



**Off-Base Drinking Water Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Figure, SDG 320-17406-1**

*Naval Weapons Station Earle
Colts Neck, New Jersey*

July 2019

ANALYTICAL REPORT

Job Number: 320-17406-1

Job Description: Ensafe--NWS-Earle, NJ PFCs Potable Water

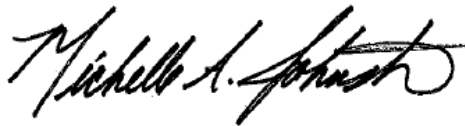
For:

Earth Toxics, Inc

PO BOX 3382

Logan, UT 84321

Attention: Mike Dryden



Approved for release.
Michelle A Johnston
Project Manager II
3/23/2016 9:27 AM

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03/23/2016
Revision: 2

cc: Ms. Tina Cantwell
Ms. Nicole Loos
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The test results in this report relate only to the samples in this report and meet all requirements of NELAP, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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Definitions/Glossary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, 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: Earth Toxics, Inc.
Project: Ensafe-NWS-Earle, NJ PFCs Potable Water
Report Number: 320-17406-1

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.

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.

Revision - 3/23/2016

The first revision header was updated to correct the revision date typo from 3/22/2016 to 3/21/2016 to match the date it was revised. In addition, the first revision narrative noted the PFOS integrations were fixed for samples DW-55 (320-17406-16) and DW-95 (320-17406-18). Due to a laboratory typo, the samples fixed were actually DW-68 (320-17406-14) and DW-95 (320-17406-18).

Revision - 3/21/2016

The PFOS integrations have been fixed for samples DW-68 (320-17406-14) and DW-95 (320-17406-18). In addition, the sixth paragraph in case narrative section Perfluorinated Hydrocarbons (PFCs) was added to the revised narrative.

Sample Receipt

The samples were received on 2/24/2016 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.5° C and 2.7° C. No anomalies were encountered during sample receipt.

Perfluorinated Hydrocarbons (PFCs)

Samples BC_2_22_16 (320-17406-1), DW-1 (320-17406-2), DW-1FB (320-17406-3), DW-56 (320-17406-4), DW-56FB (320-17406-5), DW-80 (320-17406-6), DW-80FB (320-17406-7), DW-44 (320-17406-8), DW-44FB (320-17406-9), DW-15 (320-17406-10), DW-15FB (320-17406-11), DW-19 (320-17406-12), DW-19FB (320-17406-13), DW-68 (320-17406-14), DW-68FB (320-17406-15), DW-55 (320-17406-16), DW-55FB (320-17406-17), DW-95 (320-17406-18), DW-95FB (320-17406-19), DW-6 (320-17406-20), DW-6FB (320-17406-21), DW-37 (320-17406-22), DW-37FB (320-17406-23) and DUP-022216 (320-17406-24) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with WS-LC-0025. The samples were prepared on 02/25/2016 and 02/26/2016 and analyzed on 02/27/2016, 02/29/2016 and 03/01/2016.

Reporting limits and method detection limits have been adjusted accordingly for the initial volumes extracted.

MS/MSD analyses for prep batches 320-101543 and 320-101659 were not requested.

The level 1 standards from the ICAIs (ICV 320-101820/10 & ICV 320-101853/11) are used to evaluate the tune criteria. The instrument mass windows are set at +/-0.5 amu. Detection of the analyte serves as verification that the assigned mass is within +/-0.5 amu of the true value, which meets the DOD tune criterion.

