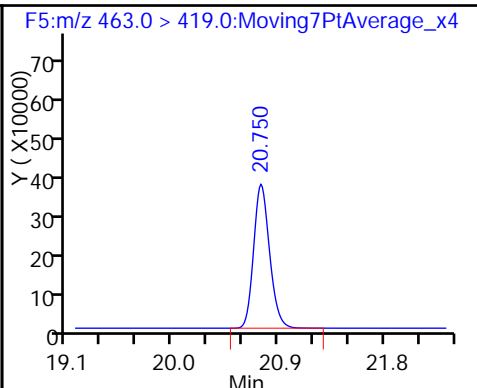
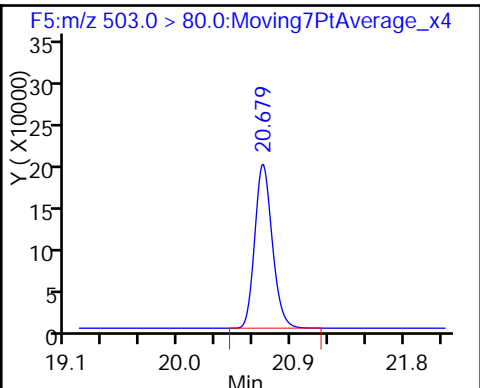
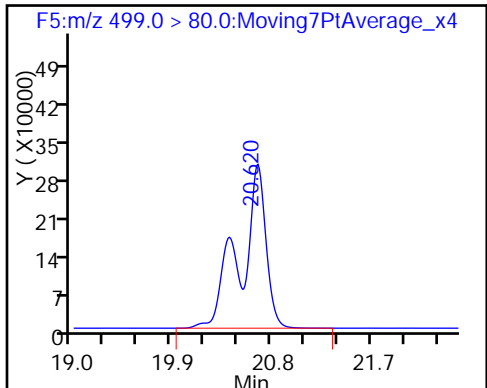
6 Perfluorooctanoic acid



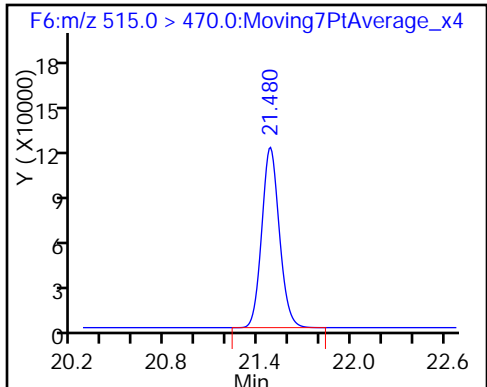
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Lims ID: STD L6  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 05-Dec-2016 19:54:00 ALS Bottle#: 6 Worklist Smp#: 7  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: STD L6 L6  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:39 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	7753569	166.9	8570
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1095977	10.4	34796
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	3556638	59.8	31299
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	2032288	18.5	6367
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		906416	10.0	23083
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	3876381	41.1	917
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	5775285	83.5	12991
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		1899408	28.7	17628
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	4124664	40.1	17939
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	857144	10.8	26862

Reagents:

LC537-L6\_00014 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d

Injection Date: 05-Dec-2016 19:54:00

Instrument ID: A6

Lims ID: STD L6

Client ID:

Operator ID: CBW

ALS Bottle#: 6

Worklist Smp#: 7

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

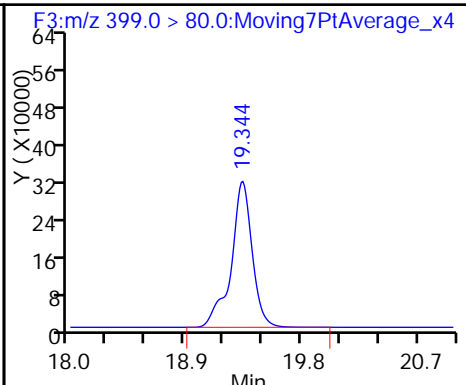
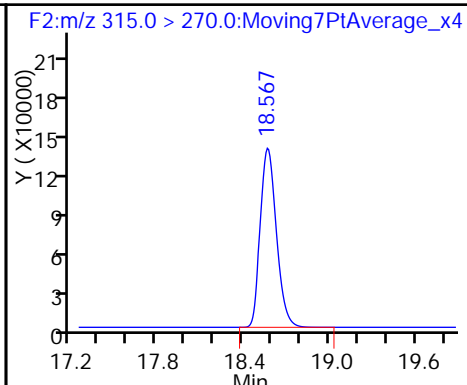
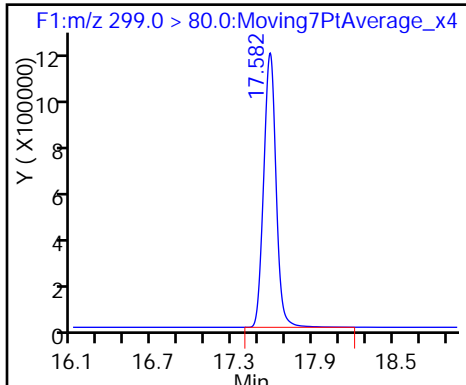
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

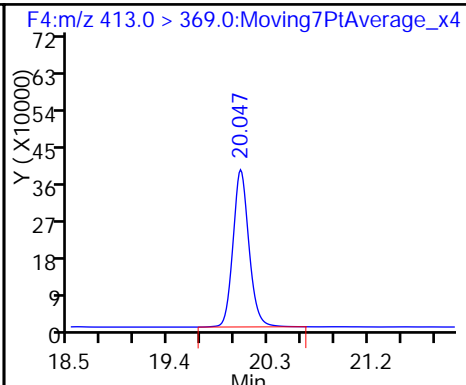
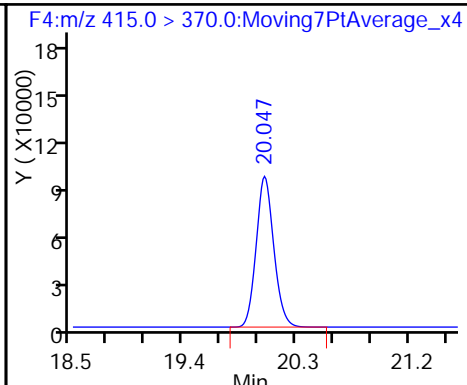
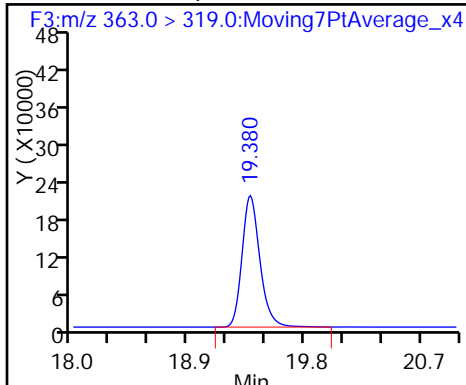
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

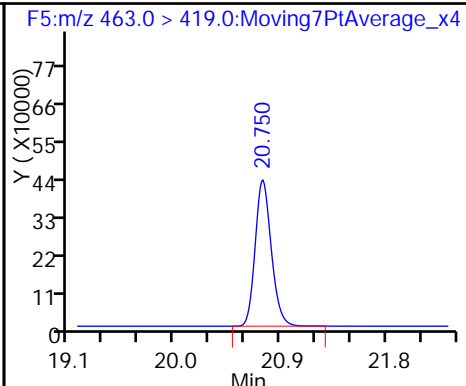
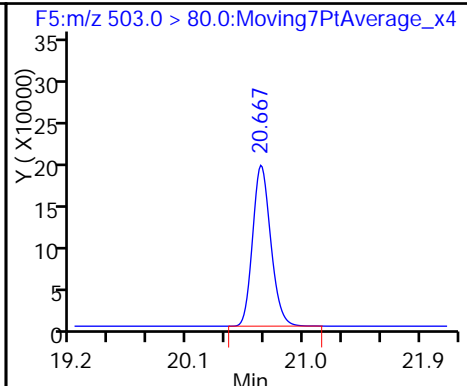
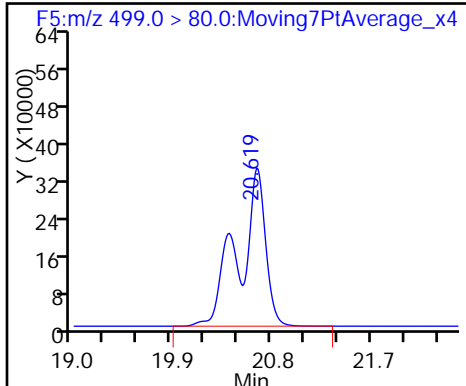
6 Perfluorooctanoic acid



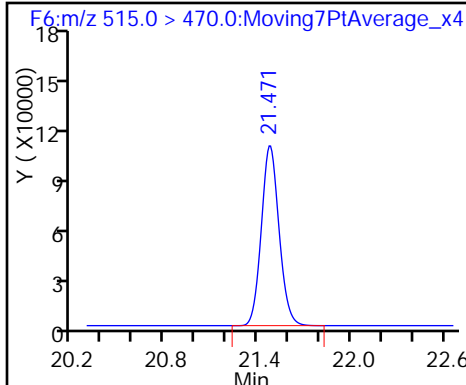
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-140688/9 Calibration Date: 12/05/2016 20:53  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 05DEC2016A6A\_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.6306		20.6	22.9	-10.1	50.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.7822		6.72	7.72	-12.9	50.0
Perfluoroheptanoic acid	Ave	1.215	1.239		2.65	2.60	1.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9133		4.54	5.17	-12.2	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8902		8.71	10.2	-14.7	50.0
Perfluorononanoic acid	Ave	1.134	1.093		4.83	5.01	-3.6	50.0
13C2 PFHxA	Ave	1.167	1.081		9.27	10.0	-7.3	30.0
13C2 PFDA	Ave	0.8763	0.8211		9.37	10.0	-6.3	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_011.d  
 Lims ID: CCV L2  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 05-Dec-2016 20:53:12 ALS Bottle#: 2 Worklist Smp#: 9  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L2 CCV L2  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:35:40 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 10:08:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.581	0.005	1.000	1186753	20.6	693
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	1108698	9.27	35970
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	496197	6.72	11535
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	329772	2.65	166 M
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		1025187	10.0	21492
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	484196	4.54	93.2 M
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	747766	8.71	8549
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2358079	28.7	20478
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	561371	4.83	15032
\$ 10 13C2 PFDA	515.0 > 470.0	21.471	21.474	-0.003	1.000	841818	9.37	26813

### QC Flag Legend

Review Flags

M - Manually Integrated

### Reagents:

LC537-L2\_00014

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_011.d

Injection Date: 05-Dec-2016 20:53:12

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 9

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

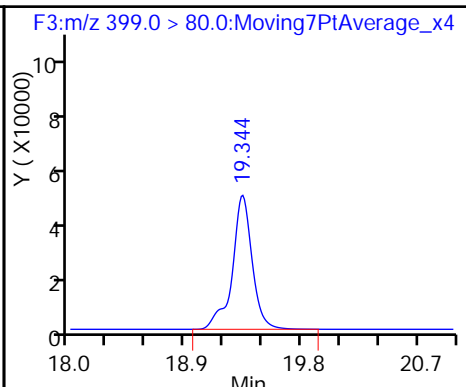
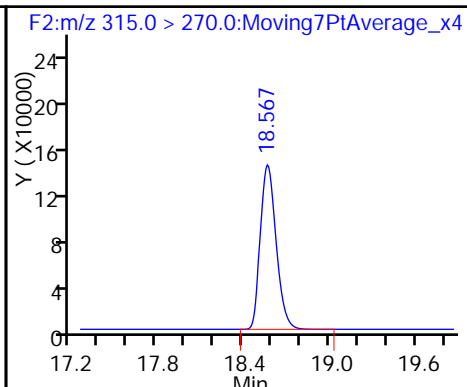
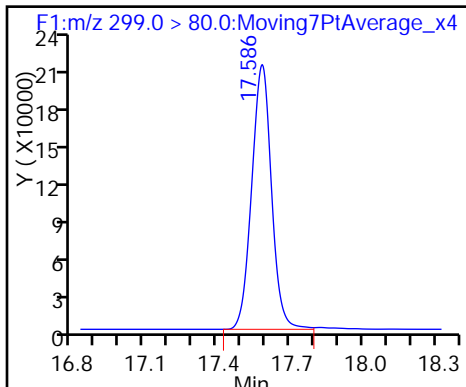
Method: 537\_\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

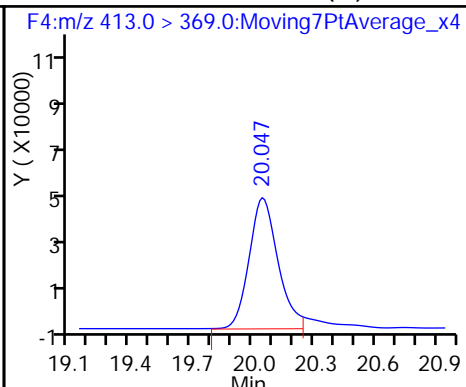
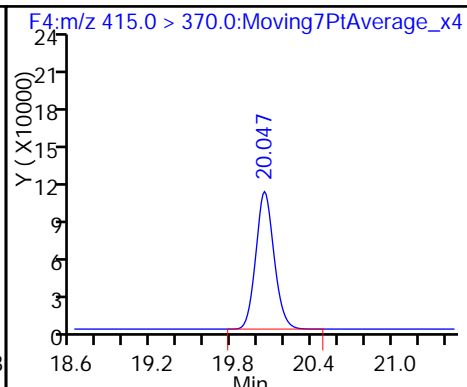
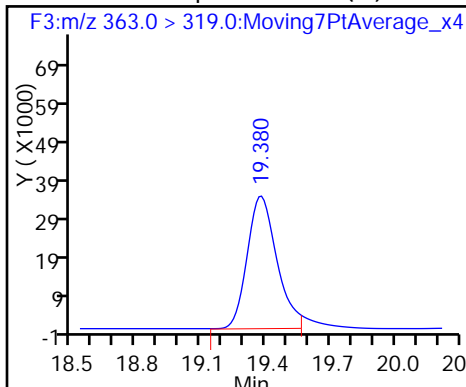
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

\* 5 13C2-PFOA

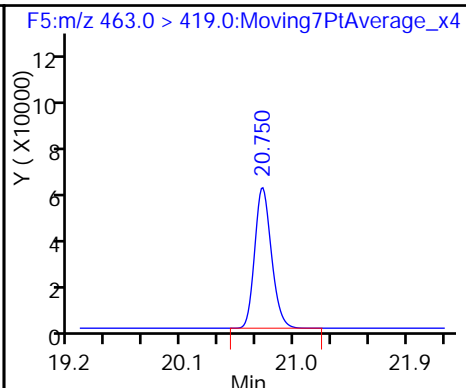
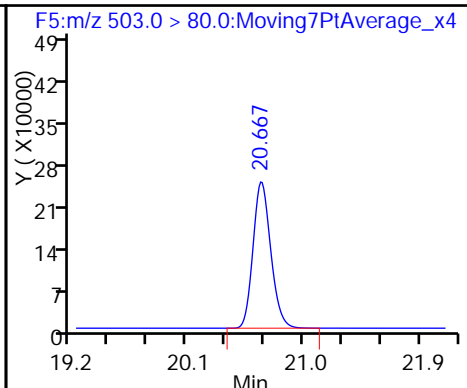
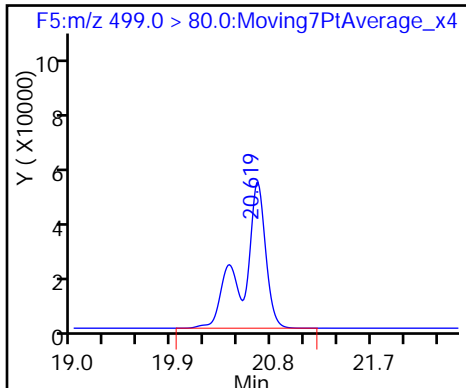
6 Perfluorooctanoic acid (M)



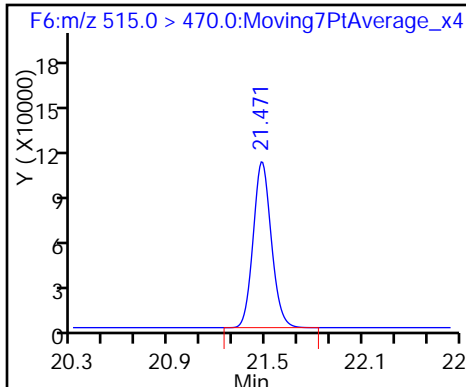
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

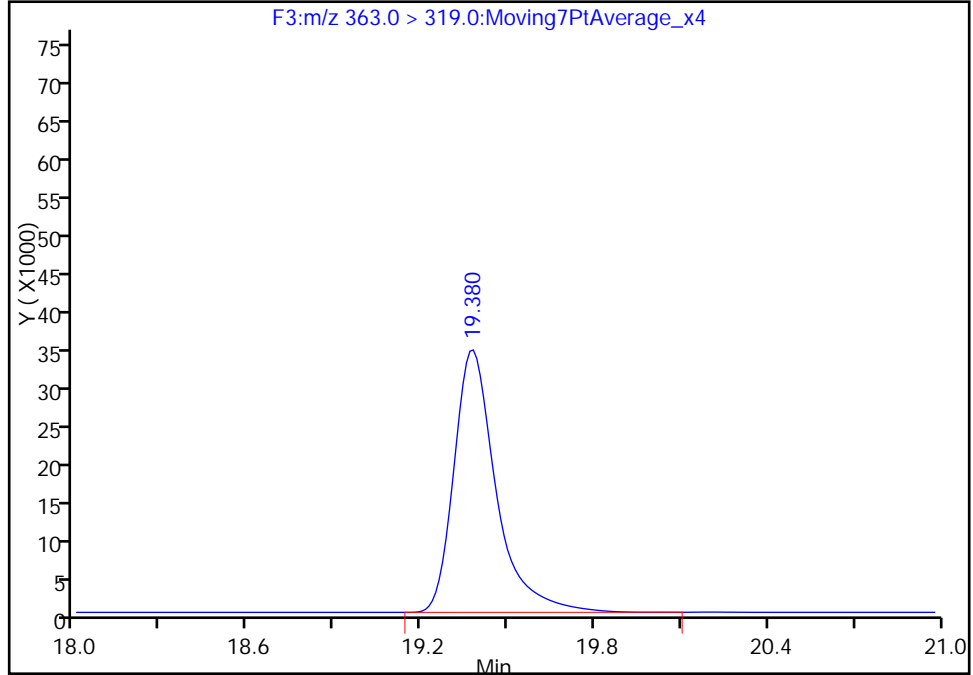
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Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6  
Lims ID: CCV L2  
Client ID:  
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F3:M/RM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

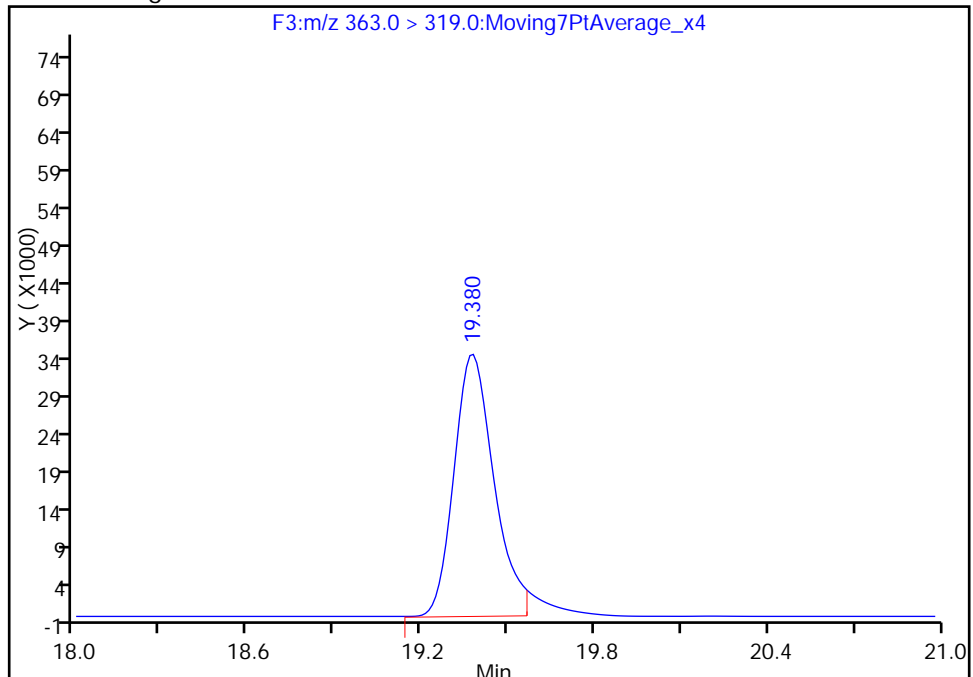
RT: 19.38  
Area: 349162  
Amount: 2.802857  
Amount Units: ng/ml

Processing Integration Results



RT: 19.38  
Area: 329772  
Amount: 2.647206  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:08:33  
Audit Action: Manually Integrated

Audit Reason: Split Peak



TestAmerica Sacramento

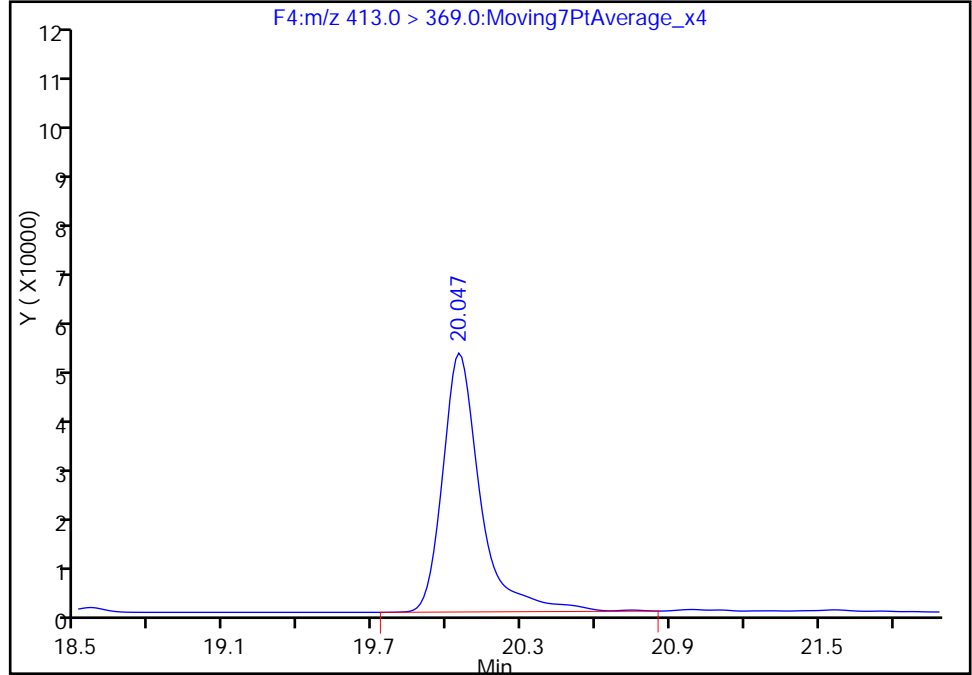
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Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6  
Lims ID: CCV L2  
Client ID:  
Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

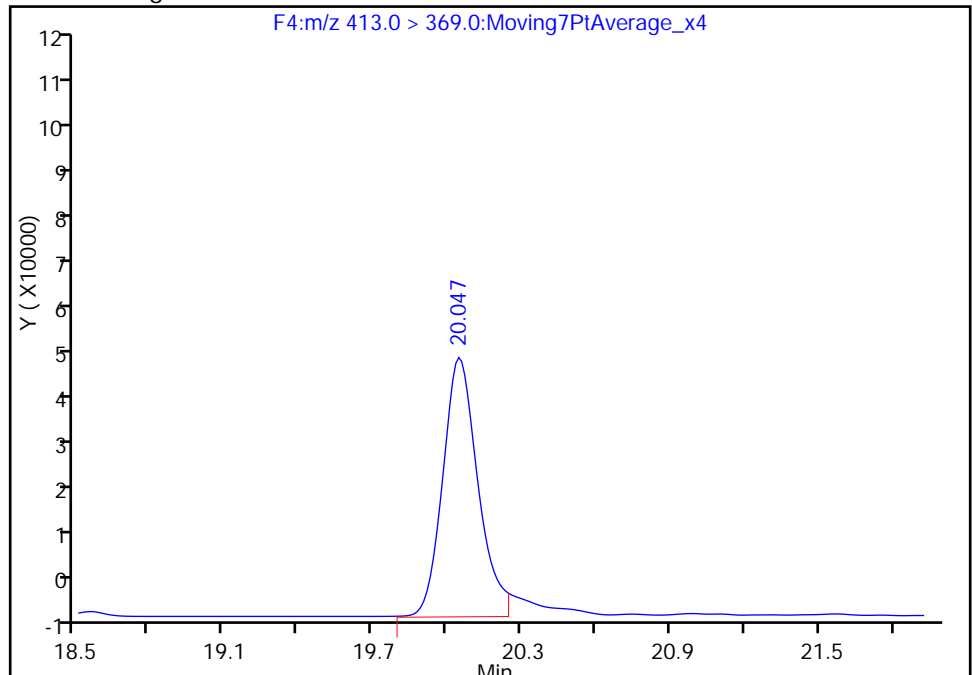
RT: 20.05  
Area: 520603  
Amount: 4.880820  
Amount Units: ng/ml

Processing Integration Results



RT: 20.05  
Area: 484196  
Amount: 4.539493  
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:08:33  
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-140688/11 Calibration Date: 12/05/2016 21:52  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 05DEC2016A6A\_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.5756		94.2	115	-18.0	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.6976		20.6	26.5	-22.3	30.0
Perfluoroheptanoic acid	Ave	1.215	1.155		11.9	12.5	-4.9	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9604		23.2	25.1	-7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8424		22.0	27.2	-19.3	30.0
Perfluorononanoic acid	Ave	1.134	0.9316		20.6	25.1	-17.9	30.0
13C2 PFHxA	Ave	1.167	1.079		9.25	10.0	-7.5	30.0
13C2 PFDA	Ave	0.8763	0.8628		9.85	10.0	-1.5	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_013.d  
 Lims ID: ICV  
 Client ID:  
 Sample Type: ICV  
 Inject. Date: 05-Dec-2016 21:52:24 ALS Bottle#: 7 Worklist Smp#: 11  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: ICV ICV  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist:

Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Dec-2016 16:53:23 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK024

First Level Reviewer: barnettj Date: 06-Dec-2016 16:34:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.581	0.001	1.000	4641388	94.2	8629
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	946677	9.25	29673
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.344	19.342	0.002	1.000	1298107	20.6	29738
4 Perfluoroheptanoic acid	363.0 > 319.0	19.380	19.378	0.002	1.000	1267011	11.9	9991
* 5 13C2-PFOA	415.0 > 370.0	20.047	20.047	0.0		877210	10.0	22431
6 Perfluorooctanoic acid	413.0 > 369.0	20.047	20.047	0.0	1.000	2114272	23.2	647
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1612191	22.0	13496
* 8 13C4 PFOS	503.0 > 80.0	20.667	20.669	-0.002		2015178	28.7	51574
9 Perfluorononanoic acid	463.0 > 419.0	20.750	20.748	0.002	1.000	2051048	20.6	7161
\$ 10 13C2 PFDA	515.0 > 470.0	21.480	21.474	0.006	1.000	756809	9.85	23714

Reagents:

LC537-ICV\_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_013.d

Injection Date: 05-Dec-2016 21:52:24

Instrument ID: A6

Lims ID: ICV

Client ID:

Operator ID: CBW

ALS Bottle#: 7

Worklist Smp#: 11

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

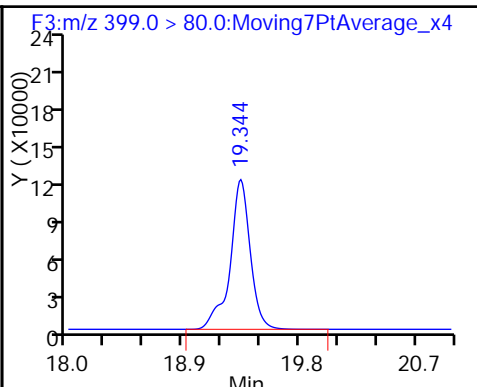
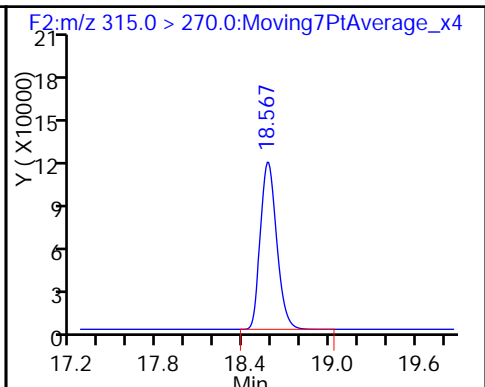
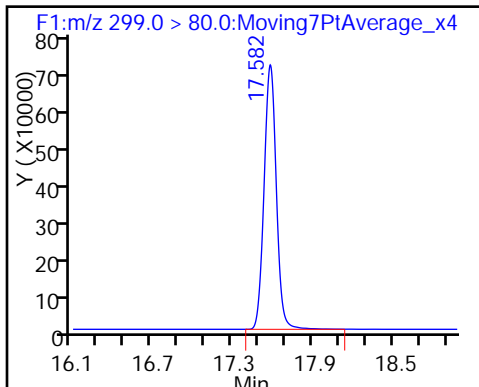
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

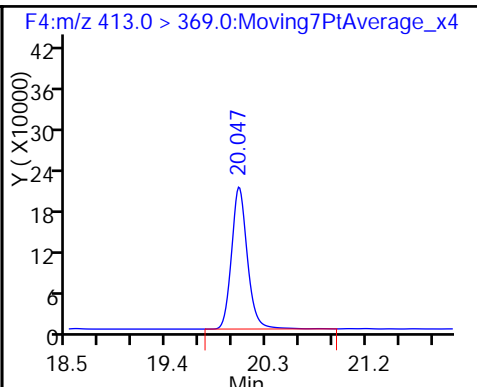
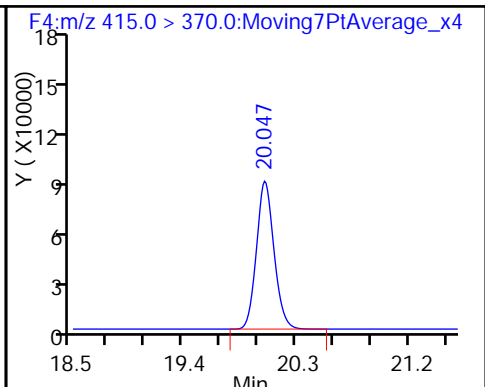
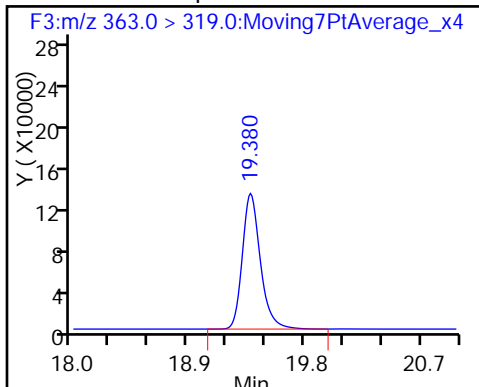
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

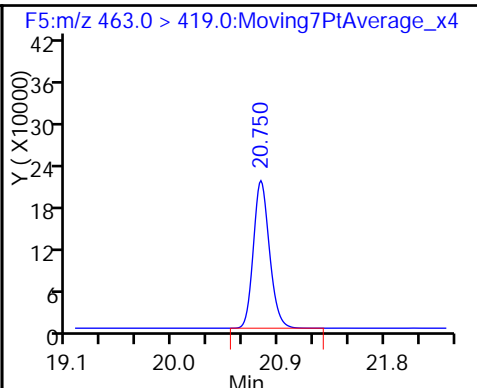
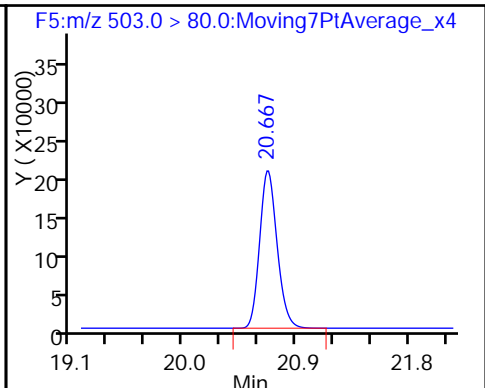
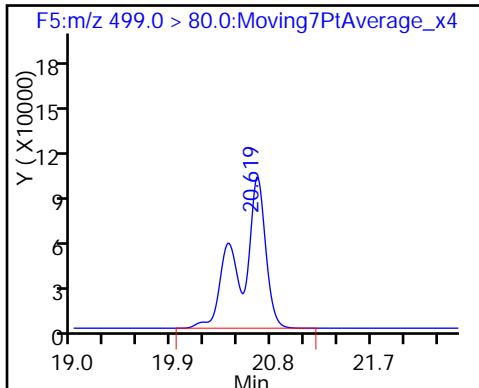
6 Perfluorooctanoic acid



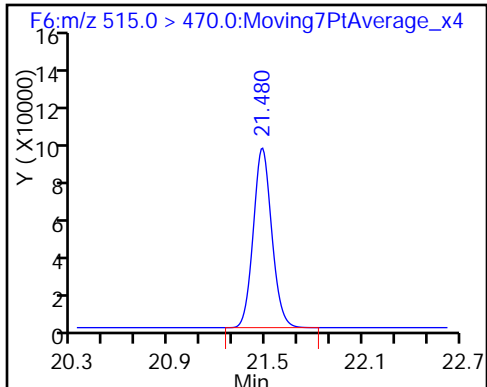
7 Perfluorooctane sulfonic acid

\* 8 13C4 PFOS

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-142884/3 Calibration Date: 12/19/2016 09:45  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 19DEC2016A6A\_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.6117		20.0	22.9	-12.8	50.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.6980		6.00	7.72	-22.3	50.0
Perfluoroheptanoic acid	Ave	1.215	1.305		2.79	2.60	7.4	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9478		4.71	5.17	-8.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8410		8.23	10.2	-19.4	50.0
Perfluorononanoic acid	Ave	1.134	1.022		4.51	5.01	-9.9	50.0
13C2 PFHxA	Ave	1.167	1.048		8.99	10.0	-10.1	30.0
13C2 PFDA	Ave	0.8763	0.8176		9.33	10.0	-6.7	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161219-37999.b\19DEC2016A6A\_003.d  
 Lims ID: CCV L2  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 19-Dec-2016 09:45:37 ALS Bottle#: 2 Worklist Smp#: 3  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L2 CCV L2  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161219-37999.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 19-Dec-2016 13:22:17 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK025