Please note the Continuing Calibration Verification (CCV) analyzed on 2/27/2016 at 13:41 did not meet criteria for PFOS. As a result all samples analyzed previously and subsequently to this CCV were re-analyzed on 2/29/2016 or 3/1/2016 for PFOS. The affected samples are DW-56 (320-17406-4), DW-56FB (320-17406-5), DW-80 (320-17406-6), DW-80FB (320-17406-7), DW-44 (320-17406-8), DW-44FB (320-17406-9), DW-15 (320-17406-10), DW-15FB (320-17406-11), DW-19 (320-17406-12), DW-19FB (320-17406-13), DW-68 (320-17406-14), DW-68FB (320-17406-15), DW-55 (320-17406-16), DW-55FB (320-17406-17), DW-95 (320-17406-18), DW-95FB (320-17406-19), DW-6 (320-17406-20), (CCV 320-101820/43), (LCS 320-101659/2-A), (LCSD 320-101659/3-A) and (MB 320-101659/1-A). In addition, as the initial analysis of sample DW-55 (320-17406-16) indicated a poor injection, all analytes for this sample are reported from the 3/1/2016 analysis.

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

Detection Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: BC_2_22_16

Lab Sample ID: 320-17406-1

☐ No Detections.

Client Sample ID: DW-1

Lab Sample ID: 320-17406-2

☐ No Detections.

Client Sample ID: DW-1FB

Lab Sample ID: 320-17406-3

☐ No Detections.

Client Sample ID: DW-56

Lab Sample ID: 320-17406-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil	Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	1.8	J	2.3	1.9	0.75	ng/L	1			WS-LC-0025	Total/NA

Client Sample ID: DW-56FB

Lab Sample ID: 320-17406-5

☐ No Detections.

Client Sample ID: DW-80

Lab Sample ID: 320-17406-6

☐ No Detections.

Client Sample ID: DW-80FB

Lab Sample ID: 320-17406-7

☐ No Detections.

Client Sample ID: DW-44

Lab Sample ID: 320-17406-8

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.6		2.2	1.8	0.66	ng/L	1			WS-LC-0025	Total/NA

Client Sample ID: DW-44FB

Lab Sample ID: 320-17406-9

☐ No Detections.

Client Sample ID: DW-15

Lab Sample ID: 320-17406-10

☐ No Detections.

Client Sample ID: DW-15FB

Lab Sample ID: 320-17406-11

☐ No Detections.

Client Sample ID: DW-19

Lab Sample ID: 320-17406-12

☐ No Detections.

Client Sample ID: DW-19FB

Lab Sample ID: 320-17406-13

☐ No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-68

Lab Sample ID: 320-17406-14

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	6.1		2.3	1.8	0.72	ng/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.7	M	2.3	1.8	0.78	ng/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	2.7		2.3	1.8	0.59	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	27		2.3	1.8	0.67	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RA	18	M	3.6	2.7	1.1	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-68FB

Lab Sample ID: 320-17406-15

No Detections.

Client Sample ID: DW-55

Lab Sample ID: 320-17406-16

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.3	1.9	0.81	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-55FB

Lab Sample ID: 320-17406-17

No Detections.

Client Sample ID: DW-95

Lab Sample ID: 320-17406-18

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.9	J	2.4	1.9	0.89	ng/L	1		WS-LC-0025	Total/NA
Perfluoroheptanoic acid (PFHpA)	9.9		2.4	1.9	0.78	ng/L	1		WS-LC-0025	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.2	M	2.4	1.9	0.85	ng/L	1		WS-LC-0025	Total/NA
Perfluorononanoic acid (PFNA)	1.5	J	2.4	1.9	0.64	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanoic acid (PFOA)	42	M	2.4	1.9	0.73	ng/L	1		WS-LC-0025	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RA	28	M	3.9	2.9	1.2	ng/L	1		WS-LC-0025	Total/NA

Client Sample ID: DW-95FB

Lab Sample ID: 320-17406-19

No Detections.

Client Sample ID: DW-6

Lab Sample ID: 320-17406-20

No Detections.

Client Sample ID: DW-6FB

Lab Sample ID: 320-17406-21

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-37

Lab Sample ID: 320-17406-22

No Detections.

Client Sample ID: DW-37FB

Lab Sample ID: 320-17406-23

No Detections.

Client Sample ID: DUP-022216

Lab Sample ID: 320-17406-24

No Detections.