First Level Reviewer: westendorfc Date: 19-Dec-2016 11:23:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.586	0.0	1.000	701934	20.0	516
\$ 2 13C2 PFHxA	315.0 > 270.0	18.549	18.549	0.0	1.000	642432	8.99	21202
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.308	19.308	0.0	1.000	269978	6.00	6558
4 Perfluoroheptanoic acid	363.0 > 319.0	19.344	19.344	0.0	1.000	207650	2.79	752
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		612795	10.0	15691
6 Perfluorooctanoic acid	413.0 > 369.0	19.999	19.999	0.0	1.000	300363	4.71	247
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.619	0.0		1437810	28.7	37350
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	430785	8.23	7306
9 Perfluorononanoic acid	463.0 > 419.0	20.691	20.691	0.0	1.000	313809	4.51	8317
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.418	0.0	1.000	501037	9.33	15767

Reagents:

LC537-L2\_00014 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161219-37999.b\19DEC2016A6A\_003.d

Injection Date: 19-Dec-2016 09:45:37

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: CBW

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

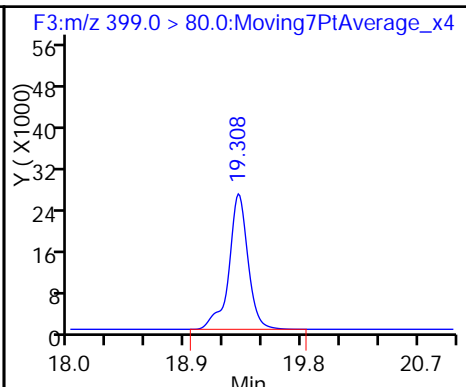
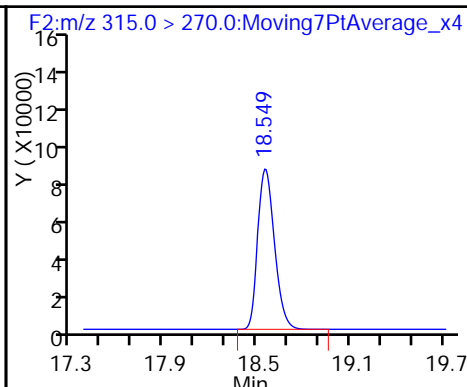
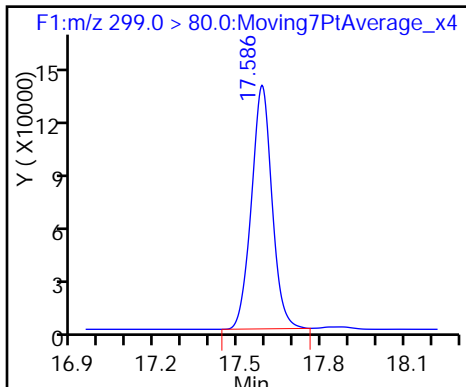
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

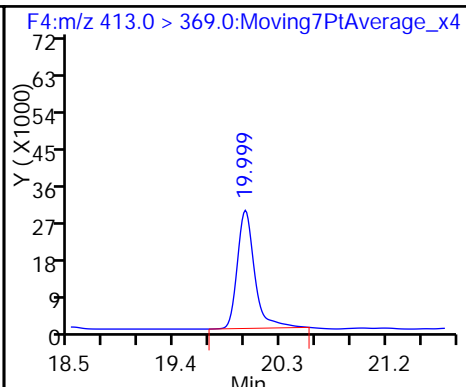
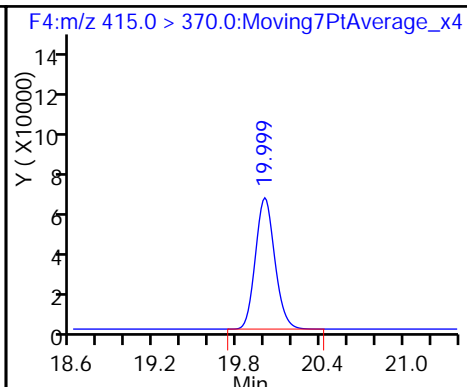
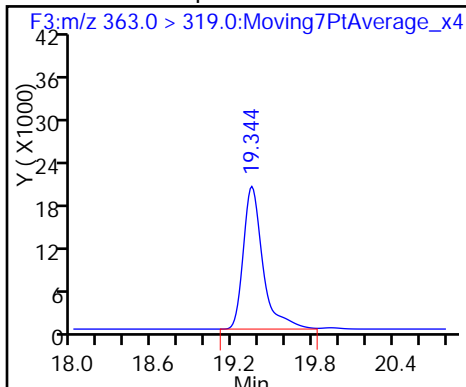
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

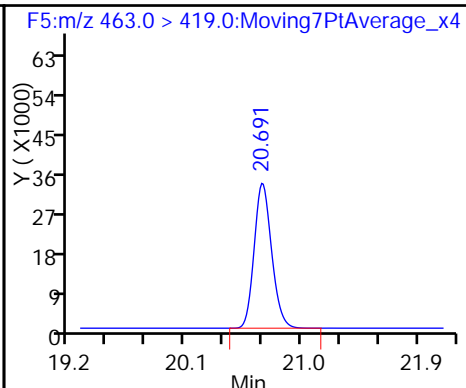
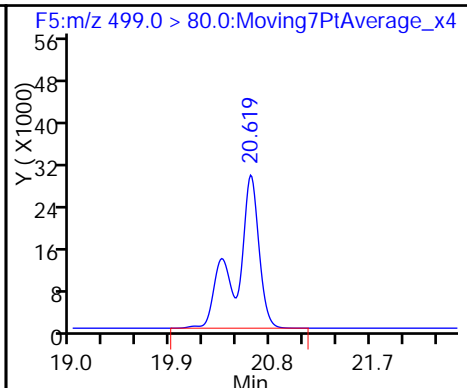
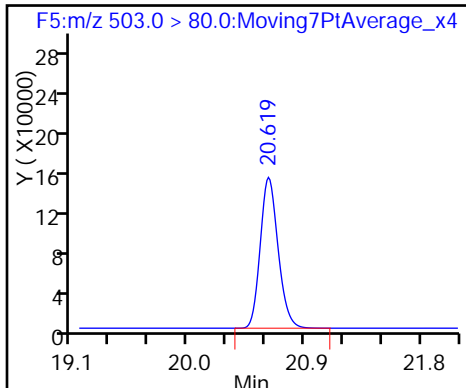
6 Perfluorooctanoic acid



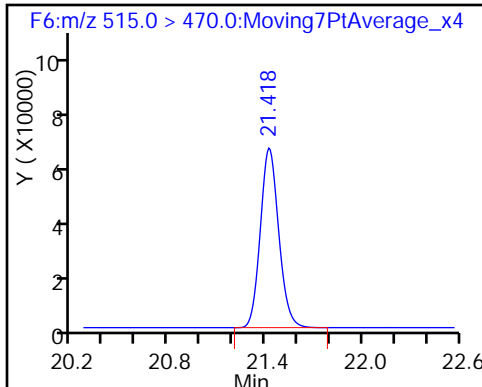
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-143413/22 Calibration Date: 12/22/2016 09:52  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 19DEC2016A6A\_147.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7735		148	135	10.3	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	1.083		54.7	45.4	20.6	30.0
Perfluoroheptanoic acid	Ave	1.215	1.273		16.0	15.3	4.7	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.054		30.8	30.4	1.3	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.258		72.4	60.1	20.5	30.0
Perfluorononanoic acid	Ave	1.134	1.190		30.9	29.5	5.0	30.0
13C2 PFHxA	Ave	1.167	1.289		11.1	10.0	10.5	30.0
13C2 PFDA	Ave	0.8763	0.9564		10.9	10.0	9.1	30.0



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_147.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 22-Dec-2016 09:52:37 ALS Bottle#: 5 Worklist Smp#: 22  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5 CCV L5  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 22-Dec-2016 13:16:24 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 13:15:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
--------	----	--------	--------	--------	----------	--------------	-----	-------

1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.589	17.589	0.0	1.000	5682964	148.5	3372
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	994589	11.1	32229
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.308	19.308	0.0	1.000	2682129	54.7	59949
4 Perfluoroheptanoic acid	363.0 > 319.0	19.344	19.344	0.0	1.000	1499340	16.0	827
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		771348	10.0	19499
6 Perfluorooctanoic acid	413.0 > 369.0	19.999	19.999	0.0	1.000	2472785	30.8	1214
* 8 13C4 PFOS	503.0 > 80.0	20.608	20.608	0.0		1564962	28.7	22635
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	4126885	72.4	25095
9 Perfluorononanoic acid	463.0 > 419.0	20.690	20.690	0.0	1.000	2705915	30.9	16656
\$ 10 13C2 PFDA	515.0 > 470.0	21.409	21.409	0.0	1.000	737689	10.9	23069

Reagents:

LC537-L5\_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_147.d

Injection Date: 22-Dec-2016 09:52:37

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 22

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

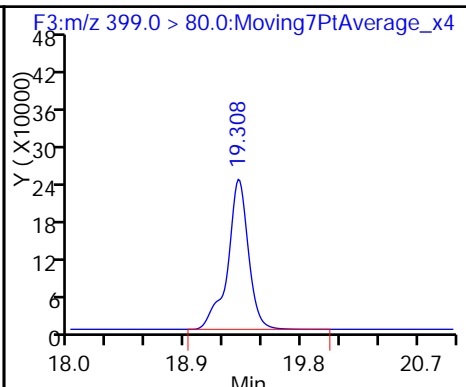
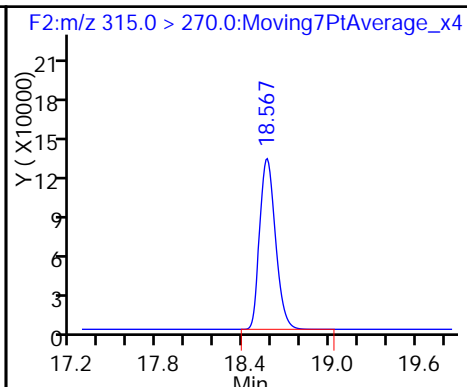
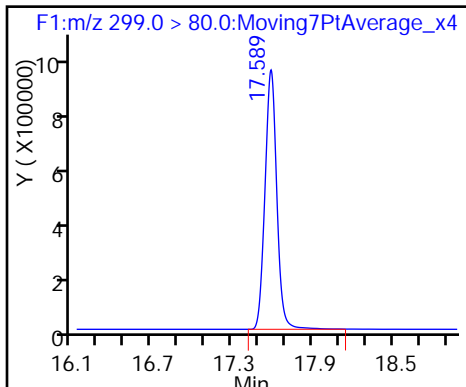
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

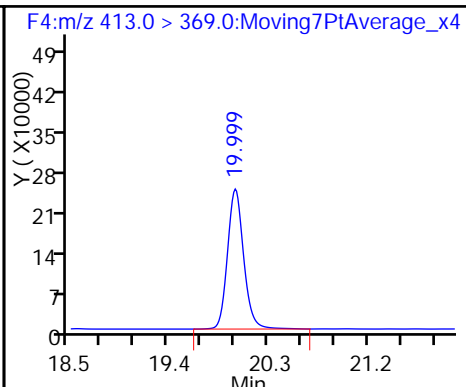
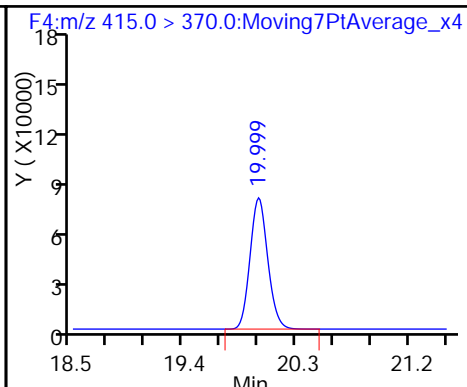
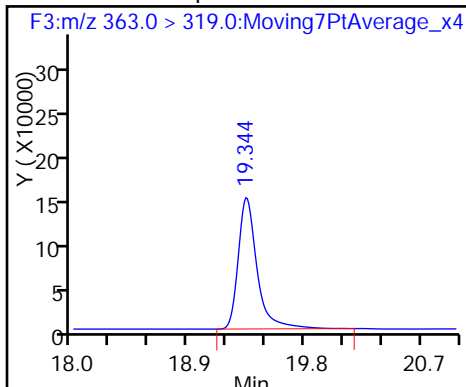
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

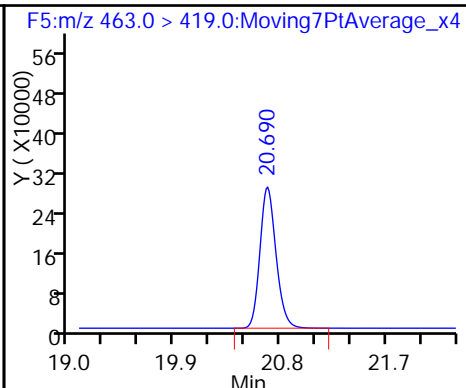
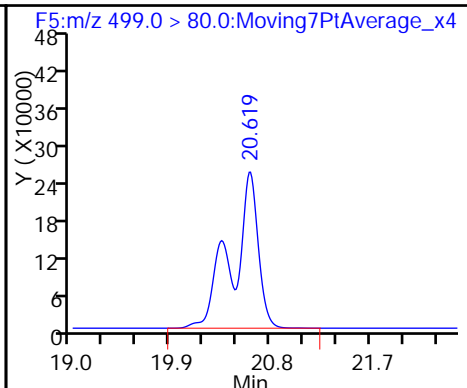
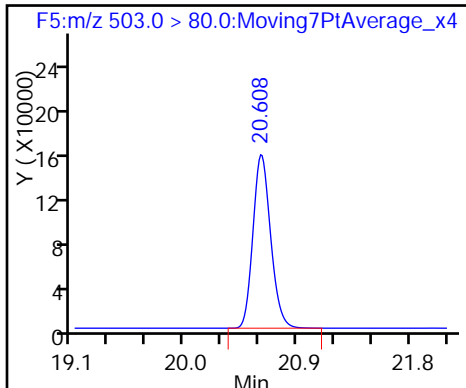
6 Perfluorooctanoic acid



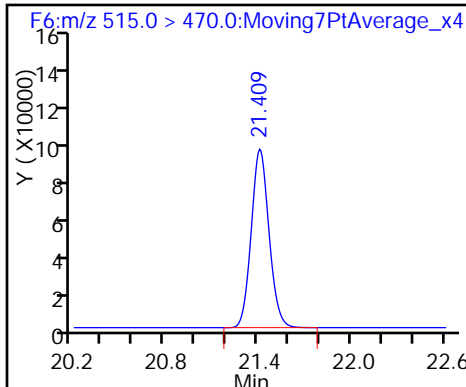
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-143413/34 Calibration Date: 12/22/2016 15:54  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 19DEC2016A6A\_159.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7987		51.4	45.1	13.9	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.9765		16.5	15.2	8.7	30.0
Perfluoroheptanoic acid	Ave	1.215	1.297		5.46	5.12	6.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.021		10.0	10.2	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.115		21.5	20.1	6.8	30.0
Perfluorononanoic acid	Ave	1.134	1.301		11.3	9.87	14.7	30.0
13C2 PFHxA	Ave	1.167	1.193		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.8763	0.9192		10.5	10.0	4.9	30.0

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-143415/34 Calibration Date: 12/22/2016 15:54  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 19DEC2016A6A\_159.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7987		51.4	45.1	13.9	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.9765		16.5	15.2	8.7	30.0
Perfluoroheptanoic acid	Ave	1.215	1.297		5.46	5.12	6.8	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.021		10.0	10.2	-1.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.115		21.5	20.1	6.8	30.0
Perfluorononanoic acid	Ave	1.134	1.301		11.3	9.87	14.7	30.0
13C2 PFHxA	Ave	1.167	1.193		10.2	10.0	2.3	30.0
13C2 PFDA	Ave	0.8763	0.9192		10.5	10.0	4.9	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_159.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 22-Dec-2016 15:54:46 ALS Bottle#: 3 Worklist Smp#: 34  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L3 CCV L3  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 22-Dec-2016 16:54:06 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 16:50:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.589	17.589	0.0	1.000	2221484	51.4	586
\$ 2 13C2 PFHxA	315.0 > 270.0	18.557	18.557	0.0	1.000	922504	10.2	29811
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.320	19.320	0.0	1.000	915588	16.5	20825
4 Perfluoroheptanoic acid	363.0 > 319.0	19.356	19.356	0.0	1.000	513370	5.46	72.7 M
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		773306	10.0	19564
6 Perfluorooctanoic acid	413.0 > 369.0	19.999	19.999	0.0	1.000	804619	10.0	401
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.619	0.0		1768636	28.7	45579
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1384896	21.5	22451
9 Perfluorononanoic acid	463.0 > 419.0	20.690	20.690	0.0	1.000	993517	11.3	9472
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.418	0.0	1.000	710850	10.5	22348

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L3\_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_159.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 22-Dec-2016 15:54:46 ALS Bottle#: 3 Worklist Smp#: 34  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L3 CCV L3  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 22-Dec-2016 16:54:06 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 16:50:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.589	17.589	0.0	1.000	2221484	51.4	586
\$ 2 13C2 PFHxA	315.0 > 270.0	18.557	18.557	0.0	1.000	922504	10.2	29811
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.320	19.320	0.0	1.000	915588	16.5	20825
4 Perfluoroheptanoic acid	363.0 > 319.0	19.356	19.356	0.0	1.000	513370	5.46	72.7 M
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		773306	10.0	19564
6 Perfluorooctanoic acid	413.0 > 369.0	19.999	19.999	0.0	1.000	804619	10.0	401
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.619	0.0		1768636	28.7	45579
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	1384896	21.5	22451
9 Perfluorononanoic acid	463.0 > 419.0	20.690	20.690	0.0	1.000	993517	11.3	9472
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.418	0.0	1.000	710850	10.5	22348

**QC Flag Legend**

Review Flags

M - Manually Integrated

**Reagents:**

LC537-L3\_00016

Amount Added: 1.00

Units: mL



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_159.d

Injection Date: 22-Dec-2016 15:54:46

Instrument ID: A6

Lims ID: CCV L3

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 34

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

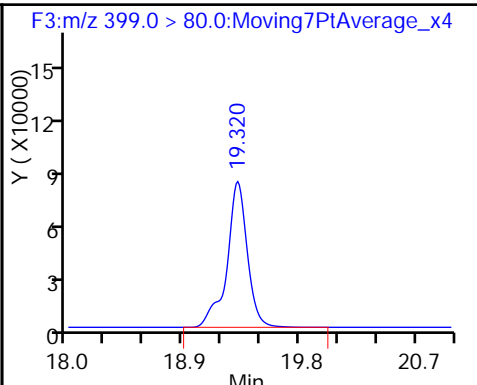
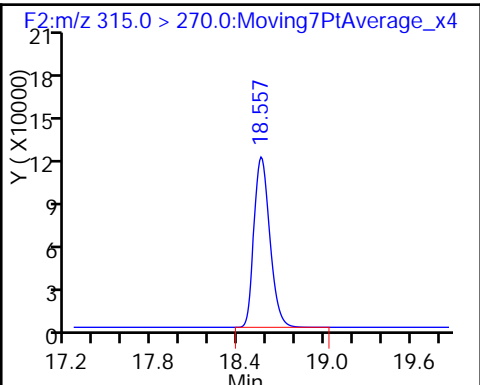
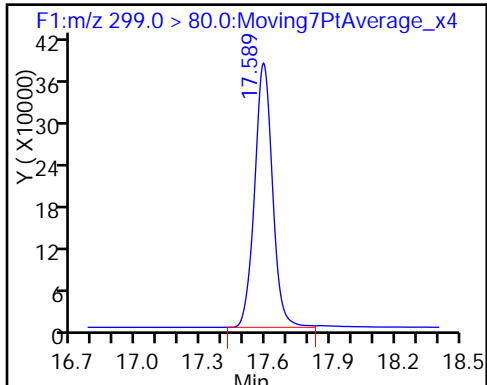
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

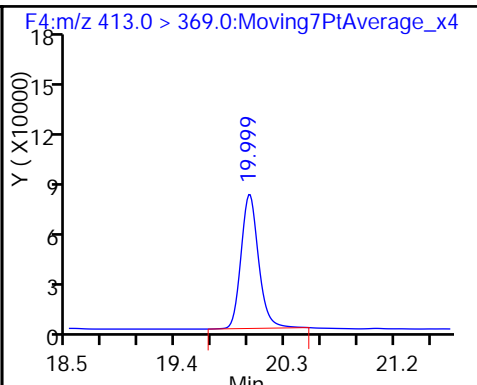
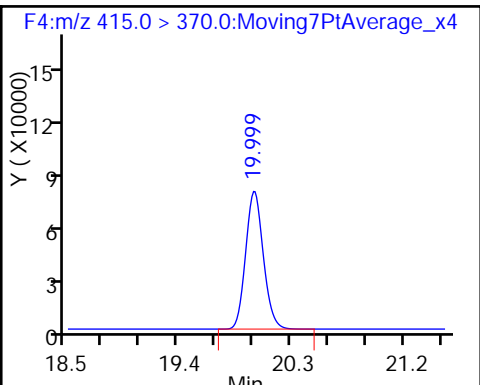
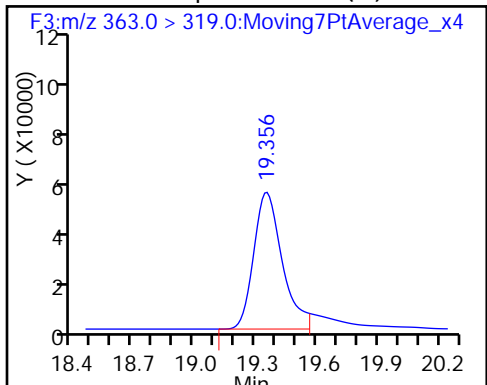
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

\* 5 13C2-PFOA

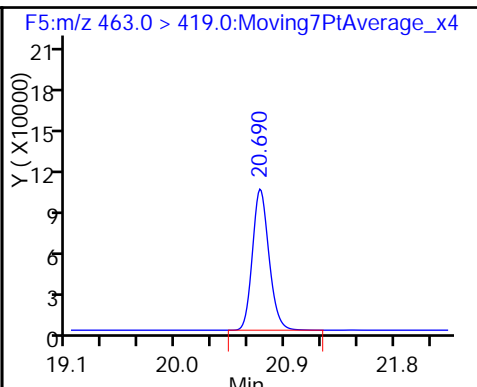
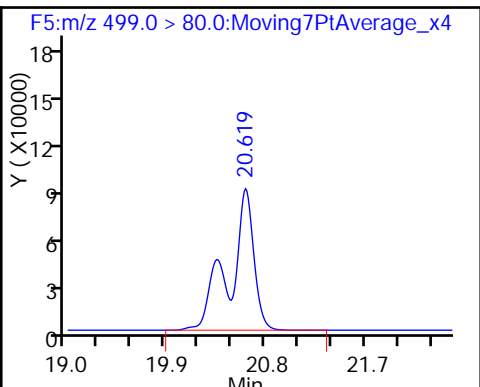
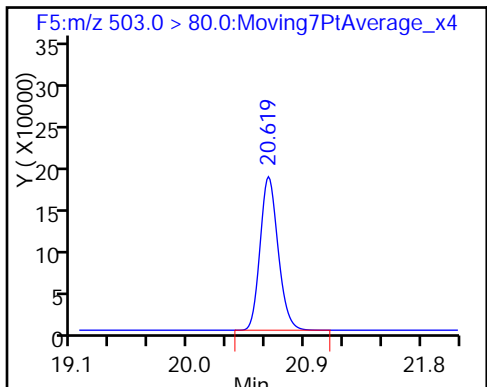
6 Perfluorooctanoic acid



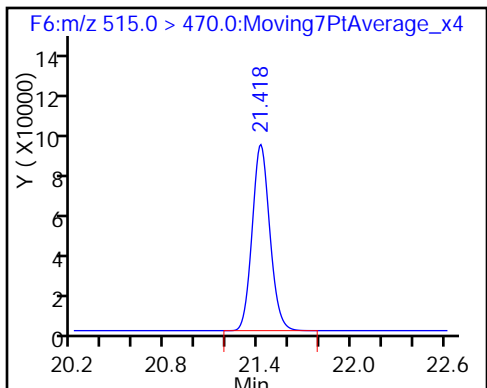
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_159.d

Injection Date: 22-Dec-2016 15:54:46

Instrument ID: A6

Lims ID: CCV L3

Client ID:

Operator ID: CBW

ALS Bottle#: 3

Worklist Smp#: 34

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

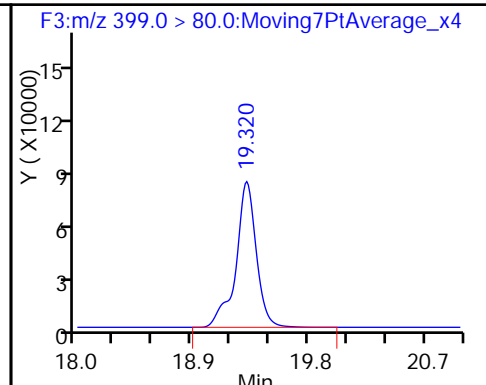
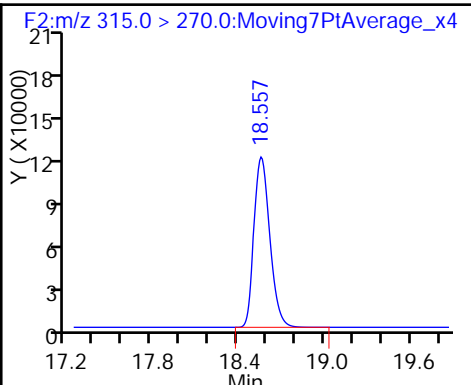
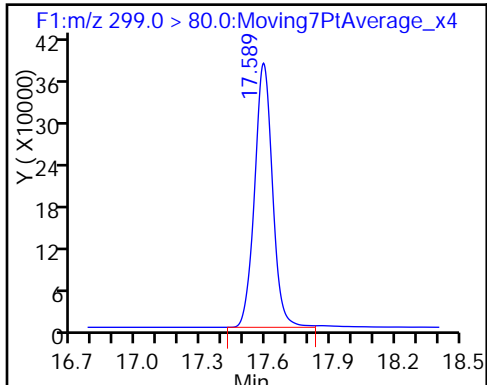
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

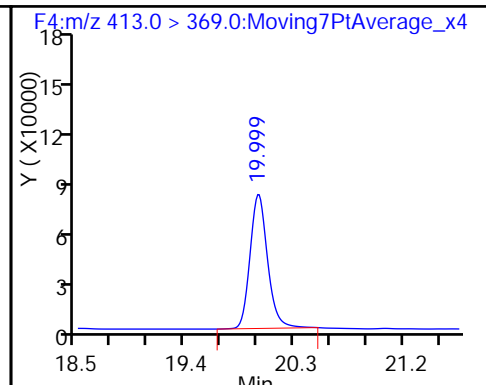
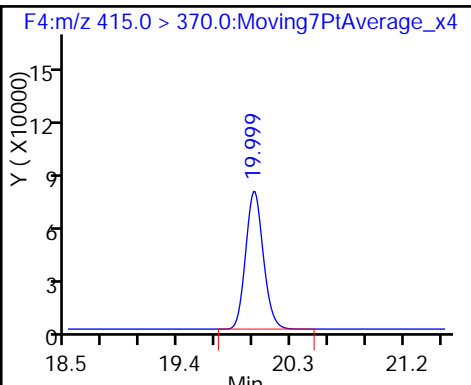
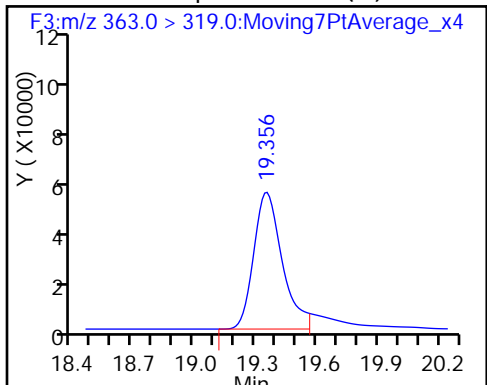
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid (M)

\* 5 13C2-PFOA

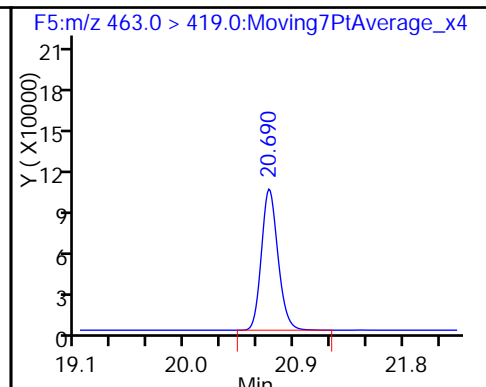
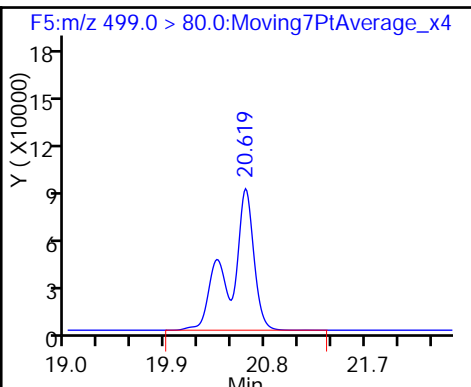
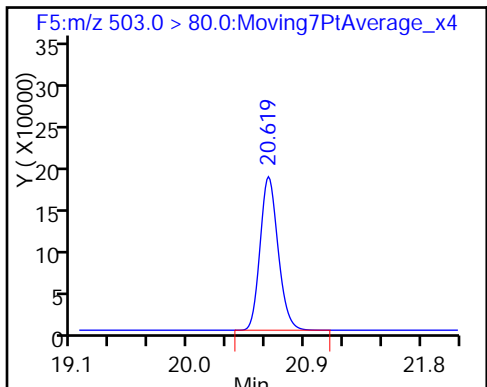
6 Perfluorooctanoic acid



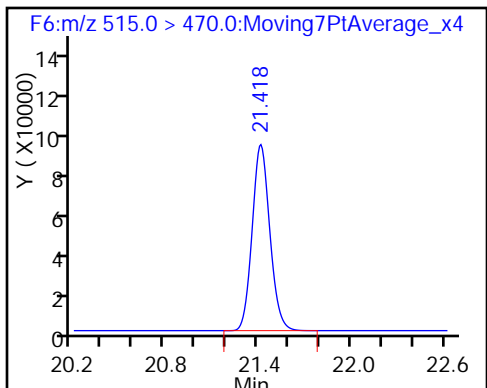
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

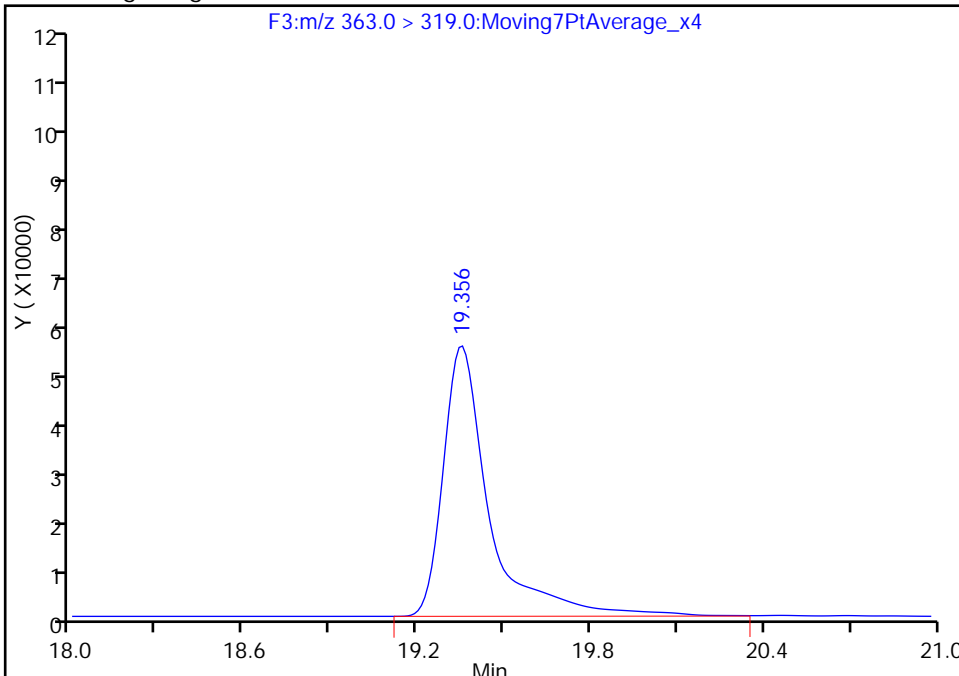
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Injection Date: 22-Dec-2016 15:54:46 Instrument ID: A6  
Lims ID: CCV L3  
Client ID:  
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 34  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

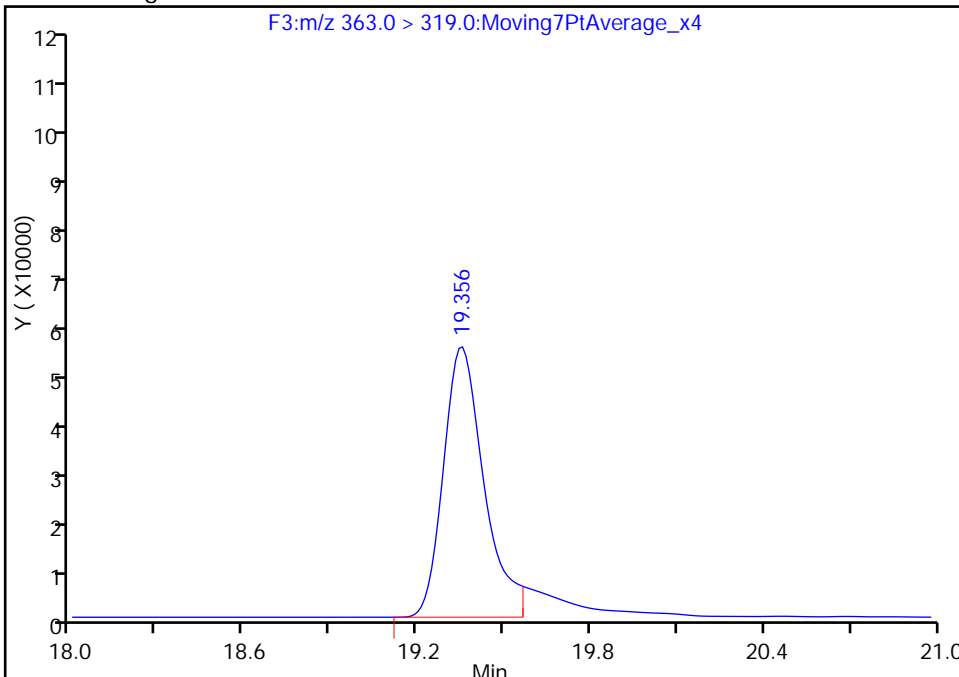
RT: 19.36  
Area: 586964  
Amount: 6.246507  
Amount Units: ng/ml