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: BC_2_22_16

Date Collected: 02/22/16 11:02

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-1

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.6	2.0	0.94	ng/L		02/27/16 02:59	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.6	2.0	0.82	ng/L		02/27/16 02:59	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.6	2.0	0.89	ng/L		02/27/16 02:59	1
Perfluorononanoic acid (PFNA)	2.0	U	2.6	2.0	0.67	ng/L		02/27/16 02:59	1
Perfluorooctanesulfonic acid (PFOS)	3.1	U	4.1	3.1	1.3	ng/L		02/27/16 02:59	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.6	2.0	0.76	ng/L		02/27/16 02:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		25 - 150	02/25/16 10:17	02/27/16 02:59	1
13C4 PFOA	126		25 - 150	02/25/16 10:17	02/27/16 02:59	1
13C4 PFOS	87		25 - 150	02/25/16 10:17	02/27/16 02:59	1
13C4-PFHpA	121		25 - 150	02/25/16 10:17	02/27/16 02:59	1
13C5 PFNA	116		25 - 150	02/25/16 10:17	02/27/16 02:59	1
18O2 PFHxS	104		25 - 150	02/25/16 10:17	02/27/16 02:59	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-1

Date Collected: 02/22/16 11:31

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-2

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.84	ng/L		02/27/16 03:20	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73	ng/L		02/27/16 03:20	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.80	ng/L		02/27/16 03:20	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.60	ng/L		02/27/16 03:20	1
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	2.7	1.2	ng/L		02/27/16 03:20	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68	ng/L		02/27/16 03:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	49		25 - 150	02/25/16 10:17	02/27/16 03:20	1
13C4 PFOA	57		25 - 150	02/25/16 10:17	02/27/16 03:20	1
13C4 PFOS	87		25 - 150	02/25/16 10:17	02/27/16 03:20	1
13C4-PFHpA	51		25 - 150	02/25/16 10:17	02/27/16 03:20	1
13C5 PFNA	56		25 - 150	02/25/16 10:17	02/27/16 03:20	1
18O2 PFHxS	110		25 - 150	02/25/16 10:17	02/27/16 03:20	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-1FB

Date Collected: 02/22/16 11:21

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-3

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.90	ng/L		02/27/16 03:41	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79	ng/L		02/27/16 03:41	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86	ng/L		02/27/16 03:41	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.64	ng/L		02/27/16 03:41	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	3.9	3.0	1.3	ng/L		02/27/16 03:41	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74	ng/L		02/27/16 03:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	116		25 - 150	02/25/16 10:17	02/27/16 03:41	1
13C4 PFOA	129		25 - 150	02/25/16 10:17	02/27/16 03:41	1
13C4 PFOS	91		25 - 150	02/25/16 10:17	02/27/16 03:41	1
13C4-PFHpA	121		25 - 150	02/25/16 10:17	02/27/16 03:41	1
13C5 PFNA	111		25 - 150	02/25/16 10:17	02/27/16 03:41	1
18O2 PFHxS	110		25 - 150	02/25/16 10:17	02/27/16 03:41	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-56

Date Collected: 02/22/16 12:06

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-4

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.3	1.9	0.85	ng/L		02/27/16 10:09	1
Perfluoroheptanoic acid (PFHpA)	1.8	J	2.3	1.9	0.75	ng/L		02/27/16 10:09	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	1.9	0.81	ng/L		02/27/16 10:09	1
Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61	ng/L		02/27/16 10:09	1
Perfluorooctanoic acid (PFOA)	1.9	U	2.3	1.9	0.70	ng/L		02/27/16 10:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		25 - 150				02/25/16 10:17	02/27/16 10:09	1
13C4 PFOA	71		25 - 150				02/25/16 10:17	02/27/16 10:09	1
13C4 PFOS	84		25 - 150				02/25/16 10:17	02/27/16 10:09	1
13C4-PFHpA	85		25 - 150				02/25/16 10:17	02/27/16 10:09	1
13C5 PFNA	66		25 - 150				02/25/16 10:17	02/27/16 10:09	1
18O2 PFHxS	96		25 - 150				02/25/16 10:17	02/27/16 10:09	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2	ng/L		02/29/16 18:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		25 - 150				02/25/16 10:17	02/29/16 18:57	1
13C4 PFOA	77		25 - 150				02/25/16 10:17	02/29/16 18:57	1
13C4 PFOS	108		25 - 150				02/25/16 10:17	02/29/16 18:57	1
13C4-PFHpA	97		25 - 150				02/25/16 10:17	02/29/16 18:57	1
13C5 PFNA	63		25 - 150				02/25/16 10:17	02/29/16 18:57	1
18O2 PFHxS	115		25 - 150				02/25/16 10:17	02/29/16 18:57	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-56FB