Processing Integration Results



RT: 19.36  
Area: 513370  
Amount: 5.463315  
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 22-Dec-2016 16:50:16

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

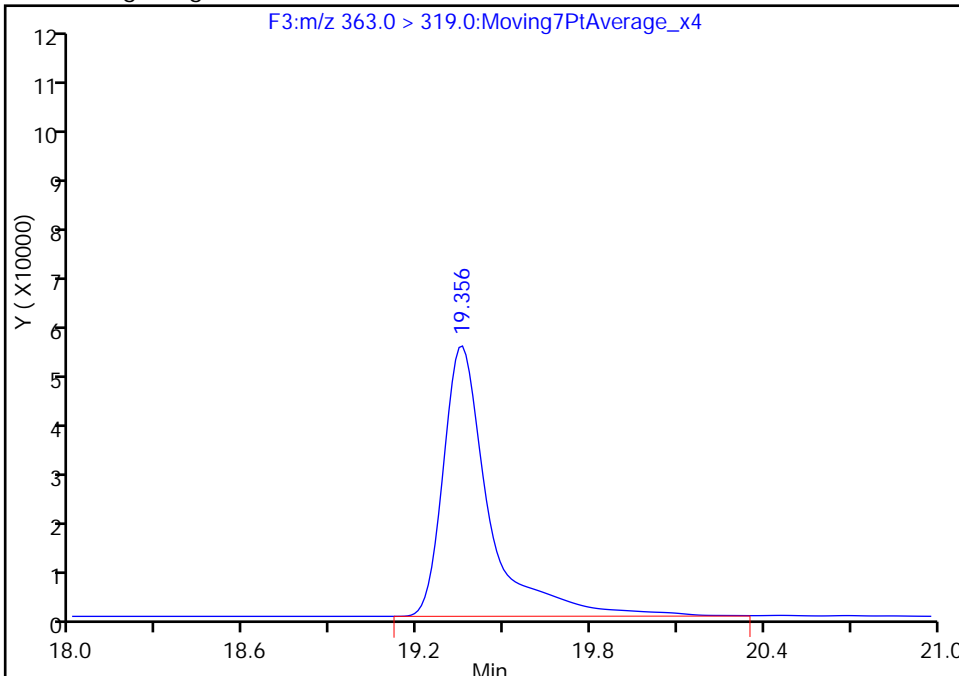
Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_159.d  
Injection Date: 22-Dec-2016 15:54:46 Instrument ID: A6  
Lims ID: CCV L3  
Client ID:  
Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 34  
Injection Vol: 10.0 ul Dil. Factor: 1.0000  
Method: 537\_\_A6 Limit Group: LC 537 ICAL  
Column: Acquity BEH C18 ( 2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

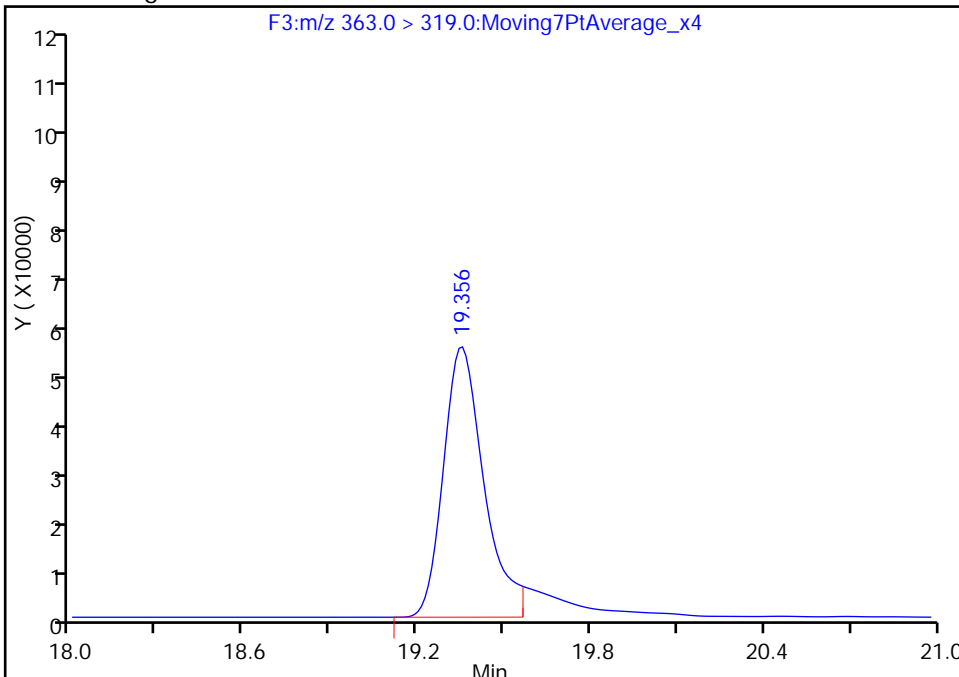
RT: 19.36  
Area: 586964  
Amount: 6.246507  
Amount Units: ng/ml

Processing Integration Results



RT: 19.36  
Area: 513370  
Amount: 5.463315  
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 22-Dec-2016 16:50:16  
Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-143415/37 Calibration Date: 12/22/2016 22:49  
 Instrument ID: A6 Calib Start Date: 12/05/2016 17:26  
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54  
 Lab File ID: 19DEC2016A6A\_173.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7598		146	135	8.3	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	1.040		52.5	45.4	15.8	30.0
Perfluoroheptanoic acid	Ave	1.215	1.276		16.0	15.3	5.0	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.121		32.8	30.4	7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.212		69.8	60.1	16.1	30.0
Perfluorononanoic acid	Ave	1.134	1.261		32.8	29.5	11.2	30.0
13C2 PFHxA	Ave	1.167	1.229		10.5	10.0	5.4	30.0
13C2 PFDA	Ave	0.8763	0.9725		11.1	10.0	11.0	30.0

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_173.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 22-Dec-2016 22:49:07 ALS Bottle#: 5 Worklist Smp#: 37  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5 CCV L5  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Sublist: chrom-537\_\_A6\*sub3  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 23-Dec-2016 08:23:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.582	0.0	1.000	5390004	145.8	1003
\$ 2 13C2 PFHxA	315.0 > 270.0	18.557	18.557	0.0	1.000	844227	10.5	27511
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.320	19.320	0.0	1.000	2486051	52.5	56113
4 Perfluoroheptanoic acid	363.0 > 319.0	19.356	19.356	0.0	1.000	1338545	16.0	745
* 5 13C2-PFOA	415.0 > 370.0	20.011	20.011	0.0		686789	10.0	17490
6 Perfluorooctanoic acid	413.0 > 369.0	20.011	20.011	0.0	1.000	2340930	32.8	927
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.619	0.0		1511069	28.7	22116
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	3836733	69.8	16783
9 Perfluorononanoic acid	463.0 > 419.0	20.691	20.691	0.0	1.000	2552729	32.8	15629
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.418	0.0	1.000	667917	11.1	20786

Reagents:

LC537-L5\_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_173.d

Injection Date: 22-Dec-2016 22:49:07

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 37

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

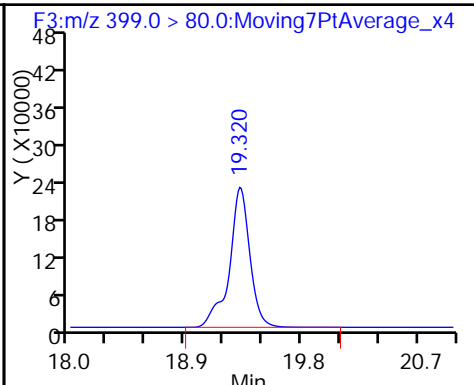
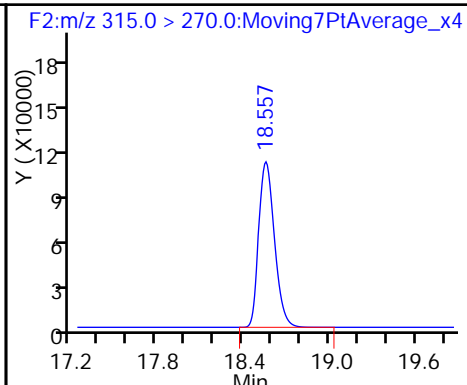
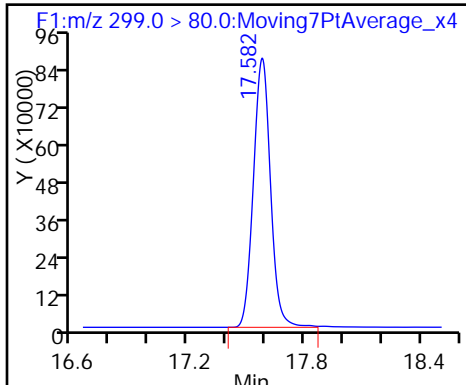
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

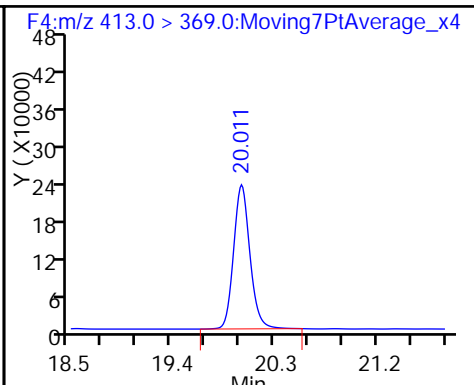
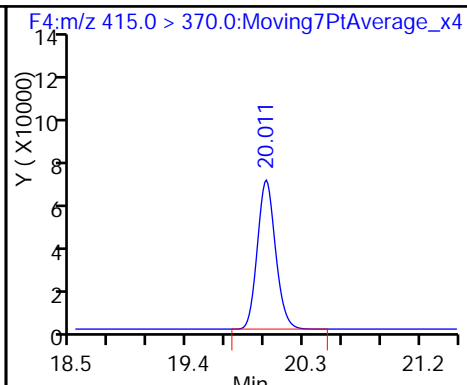
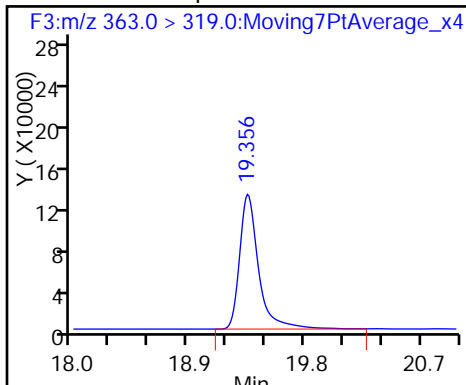
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

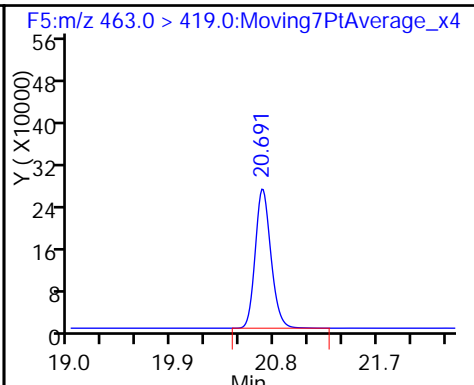
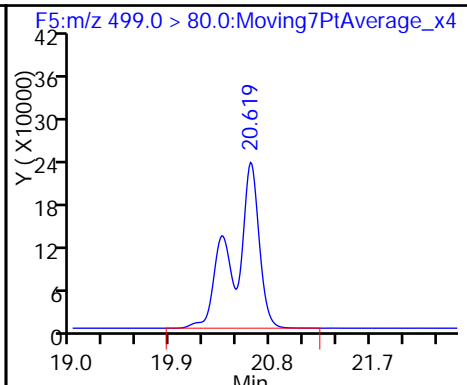
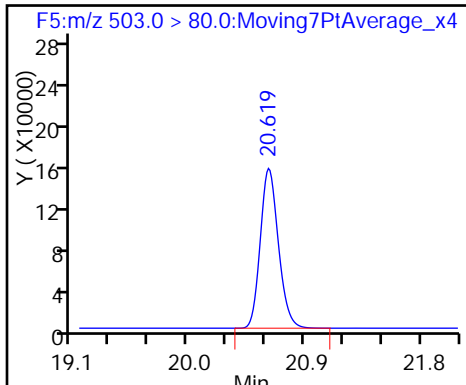
6 Perfluorooctanoic acid



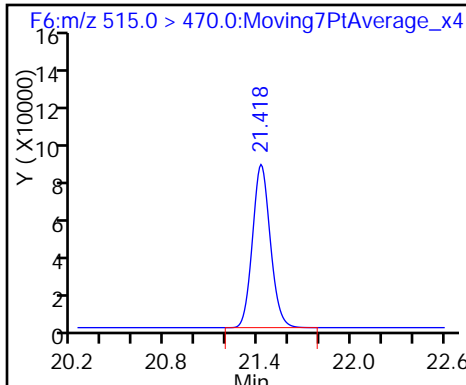
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-142683/1-A  
 Matrix: Water Lab File ID: 19DEC2016A6A\_149.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/22/2016 10:51  
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		70-130
STL00996	13C2 PFDA	104		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_149.d  
 Lims ID: MB 320-142683/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 22-Dec-2016 10:51:49 ALS Bottle#: 4 Worklist Smp#: 24  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-142683/1-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 13:16:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.567	0.0	1.000	838511	10.3	27307
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		695779	10.0	17609
6 Perfluorooctanoic acid	413.0 > 369.0	20.236	19.999	0.237	1.000	20557	0.2840	8.8
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.608	0.011		2117564	28.7	21958
\$ 10 13C2 PFDA	515.0 > 470.0	21.418	21.409	0.009	1.000	632698	10.4	20038

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_149.d

Injection Date: 22-Dec-2016 10:51:49

Instrument ID: A6

Lims ID: MB 320-142683/1-A

Client ID:

Operator ID: CBW

ALS Bottle#: 4

Worklist Smp#: 24

Injection Vol: 10.0 ul

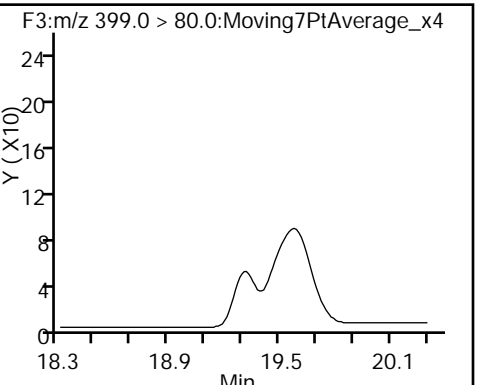
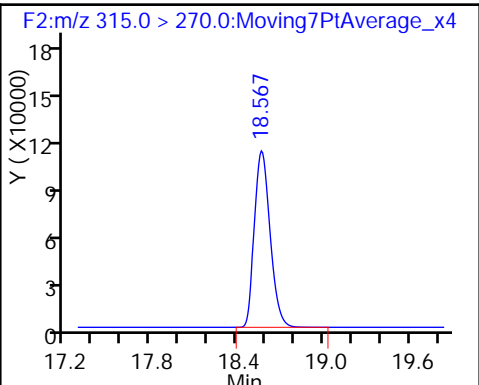
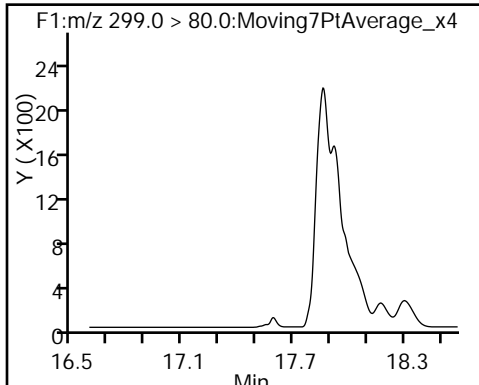
Dil. Factor: 1.0000

Method: 537\_A6

Limit Group: LC 537 ICAL

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

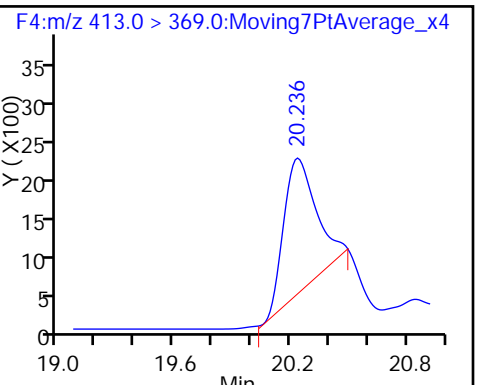
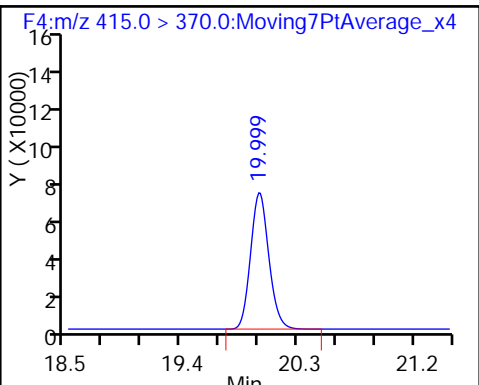
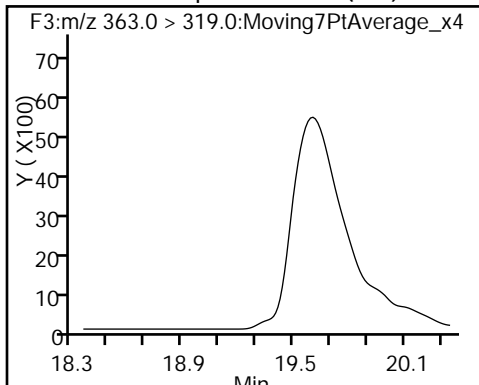
3 Perfluorohexanesulfonic acid (ND)



4 Perfluoroheptanoic acid (ND)

\* 5 13C2-PFOA

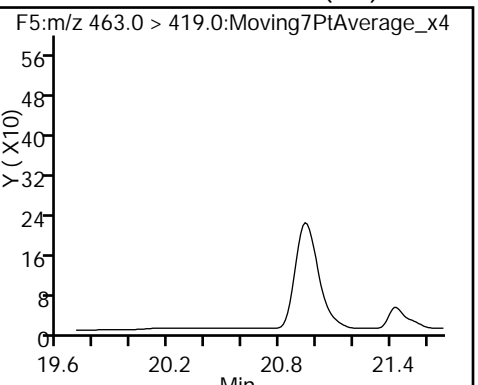
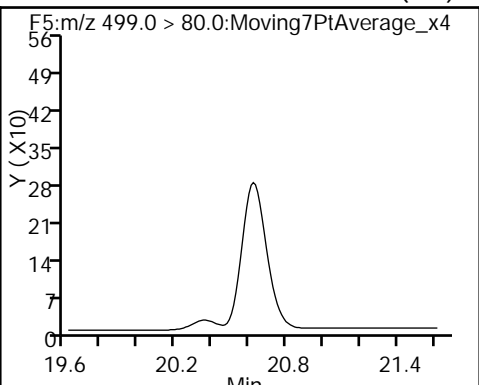
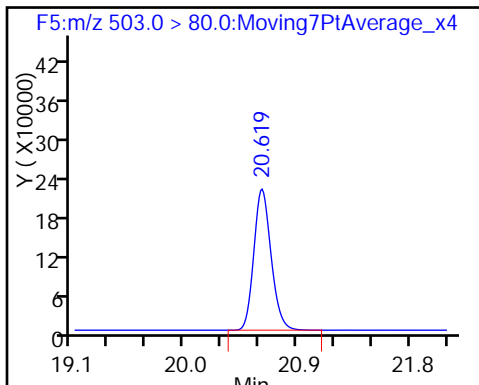
6 Perfluorooctanoic acid



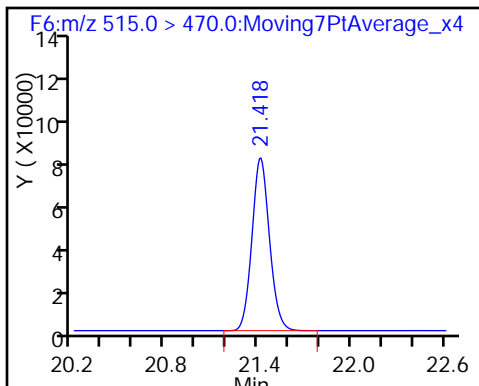
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_149.d  
 Lims ID: MB 320-142683/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 22-Dec-2016 10:51:49 ALS Bottle#: 4 Worklist Smp#: 24  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-142683/1-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35°C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

First Level Reviewer: westendorfc Date: 22-Dec-2016 13:16:00

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.3	103.31
\$ 10 13C2 PFDA	10.0	10.4	103.77

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCS 320-142683/2-A  
 Matrix: Water Lab File ID: 19DEC2016A6A\_150.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/22/2016 11:21  
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.149		0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0740		0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.340		0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	111		70-130
STL00996	13C2 PFDA	113		70-130

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_150.d  
 Lims ID: LCS 320-142683/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 22-Dec-2016 11:21:24 ALS Bottle#: 5 Worklist Smp#: 25  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-142683/2-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.592	17.589	0.003	1.000	3709912	85.0	625
\$ 2 13C2 PFHxA	315.0 > 270.0	18.576	18.567	0.009	1.000	828770	11.1	26800
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.320	19.308	0.012	1.000	1596105	28.6	36096
4 Perfluoroheptanoic acid	363.0 > 319.0	19.356	19.356	0.0	1.000	861383	11.1	1067
* 5 13C2-PFOA	415.0 > 370.0	20.011	19.999	0.012		637524	10.0	2213
6 Perfluorooctanoic acid	413.0 > 369.0	20.011	19.999	0.012	1.000	1227656	18.5	715
* 8 13C4 PFOS	503.0 > 80.0	20.619	20.608	0.011		1783962	28.7	45586
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.619	20.619	0.0	1.000	2425614	37.4	30963
9 Perfluorononanoic acid	463.0 > 419.0	20.690	20.690	0.0	1.000	1424844	19.7	14998
\$ 10 13C2 PFDA	515.0 > 470.0	21.409	21.409	0.0	1.000	629545	11.3	19810

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_150.d

Injection Date: 22-Dec-2016 11:21:24

Instrument ID: A6

Lims ID: LCS 320-142683/2-A

Client ID:

Operator ID: CBW

ALS Bottle#: 5

Worklist Smp#: 25

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

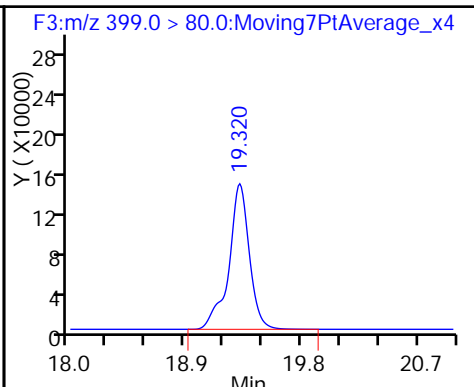
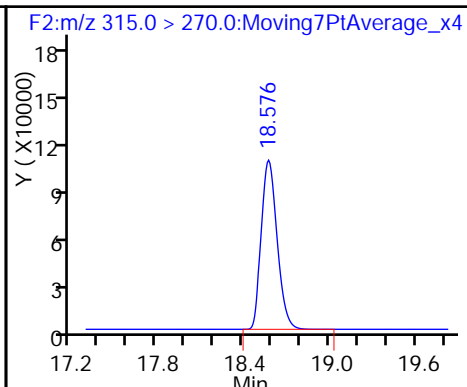
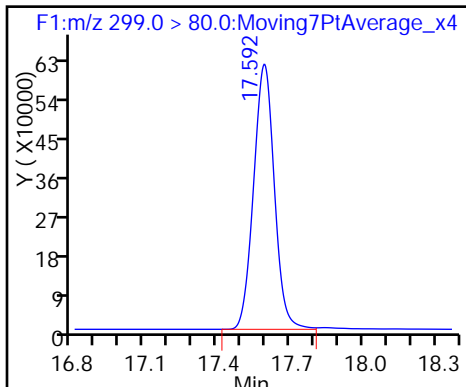
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

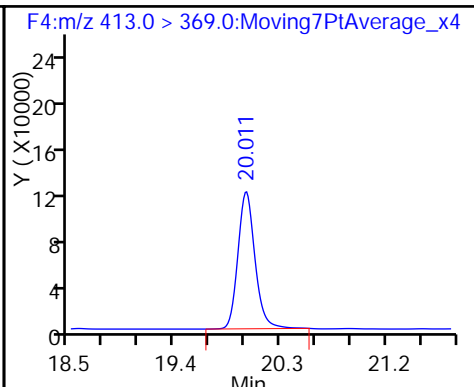
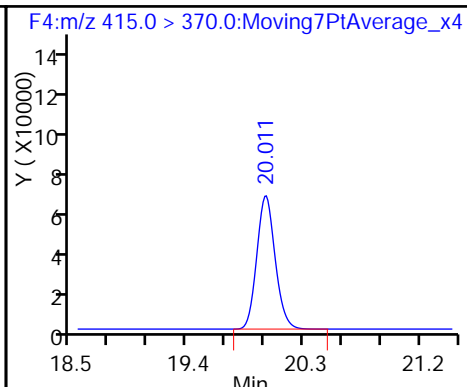
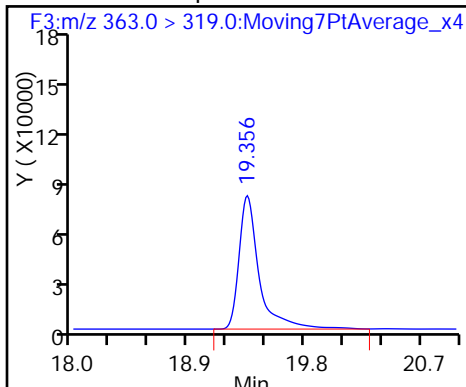
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

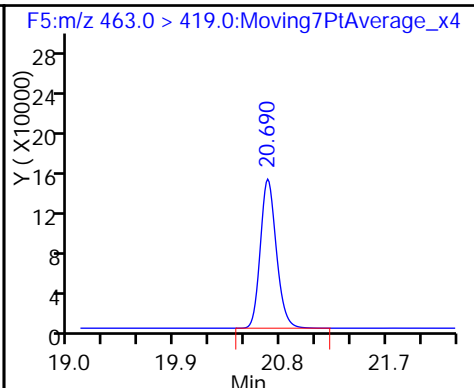
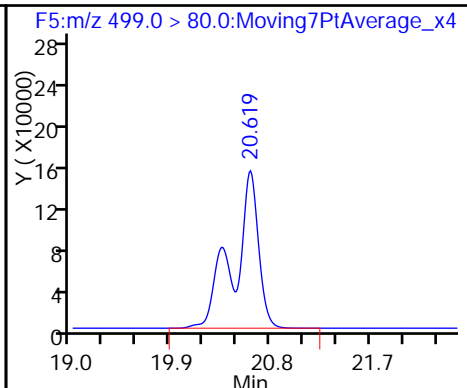
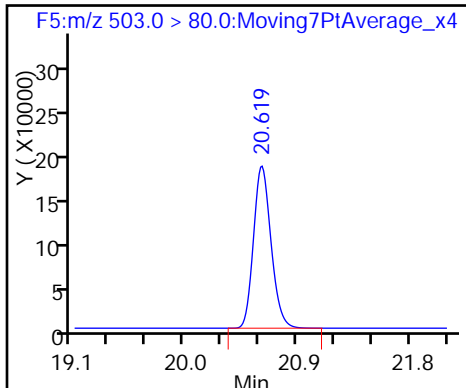
6 Perfluorooctanoic acid



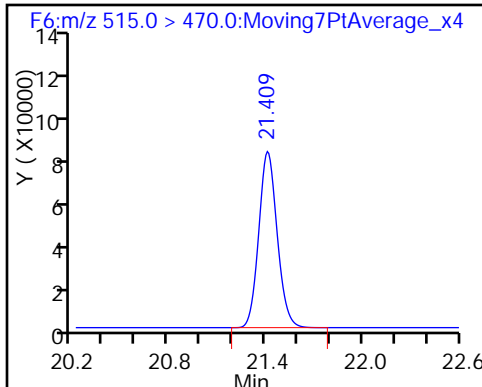
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_150.d  
 Lims ID: LCS 320-142683/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 22-Dec-2016 11:21:24 ALS Bottle#: 5 Worklist Smp#: 25  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-142683/2-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.1	111.44
\$ 10 13C2 PFDA	10.0	11.3	112.69

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCSD 320-142683/3-A  
 Matrix: Water Lab File ID: 19DEC2016A6A\_151.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 250 (mL) Date Analyzed: 12/22/2016 11:51  
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.158		0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0751		0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.352		0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	114		70-130
STL00996	13C2 PFDA	114		70-130



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_151.d  
 Lims ID: LCSD 320-142683/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 22-Dec-2016 11:51:01 ALS Bottle#: 6 Worklist Smp#: 26  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: lcsd 320-142683/3-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.582	17.589	-0.007	1.000	3587874	88.1	583
\$ 2 13C2 PFHxA	315.0 > 270.0	18.558	18.567	-0.009	1.000	824912	11.4	26660
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.308	19.308	0.0	1.000	1580930	30.3	36487
4 Perfluoroheptanoic acid	363.0 > 319.0	19.344	19.356	-0.012	1.000	818112	10.9	698
* 5 13C2-PFOA	415.0 > 370.0	19.999	19.999	0.0		618882	10.0	15661
6 Perfluorooctanoic acid	413.0 > 369.0	19.999	19.999	0.0	1.000	1208477	18.8	659
* 8 13C4 PFOS	503.0 > 80.0	20.608	20.608	0.0		1665020	28.7	42852
7 Perfluorooctane sulfonic acid	499.0 > 80.0	20.608	20.619	-0.011	1.000	2392877	39.5	38037
9 Perfluorononanoic acid	463.0 > 419.0	20.690	20.690	0.0	1.000	1424407	20.3	13513
\$ 10 13C2 PFDA	515.0 > 470.0	21.409	21.409	0.0	1.000	620648	11.4	19788

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_151.d

Injection Date: 22-Dec-2016 11:51:01 Instrument ID: A6

Lims ID: LCSD 320-142683/3-A

Client ID:

Operator ID: CBW

ALS Bottle#: 6

Worklist Smp#: 26

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

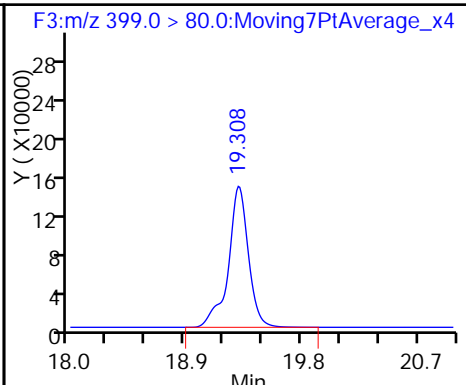
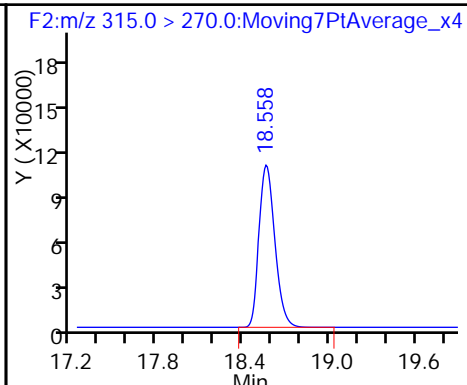
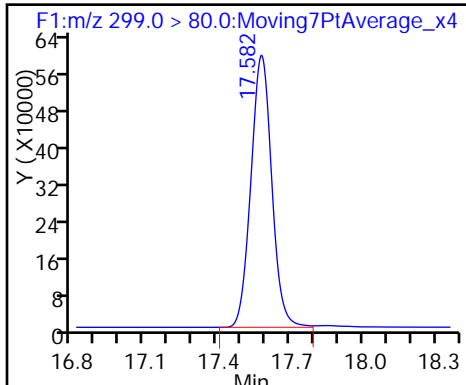
Method: 537\_A6

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

\$ 2 13C2 PFHxA

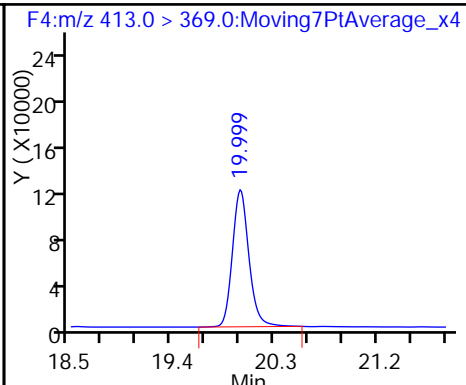
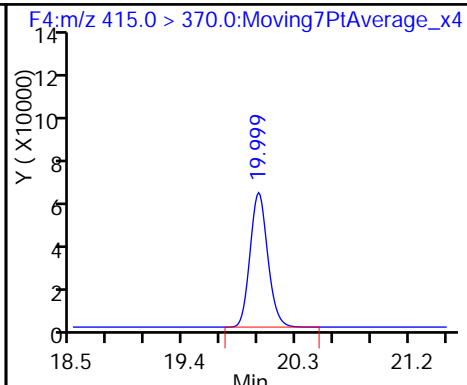
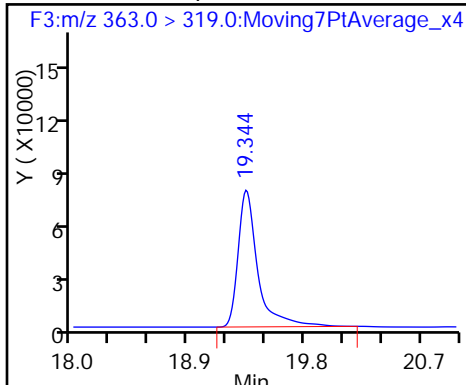
3 Perfluorohexanesulfonic acid