Date Collected: 02/22/16 11:56

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-5

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.90	ng/L		02/27/16 11:34	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79	ng/L		02/27/16 11:34	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86	ng/L		02/27/16 11:34	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.64	ng/L		02/27/16 11:34	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74	ng/L		02/27/16 11:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		25 - 150	02/26/16 08:58	02/27/16 11:34	1
13C4 PFOA	110		25 - 150	02/26/16 08:58	02/27/16 11:34	1
13C4 PFOS	130		25 - 150	02/26/16 08:58	02/27/16 11:34	1
13C4-PFHpA	103		25 - 150	02/26/16 08:58	02/27/16 11:34	1
13C5 PFNA	106		25 - 150	02/26/16 08:58	02/27/16 11:34	1
18O2 PFHxS	110		25 - 150	02/26/16 08:58	02/27/16 11:34	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3.0	U	3.9	3.0	1.3	ng/L		02/29/16 20:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		25 - 150	02/26/16 08:58	02/29/16 20:22	1
13C4 PFOA	104		25 - 150	02/26/16 08:58	02/29/16 20:22	1
13C4 PFOS	98		25 - 150	02/26/16 08:58	02/29/16 20:22	1
13C4-PFHpA	103		25 - 150	02/26/16 08:58	02/29/16 20:22	1
13C5 PFNA	96		25 - 150	02/26/16 08:58	02/29/16 20:22	1
18O2 PFHxS	94		25 - 150	02/26/16 08:58	02/29/16 20:22	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-80

Date Collected: 02/22/16 12:31

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-6

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82	ng/L		02/27/16 11:56	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71	ng/L		02/27/16 11:56	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.77	ng/L		02/27/16 11:56	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58	ng/L		02/27/16 11:56	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/27/16 11:56	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	62		25 - 150				02/26/16 08:58	02/27/16 11:56	1
13C4 PFOA	58		25 - 150				02/26/16 08:58	02/27/16 11:56	1
13C4 PFOS	149		25 - 150				02/26/16 08:58	02/27/16 11:56	1
13C4-PFHpA	59		25 - 150				02/26/16 08:58	02/27/16 11:56	1
13C5 PFNA	50		25 - 150				02/26/16 08:58	02/27/16 11:56	1
18O2 PFHxS	110		25 - 150				02/26/16 08:58	02/27/16 11:56	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1	ng/L		02/29/16 20:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	63		25 - 150				02/26/16 08:58	02/29/16 20:43	1
13C4 PFOA	54		25 - 150				02/26/16 08:58	02/29/16 20:43	1
13C4 PFOS	92		25 - 150				02/26/16 08:58	02/29/16 20:43	1
13C4-PFHpA	59		25 - 150				02/26/16 08:58	02/29/16 20:43	1
13C5 PFNA	43		25 - 150				02/26/16 08:58	02/29/16 20:43	1
18O2 PFHxS	91		25 - 150				02/26/16 08:58	02/29/16 20:43	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-80FB