4 Perfluoroheptanoic acid

\* 5 13C2-PFOA

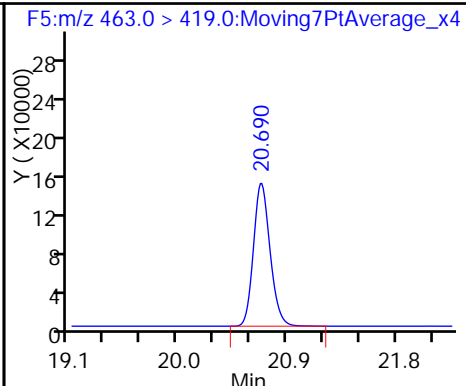
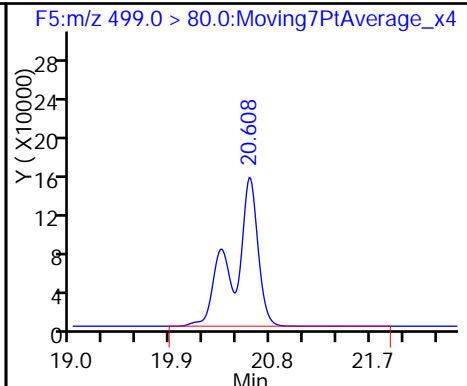
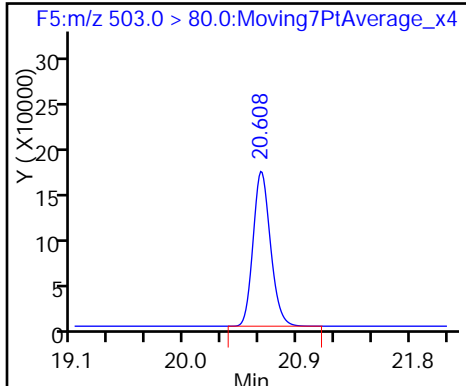
6 Perfluorooctanoic acid



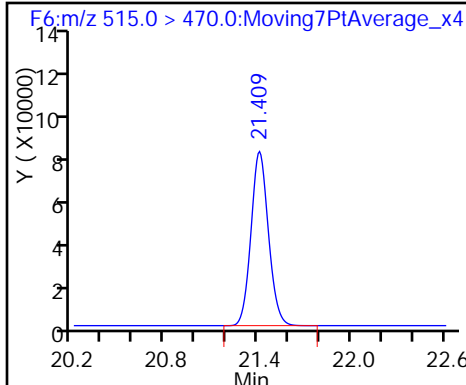
\* 8 13C4 PFOS

7 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\19DEC2016A6A\_151.d  
 Lims ID: LCSD 320-142683/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 22-Dec-2016 11:51:01 ALS Bottle#: 6 Worklist Smp#: 26  
 Injection Vol: 10.0 ul Dil. Factor: 1.0000  
 Sample Info: lcsd 320-142683/3-a  
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35\*C  
 Operator ID: CBW Instrument ID: A6  
 Method: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b\537\_\_A6.m  
 Limit Group: LC 537 ICAL  
 Last Update: 23-Dec-2016 08:23:57 Calib Date: 05-Dec-2016 19:54:00  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A\_009.d  
 Column 1 : Acquity BEH C18 ( 2.10 mm) Det: F1:MRM  
 Process Host: XAWRK034

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.4	114.26
\$ 10 13C2 PFDA	10.0	11.4	114.44

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Start Date: 12/05/2016 17:26

Analysis Batch Number: 140688 End Date: 12/06/2016 02:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-140688/2 IC		12/05/2016 17:26	1	05DEC2016A6A_00 4.d	Acquity 2.1 (mm)
STD 320-140688/3 IC		12/05/2016 17:55	1	05DEC2016A6A_00 5.d	Acquity 2.1 (mm)
STD 320-140688/4 IC		12/05/2016 18:25	1	05DEC2016A6A_00 6.d	Acquity 2.1 (mm)
STD 320-140688/5 ICISAV		12/05/2016 18:54	1	05DEC2016A6A_00 7.d	Acquity 2.1 (mm)
STD 320-140688/6 IC		12/05/2016 19:24	1	05DEC2016A6A_00 8.d	Acquity 2.1 (mm)
STD 320-140688/7 IC		12/05/2016 19:54	1	05DEC2016A6A_00 9.d	Acquity 2.1 (mm)
ZZZZZ		12/05/2016 20:23	1		Acquity 2.1 (mm)
CCV 320-140688/9 CCVL		12/05/2016 20:53	1	05DEC2016A6A_01 1.d	Acquity 2.1 (mm)
ZZZZZ		12/05/2016 21:22	1		Acquity 2.1 (mm)
ICV 320-140688/11		12/05/2016 21:52	1	05DEC2016A6A_01 3.d	Acquity 2.1 (mm)
ZZZZZ		12/05/2016 22:22	1		Acquity 2.1 (mm)
ZZZZZ		12/05/2016 22:51	1		Acquity 2.1 (mm)
ZZZZZ		12/05/2016 23:21	1		Acquity 2.1 (mm)
ZZZZZ		12/05/2016 23:50	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 00:20	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 00:49	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 01:19	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 01:49	1		Acquity 2.1 (mm)
ZZZZZ		12/06/2016 02:18	1		Acquity 2.1 (mm)
CCV 320-140688/21 CCVIS		12/06/2016 02:48	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Start Date: 12/19/2016 09:45

Analysis Batch Number: 142884 End Date: 12/19/2016 11:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-142884/3 CCVL		12/19/2016 09:45	1	19DEC2016A6A_00 3.d	Acquity 2.1(mm)
CCV 320-142884/4 CCVIS		12/19/2016 10:15	1		Acquity 2.1(mm)
ZZZZZ		12/19/2016 10:44	1		Acquity 2.1(mm)
CCV 320-142884/7 CCVIS		12/19/2016 11:51	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Start Date: 12/22/2016 09:52

Analysis Batch Number: 143413 End Date: 12/22/2016 15:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-143413/22 CCVIS		12/22/2016 09:52	1	19DEC2016A6A_14 7.d	Acquity 2.1(mm)
ZZZZZ		12/22/2016 10:22	1		Acquity 2.1(mm)
MB 320-142683/1-A		12/22/2016 10:51	1	19DEC2016A6A_14 9.d	Acquity 2.1(mm)
LCS 320-142683/2-A		12/22/2016 11:21	1	19DEC2016A6A_15 0.d	Acquity 2.1(mm)
LCSD 320-142683/3-A		12/22/2016 11:51	1	19DEC2016A6A_15 1.d	Acquity 2.1(mm)
ZZZZZ		12/22/2016 12:20	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 12:50	1		Acquity 2.1(mm)
320-24442-1		12/22/2016 13:19	1	19DEC2016A6A_15 4.d	Acquity 2.1(mm)
320-24442-2		12/22/2016 13:49	1	19DEC2016A6A_15 5.d	Acquity 2.1(mm)
320-24442-3		12/22/2016 14:19	1	19DEC2016A6A_15 6.d	Acquity 2.1(mm)
CCV 320-143413/34 CCVIS		12/22/2016 15:54	1	19DEC2016A6A_15 9.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Instrument ID: A6 Start Date: 12/22/2016 15:54

Analysis Batch Number: 143415 End Date: 12/22/2016 22:49

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-143415/34 CCVIS		12/22/2016 15:54	1	19DEC2016A6A_15 9.d	Acquity 2.1(mm)
ZZZZZ		12/22/2016 16:24	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 16:53	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 17:23	1		Acquity 2.1(mm)
320-24442-4		12/22/2016 17:53	1	19DEC2016A6A_16 3.d	Acquity 2.1(mm)
320-24442-5		12/22/2016 18:22	1	19DEC2016A6A_16 4.d	Acquity 2.1(mm)
320-24442-6		12/22/2016 18:52	1	19DEC2016A6A_16 5.d	Acquity 2.1(mm)
ZZZZZ		12/22/2016 19:21	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 19:51	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 20:21	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 20:50	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 21:20	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 21:49	1		Acquity 2.1(mm)
ZZZZZ		12/22/2016 22:19	1		Acquity 2.1(mm)
CCV 320-143415/37 CCVIS		12/22/2016 22:49	1	19DEC2016A6A_17 3.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1

SDG No.: \_\_\_\_\_

Batch Number: 142683 Batch Start Date: 12/17/16 13:06 Batch Analyst: Marchenko, Veronika P

Batch Method: 537 Batch End Date: 12/19/16 13:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00027
MB 320-142683/1		537, 537				250 mL	1.0 mL	7 SU	20 uL
LCS 320-142683/2		537, 537				250 mL	1.0 mL	7 SU	20 uL
LCSD 320-142683/3		537, 537				250 mL	1.0 mL	7 SU	20 uL
320-24442-A-1	WI-CV-1RW35-1216	537, 537	T	282.34 g	27.45 g	254.9 mL	1.0 mL	7 SU	20 uL
320-24442-A-2	WI-CV-1FB35-1216	537, 537	T	287.67 g	26.89 g	260.8 mL	1.0 mL	7 SU	20 uL
320-24442-A-3	WI-CV-1RW36-1216	537, 537	T	277.16 g	27.95 g	249.2 mL	1.0 mL	7 SU	20 uL
320-24442-A-4	WI-CV-1FB36-1216	537, 537	T	305.50 g	26.65 g	278.9 mL	1.0 mL	7 SU	20 uL
320-24442-A-5	WI-CV-1RW37-1216	537, 537	T	282.69 g	26.96 g	255.7 mL	1.0 mL	7 SU	20 uL
320-24442-A-6	WI-CV-1FB37-1216	537, 537	T	285.68 g	26.25 g	259.4 mL	1.0 mL	7 SU	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	IC537-MSP 00014	IC537-SU 00026	AnalysisComment			
MB 320-142683/1		537, 537			50 uL	Chlorine ND			
LCS 320-142683/2		537, 537		50 uL	50 uL	Chlorine ND			
LCSD 320-142683/3		537, 537		50 uL	50 uL	Chlorine ND			
320-24442-A-1	WI-CV-1RW35-1216	537, 537	T		50 uL	Chlorine ND			
320-24442-A-2	WI-CV-1FB35-1216	537, 537	T		50 uL	Chlorine ND			
320-24442-A-3	WI-CV-1RW36-1216	537, 537	T		50 uL	Chlorine ND			
320-24442-A-4	WI-CV-1FB36-1216	537, 537	T		50 uL	Chlorine ND			
320-24442-A-5	WI-CV-1RW37-1216	537, 537	T		50 uL	Chlorine ND			
320-24442-A-6	WI-CV-1FB37-1216	537, 537	T		50 uL	Chlorine 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.: 320-24442-1

SDG No.: \_\_\_\_\_

Batch Number: 142683 Batch Start Date: 12/17/16 13:06

Batch Analyst: Marchenko, Veronika P

Batch Method: 537 Batch End Date: 12/19/16 13:25

Batch Notes	
Manifold ID	5
Methanol ID	807188
Pipette ID	MD05306
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	CCB
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	ERW
Analyst ID - TA Reagent Drop	VPM
Analyst ID - TA Reagent Drop Witness	ERW
SPE Cartridge ID	6341059-01
Trizma ID	SLBR4303V
Reagent Water ID	12/15/16

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.

Job No: 24441, 24442 Instrument ID & Date: A6 12/22/16 ICAL Batch: 140688  
 Extraction Batch: 142683 Worklist #: 3811 TALS Batch: 143413, 143415

Review Items	-- Level 1 --			Level 2
	Yes	No	N/A	
<b>Initial Calibration</b>				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
<b>Continuing Calibration</b>				
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.	✓			✓
<b>Client Samples &amp; QC Sample Results</b>				
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? <u>0</u> Dilutions due to non-targets? <u>0</u>	✓			✓
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?	✓			✓

1<sup>st</sup> Level Reviewer / Date: Coy [Signature] 12/23/16 2<sup>nd</sup> Level Reviewer / Date: Murray 12/23/2016

NCM # and Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Instrument ID & Date: <sup>AL6</sup> 12-5-16 Worklist#: 37524

ICAL Batch: 140688, 140689 Calibration ID number: 26888, 26889

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

1<sup>st</sup> Level Reviewer / Date: JRB 12-6-16

2<sup>nd</sup> Level Reviewer / Date: R. [Signature] 12/7/16

NCM # and Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 21DEC2016A\_A6 537      Worklist Number: 38111  
 Instrument Name: A6      Chrom Method: 537\_A6  
 Data Directory: \\ChromNA\Sacramento\ChromData\A6\20161221-38111.b  
 QC Batching: Enabled      Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 143409	LC 537 CS ICAL Raw Batch: 143410
# 1 CCV L5	# 1 CCV L5	
# 2 RB	# 2 RB	
# 3 320-24313-A-1-A	# 3 320-24313-A-1-A	
# 4 320-24313-A-2-A	# 4 320-24313-A-2-A	
# 5 320-24313-A-3-A	# 5 320-24313-A-3-A	
# 6 320-24313-A-4-A	# 6 320-24313-A-4-A	
# 7 320-24313-A-5-A	# 7 320-24313-A-5-A	
# 8 MB 320-137363/1-A	# 8 MB 320-137363/1-A	
# 9 320-20510-A-7-B	# 9 320-20510-A-7-B	
#10 320-20510-A-8-B	#10 320-20510-A-8-B	
#11 CCV L3	#11 CCV L3	#11 CCV L3

QC Batch: 2	LC 537 ICAL Raw Batch: 143411	LC 537 CS ICAL Raw Batch: 143412
#11 CCV L3	#11 CCV L3	#11 CCV L3
#12 RB		#12 RB
#13 320-24143-A-1-A		#13 320-24143-A-1-A
#14 320-24143-A-2-A		#14 320-24143-A-2-A
#15 320-24143-A-3-A		#15 320-24143-A-3-A
#16 320-24156-A-4-A		#16 320-24156-A-4-A
#17 320-24156-A-5-A		#17 320-24156-A-5-A
#18 320-24156-A-6-A		#18 320-24156-A-6-A
#19 320-24156-A-7-A		#19 320-24156-A-7-A
#20 320-24156-A-8-A		#20 320-24156-A-8-A
#21 320-24156-A-9-A		#21 320-24156-A-9-A
#22 CCV L5	#22 CCV L5	#22 CCV L5

QC Batch: 3	LC 537 ICAL Raw Batch: 143413	LC 537 CS ICAL Raw Batch: 143414
#22 CCV L5	#22 CCV L5	#22 CCV L5
#23 RB	#23 RB	
#24 MB 320-142683/1-A	#24 MB 320-142683/1-A	
#25 LCS 320-142683/2-A	#25 LCS 320-142683/2-A	
#26 LCSD 320-142683/3-A	#26 LCSD 320-142683/3-A	
#27 320-24441-A-1-A	#27 320-24441-A-1-A	
#28 320-24441-A-2-A	#28 320-24441-A-2-A	
#29 320-24442-A-1-A	#29 320-24442-A-1-A	
#30 320-24442-A-2-A	#30 320-24442-A-2-A	
#31 320-24442-A-3-A	#31 320-24442-A-3-A	
#41 320-24156-A-2-B DU		#41 320-24156-A-2-B DU
#40 320-24156-A-14-A		#40 320-24156-A-14-A
#34 CCV L3	#34 CCV L3	#34 CCV L3

QC Batch: 4	LC 537 ICAL Raw Batch: 143415	LC 537 CS ICAL Raw Batch: 143611
#34 CCV L3	#34 CCV L3	#34 CCV L3
#35 RB	#35 RB	
#42 537 MSP QC	#42 537 MSP QC	
#43 537 HSP QC	#43 537 HSP QC	
#32 320-24442-A-4-A	#32 320-24442-A-4-A	

QC Batch: 4	LC 537 ICAL Raw Batch: 143415	LC 537 CS ICAL Raw Batch: 143611
#33 320-24442-A-5-A	#33 320-24442-A-5-A	
#36 320-24442-A-6-A	#36 320-24442-A-6-A	
#44 MB 320-142406/1-A	#44 MB 320-142406/1-A	
#45 LLCS 320-142406/2-A	#45 LLCS 320-142406/2-A	
#46 LLCSD 320-142406/3-A	#46 LLCSD 320-142406/3-A	
#47 320-24371-A-1-A	#47 320-24371-A-1-A	
#48 320-24371-A-2-A	#48 320-24371-A-2-A	
#49 320-24371-A-3-A	#49 320-24371-A-3-A	
#50 320-24371-A-4-A	#50 320-24371-A-4-A	
#37 CCV L5	#37 CCV L5	

QC Batch: 5	LC 537 ICAL Raw Batch: 143649
#37 CCV L5	#37 CCV L5
#38 RB	#38 RB
#51 320-24371-A-5-A	#51 320-24371-A-5-A
#52 320-24371-A-6-A	#52 320-24371-A-6-A
#53 320-24371-A-7-A	#53 320-24371-A-7-A
#54 320-24371-A-8-A	#54 320-24371-A-8-A
#55 320-24371-A-9-A	#55 320-24371-A-9-A
#56 320-24371-A-10-A	#56 320-24371-A-10-A
#57 320-24371-A-11-A	#57 320-24371-A-11-A
#58 320-24371-A-12-A	#58 320-24371-A-12-A
#59 320-24371-A-13-A	#59 320-24371-A-13-A
#78 CCV L5	#78 CCV L5