Lab Sample ID: 320-17406-7

Date Collected: 02/22/16 12:21

Matrix: Water

Date Received: 02/24/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.93	ng/L		02/27/16 12:17	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.81	ng/L		02/27/16 12:17	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.88	ng/L		02/27/16 12:17	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.66	ng/L		02/27/16 12:17	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.76	ng/L		02/27/16 12:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	104		25 - 150	02/26/16 08:58	02/27/16 12:17	1
13C4 PFOA	112		25 - 150	02/26/16 08:58	02/27/16 12:17	1
13C4 PFOS	156	Q	25 - 150	02/26/16 08:58	02/27/16 12:17	1
13C4-PFHpA	97		25 - 150	02/26/16 08:58	02/27/16 12:17	1
13C5 PFNA	113		25 - 150	02/26/16 08:58	02/27/16 12:17	1
18O2 PFHxS	108		25 - 150	02/26/16 08:58	02/27/16 12:17	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.1	3.0	1.3	ng/L		02/29/16 21:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	110		25 - 150	02/26/16 08:58	02/29/16 21:05	1
13C4 PFOA	112		25 - 150	02/26/16 08:58	02/29/16 21:05	1
13C4 PFOS	103		25 - 150	02/26/16 08:58	02/29/16 21:05	1
13C4-PFHpA	108		25 - 150	02/26/16 08:58	02/29/16 21:05	1
13C5 PFNA	97		25 - 150	02/26/16 08:58	02/29/16 21:05	1
18O2 PFHxS	104		25 - 150	02/26/16 08:58	02/29/16 21:05	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-44

Date Collected: 02/22/16 12:56

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-8

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80	ng/L		02/27/16 12:38	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70	ng/L		02/27/16 12:38	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76	ng/L		02/27/16 12:38	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57	ng/L		02/27/16 12:38	1
Perfluorooctanoic acid (PFOA)	2.6		2.2	1.8	0.66	ng/L		02/27/16 12:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	73		25 - 150	02/26/16 08:58	02/27/16 12:38	1
13C4 PFOA	73		25 - 150	02/26/16 08:58	02/27/16 12:38	1
13C4 PFOS	138		25 - 150	02/26/16 08:58	02/27/16 12:38	1
13C4-PFHpA	72		25 - 150	02/26/16 08:58	02/27/16 12:38	1
13C5 PFNA	65		25 - 150	02/26/16 08:58	02/27/16 12:38	1
18O2 PFHxS	107		25 - 150	02/26/16 08:58	02/27/16 12:38	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		02/29/16 21:26	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	74		25 - 150	02/26/16 08:58	02/29/16 21:26	1
13C4 PFOA	68		25 - 150	02/26/16 08:58	02/29/16 21:26	1
13C4 PFOS	95		25 - 150	02/26/16 08:58	02/29/16 21:26	1
13C4-PFHpA	74		25 - 150	02/26/16 08:58	02/29/16 21:26	1
13C5 PFNA	55		25 - 150	02/26/16 08:58	02/29/16 21:26	1
18O2 PFHxS	101		25 - 150	02/26/16 08:58	02/29/16 21:26	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-44FB

Date Collected: 02/22/16 12:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-9

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		02/27/16 12:59	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		02/27/16 12:59	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87	ng/L		02/27/16 12:59	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.66	ng/L		02/27/16 12:59	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		02/27/16 12:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		25 - 150	02/26/16 08:58	02/27/16 12:59	1
13C4 PFOA	100		25 - 150	02/26/16 08:58	02/27/16 12:59	1
13C4 PFOS	110		25 - 150	02/26/16 08:58	02/27/16 12:59	1
13C4-PFHpA	96		25 - 150	02/26/16 08:58	02/27/16 12:59	1
13C5 PFNA	108		25 - 150	02/26/16 08:58	02/27/16 12:59	1
18O2 PFHxS	101		25 - 150	02/26/16 08:58	02/27/16 12:59	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/29/16 21:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	99		25 - 150	02/26/16 08:58	02/29/16 21:47	1
13C4 PFOA	96		25 - 150	02/26/16 08:58	02/29/16 21:47	1
13C4 PFOS	93		25 - 150	02/26/16 08:58	02/29/16 21:47	1
13C4-PFHpA	94		25 - 150	02/26/16 08:58	02/29/16 21:47	1
13C5 PFNA	90		25 - 150	02/26/16 08:58	02/29/16 21:47	1
18O2 PFHxS	88		25 - 150	02/26/16 08:58	02/29/16 21:47	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-15