QC Batch: 6	LC 537 ICAL Raw Batch: 143650	LC 537 CS ICAL Raw Batch: 143651
#78 CCV L5	#78 CCV L5	
#79 RB	#79 RB	
#60 MB 320-142564/1-A	#60 MB 320-142564/1-A	
#61 LCS 320-142564/2-A	#61 LCS 320-142564/2-A	
#62 LCSD 320-142564/3-A	#62 LCSD 320-142564/3-A	
#63 320-24375-A-1-A	#63 320-24375-A-1-A	
#64 320-24375-A-2-A	#64 320-24375-A-2-A	
#65 320-24375-A-3-A	#65 320-24375-A-3-A	
#66 320-24375-A-4-A	#66 320-24375-A-4-A	
#67 320-24375-A-5-A	#67 320-24375-A-5-A	
#68 320-24375-A-6-A	#68 320-24375-A-6-A	
#69 320-24375-A-7-A	#69 320-24375-A-7-A	
#80 CCV L3	#80 CCV L3	#80 CCV L3

QC Batch: 7	LC 537 ICAL Raw Batch: 143652	LC 537 CS ICAL Raw Batch: 143653
#80 CCV L3	#80 CCV L3	#80 CCV L3
#81 RB	#81 RB	
#70 320-24375-A-8-A	#70 320-24375-A-8-A	
#71 320-24375-A-9-A	#71 320-24375-A-9-A	
#72 320-24375-A-10-A	#72 320-24375-A-10-A	
#73 320-24375-A-11-A	#73 320-24375-A-11-A	
#74 320-24375-A-12-A	#74 320-24375-A-12-A	
#75 320-24375-A-13-A	#75 320-24375-A-13-A	
#76 320-24375-B-14-A	#76 320-24375-B-14-A	
#77 320-24375-A-15-A	#77 320-24375-A-15-A	
#82 CCV L5	#82 CCV L5	

MB  
Rush

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142683

Method Code: 320-537\_Prep-320

Analyst: Marchenko, Veronika P

Batch Open: 12/17/2016 1:06:00PM

Batch End: 12/19/2016 1:25:00PM

Screened Au 12/20/16, No DL Needed

Done 12/27

## Extraction of Perfluorinated Alkyl Acids

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmt FinAmt	Rcvd	PHs		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
					Adj1	Adj2					
1 MB-320-142683/1 N/A	N/A		250 mL 1.0 mL	7			N/A	N/A	N/A	Chlorine ND	MB-320-142683/1-A
2 LCS-320-142683/2 N/A	N/A		250 mL 1.0 mL	7			N/A	N/A	N/A	Chlorine ND	LCS-320-142683/2-A
3 LCS-320-142683/3 N/A	N/A		250 mL 1.0 mL	7			N/A	N/A	N/A	Chlorine ND	LCS-320-142683/3-A
4 320-24441-A-1 (537_DOD5)	N/A (320-24441-1)	292.14 g 26.16 g	266 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24441-A-1-A
5 320-24441-A-2 (537_DOD5)	N/A (320-24441-1)	278.10 g 26.81 g	251.3 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24441-A-2-A
6 320-24442-A-1 (537_DOD5)	N/A (320-24442-1)	282.34 g 27.45 g	254.9 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24442-A-1-A
7 320-24442-A-2 (537_DOD5)	N/A (320-24442-1)	287.67 g 26.89 g	260.8 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24442-A-2-A
8 320-24442-A-3 (537_DOD5)	N/A (320-24442-1)	277.16 g 27.95 g	249.2 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24442-A-3-A
9 320-24442-A-4 (537_DOD5)	N/A (320-24442-1)	305.50 g 26.65 g	278.9 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24442-A-4-A
10 320-24442-A-5 (537_DOD5)	N/A (320-24442-1)	282.69 g 26.96 g	255.7 mL 1.0 mL	7			12/21/16	8_Day_Rush	4	Chlorine ND	320-24442-A-5-A

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142683

Analyst: Marchenko, Veronika P

Batch Open: 12/17/2016 1:06:00PM

Method Code: 320-537\_Prep-320

Batch End: 12/19/2016 1:25:00PM

320-24442-A-6 (537_DOD5)	N/A (320-24442-1)	285.68 g	259.4 mL	7	12/21/16	8_Day_Rush	4	Chlorine ND
		26.25 g	1.0 mL					

11



Batch Notes
Manifold ID 5
Trizma ID SLBR4303V
SPE Cartridge ID 6341059-01
Methanol ID 807188
Reagent Water ID 12/15/16
Pipette ID MD05306
Analyst ID - TA Reagent Drop VPM
Analyst ID - TA Reagent Drop ERW
Analyst ID - SU Reagent Drop VPM
Analyst ID - SU Reagent Drop ERW
Analyst ID - IS Reagent Drop VPM
Analyst ID - IS Reagent Drop CCB
Batch Comment

Comments

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142683

Analyst: Marchenko, Veronika P

Batch Open: 12/17/2016 1:06:00PM

Method Code: 320-537\_Prep-320

Batch End:

## Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142683/1	LC537-SU_00026	50 uL	1.0 mL	VPM 12/17/16	ERW 12/17/16
LCS 320-142683/2	LC537-MSP_00014	50 uL	1.0 mL		
LCS 320-142683/2	LC537-SU_00026	50 uL	1.0 mL		
LCSD 320-142683/3	LC537-MSP_00014	50 uL	1.0 mL		
LCSD 320-142683/3	LC537-SU_00026	50 uL	1.0 mL		
320-24441-A-1	LC537-SU_00026	50 uL	1.0 mL		
320-24441-A-2	LC537-SU_00026	50 uL	1.0 mL		
320-24442-A-1	LC537-SU_00026	50 uL	1.0 mL		
320-24442-A-2	LC537-SU_00026	50 uL	1.0 mL		
320-24442-A-3	LC537-SU_00026	50 uL	1.0 mL		
320-24442-A-4	LC537-SU_00026	50 uL	1.0 mL		
320-24442-A-5	LC537-SU_00026	50 uL	1.0 mL		
320-24442-A-6	LC537-SU_00026	50 uL	1.0 mL		



# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Marchenko, Veronika P

Batch Open: 12/17/2016 1:06:00PM

Batch End:

Batch Number: 320-142683

Method Code: 320-537\_Prep-320

Reagent	Other Reagents:	Amount/Units	Lot#:

Preparation Batch Number(s): 142683 Test: 537-0005 Push  
 Earliest Holding Time: 12/27/14

<b>Sample List Tab</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
Samples identified to the correct method		/	/
All necessary NCMs filed (including holding time)		/	/
Method/sample/login/QAS checked and correct		/	/
<b>Worksheet Tab</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> 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		/	/
<b>Reagents Tab</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
All necessary reagents not expired and entered into TALS		/	/
All spike amounts correct and added to necessary samples and QC		/	/
<b>Batch Information</b>		1 <sup>st</sup> Level Reviewer	2 <sup>nd</sup> Level Reviewer
Date and time accurate and entered into TALS correctly		/	/
All necessary 'batch information' complete and entered into TALS correctly		/	/

1<sup>st</sup> Level Reviewer: NSH  
 2<sup>nd</sup> Level Reviewer: JPM

Date: 12-19-16  
 Date: 12/19/16

Comments: \_\_\_\_\_

# Shipping and Receiving Documents

West Sacramento, CA 95605  
phone 916.373.5600 fax

TestAmerica Laboratories, Inc.  
COC No. 9 of 9 COCs

**Client Contact**  
Tiffany Hill  
Project Chemist

**Regulatory Program:**  DW  NPDES  RCRA  Other: \_\_\_\_\_  
Project Manager: **Katie Tippin**  
Tel/Fax: (757) 671-6258

**Site Contact: Eric Epple**  
Lab Contact: **Laura Turpen**

**Analysis Turnaround Time**  
 CALENDAR DAYS  WORKING DAYS  
TAT if different from Below 7 Day \_\_\_\_\_  
 2 weeks  
 1 week  
 2 days  
 1 day

Site: OLF Coupeville  
P O #: 100067106050 - 679580.09.FLFS

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)		USEPA Method 537 (FOA, PFOs, and PFBS)
						Perform MS / MSD (Y/N)	Lab Contact: Laura Turpen	
WI-CV-1RW35-1216	12/13/16	0910	G	DW	2	N	N	X
WI-CV-1FB35-1216	12/13/16	0911	G	DW	2	N	N	X
WI-CV-1RW36-1216	12/13/16	0924	G	DW	2	N	N	X
WI-CV-1FB36-1216	12/13/16	0925	G	DW	2	N	N	X
WI-CV-1RW37-1216	12/14/16	0914	G	DW	2	N	N	X
WI-CV-1FB37-1216	12/14/16	0915	G	DW	2	N	N	X



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

**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

Return to Client  Disposal by Lab  Archive for \_\_\_\_\_ Months

**Special Instructions/QC Requirements & Comments:**

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

Cooler Temp. (°C): Obs'd \_\_\_\_\_ Corrd: 1.5 Therm ID No.: \_\_\_\_\_

Received by: Eric Epple Date/Time: 12-15-16/1:00 Company: CH2M

Received by: [Signature] Date/Time: 12-16-16 10:05 Company: TA-SAC

Received in Laboratory by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

# Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-24442-1

**Login Number: 24442**  
**List Number: 1**  
**Creator: Nelson, Kym D**

**List Source: TestAmerica Sacramento**

<b>Question</b>	<b>Answer</b>	<b>Comment</b>
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	









**DATA VALIDATION SUMMARY REPORT  
WHIDBEY ISLAND, WASHINGTON**

Client: CH2M HILL, Inc., Corvallis, Oregon  
 SDG: 320-24442-1  
 Laboratory: Test America, Sacramento, California  
 Site: Whidbey Island, CTO-0008, Washington  
 Date: January 5, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WI-CV-1RW35-1216	320-24442-1	Water
2	WI-CV-1FB35-1216	320-24442-2	Water
3	WI-CV-1RW36-1216	320-24442-3	Water
4	WI-CV-1FB36-1216	320-24442-4	Water
5	WI-CV-1RW37-1216	320-24442-5	Water
6	WI-CV-1FB37-1216	320-24442-6	Water

A full data validation was performed on the analytical data for three water samples and three aqueous field blank samples collected on December 13-14, 2016 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  
PFCs

Method References  
USEPA Method 537 Rev 1.1 Modified

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 (DoD 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

- A MS/MSD sample was not collected.

### Laboratory Control Samples/Laboratory Control Sample Duplicates

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

### 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.

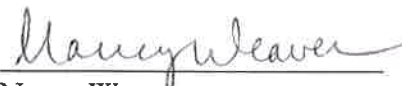
### Compound Quantitation

- All criteria were met.

### Field Duplicate Sample Precision

- Field duplicate samples were not collected.

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

Signed:   
Nancy Weaver  
Senior Chemist

Dated: 1/6/17

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.



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FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1RW35-1216 Lab Sample ID: 320-24442-1  
 Matrix: Water Lab File ID: 19DEC2016A6A\_154.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:10  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 254.9(mL) Date Analyzed: 12/22/2016 13:19  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.029	0.024	0.0092
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	92		70-130

2

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1FB35-1216 Lab Sample ID: 320-24442-2  
 Matrix: Water Lab File ID: 19DEC2016A6A\_155.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:11  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 260.8(mL) Date Analyzed: 12/22/2016 13:49  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0090
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	95		70-130

NW 1/5/17



3

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1RW36-1216 Lab Sample ID: 320-24442-3  
 Matrix: Water Lab File ID: 19DEC2016A6A\_156.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:24  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 249.2(mL) Date Analyzed: 12/22/2016 14:19  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143413 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		70-130
STL00996	13C2 PFDA	92		70-130

*MW 1/5/17*

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FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1FB36-1216 Lab Sample ID: 320-24442-4  
 Matrix: Water Lab File ID: 19DEC2016A6A\_163.d  
 Analysis Method: 537 Date Collected: 12/13/2016 09:25  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 278.9(mL) Date Analyzed: 12/22/2016 17:53  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143415 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0084
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	102		70-130

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FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1RW37-1216 Lab Sample ID: 320-24442-5  
 Matrix: Water Lab File ID: 19DEC2016A6A\_164.d  
 Analysis Method: 537 Date Collected: 12/14/2016 09:14  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 255.7(mL) Date Analyzed: 12/22/2016 18:22  
 Con. Extract Vol.: 1.0(mL) Dilution Factor: 1  
 Injection Volume: 10(uL) GC Column: Acquity ID: 2.1(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143415 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0092
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		70-130
STL00996	13C2 PFDA	115		70-130

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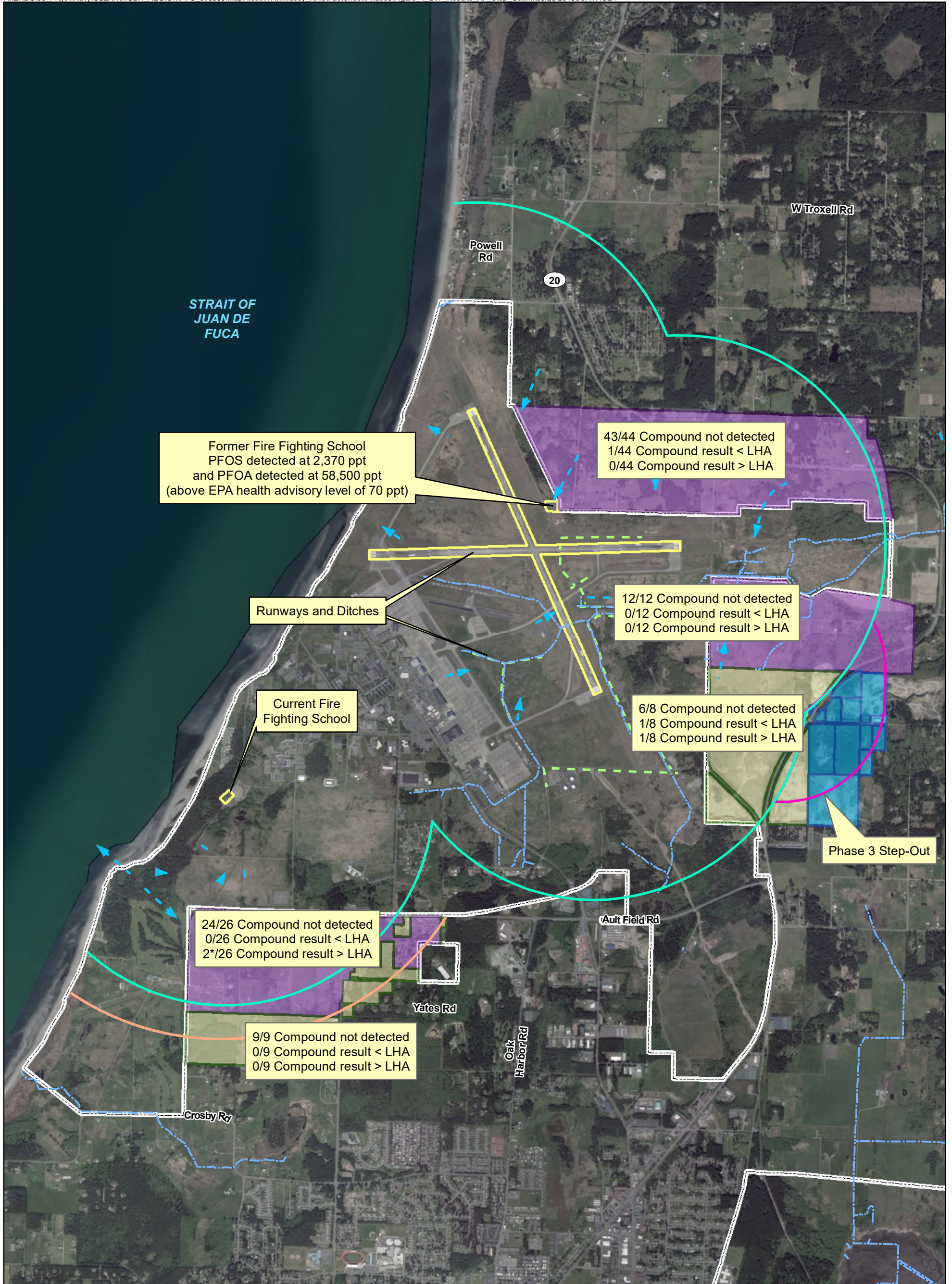
FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24442-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WI-CV-1FB37-1216 Lab Sample ID: 320-24442-6  
 Matrix: Water Lab File ID: 19DEC2016A6A\_165.d  
 Analysis Method: 537 Date Collected: 12/14/2016 09:15  
 Extraction Method: 537 Date Extracted: 12/17/2016 13:06  
 Sample wt/vol: 259.4 (mL) Date Analyzed: 12/22/2016 18:52  
 Con. Extract Vol.: 1.0 (mL) Dilution Factor: 1  
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 143415 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0091
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.13	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	99		70-130

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Former Fire Fighting School  
 PFOS detected at 2,370 ppt  
 and PFOA detected at 58,500 ppt  
 (above EPA health advisory level of 70 ppt)

43/44 Compound not detected  
 1/44 Compound result < LHA  
 0/44 Compound result > LHA

Runways and Ditches

12/12 Compound not detected  
 0/12 Compound result < LHA  
 0/12 Compound result > LHA

Current Fire Fighting School

6/8 Compound not detected  
 1/8 Compound result < LHA  
 1/8 Compound result > LHA

Phase 3 Step-Out

24/26 Compound not detected  
 0/26 Compound result < LHA  
 2\*/26 Compound result > LHA

9/9 Compound not detected  
 0/9 Compound result < LHA  
 0/9 Compound result > LHA

**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.



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