Date Collected: 02/22/16 13:26

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-10

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.7	U	2.2	1.7	0.80	ng/L		02/27/16 13:20	1
Perfluoroheptanoic acid (PFHpA)	1.7	U	2.2	1.7	0.70	ng/L		02/27/16 13:20	1
Perfluorohexanesulfonic acid (PFHxS)	1.7	U	2.2	1.7	0.76	ng/L		02/27/16 13:20	1
Perfluorononanoic acid (PFNA)	1.7	U	2.2	1.7	0.57	ng/L		02/27/16 13:20	1
Perfluorooctanoic acid (PFOA)	1.7	U	2.2	1.7	0.65	ng/L		02/27/16 13:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	65		25 - 150	02/26/16 08:58	02/27/16 13:20	1
13C4 PFOA	73		25 - 150	02/26/16 08:58	02/27/16 13:20	1
13C4 PFOS	92		25 - 150	02/26/16 08:58	02/27/16 13:20	1
13C4-PFHpA	64		25 - 150	02/26/16 08:58	02/27/16 13:20	1
13C5 PFNA	72		25 - 150	02/26/16 08:58	02/27/16 13:20	1
18O2 PFHxS	87		25 - 150	02/26/16 08:58	02/27/16 13:20	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		02/29/16 22:08	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		25 - 150	02/26/16 08:58	02/29/16 22:08	1
13C4 PFOA	76		25 - 150	02/26/16 08:58	02/29/16 22:08	1
13C4 PFOS	107		25 - 150	02/26/16 08:58	02/29/16 22:08	1
13C4-PFHpA	83		25 - 150	02/26/16 08:58	02/29/16 22:08	1
13C5 PFNA	71		25 - 150	02/26/16 08:58	02/29/16 22:08	1
18O2 PFHxS	103		25 - 150	02/26/16 08:58	02/29/16 22:08	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-15FB

Lab Sample ID: 320-17406-11

Date Collected: 02/22/16 13:16

Matrix: Water

Date Received: 02/24/16 09:45

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.91	ng/L		02/27/16 14:03	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79	ng/L		02/27/16 14:03	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86	ng/L		02/27/16 14:03	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		02/27/16 14:03	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74	ng/L		02/27/16 14:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		25 - 150	02/26/16 08:58	02/27/16 14:03	1
13C4 PFOA	103		25 - 150	02/26/16 08:58	02/27/16 14:03	1
13C4 PFOS	98		25 - 150	02/26/16 08:58	02/27/16 14:03	1
13C4-PFHpA	98		25 - 150	02/26/16 08:58	02/27/16 14:03	1
13C5 PFNA	104		25 - 150	02/26/16 08:58	02/27/16 14:03	1
18O2 PFHxS	100		25 - 150	02/26/16 08:58	02/27/16 14:03	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/29/16 22:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150	02/26/16 08:58	02/29/16 22:51	1
13C4 PFOA	93		25 - 150	02/26/16 08:58	02/29/16 22:51	1
13C4 PFOS	93		25 - 150	02/26/16 08:58	02/29/16 22:51	1
13C4-PFHpA	92		25 - 150	02/26/16 08:58	02/29/16 22:51	1
13C5 PFNA	90		25 - 150	02/26/16 08:58	02/29/16 22:51	1
18O2 PFHxS	91		25 - 150	02/26/16 08:58	02/29/16 22:51	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-19

Date Collected: 02/22/16 14:01

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-12

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.84	ng/L		02/27/16 14:24	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73	ng/L		02/27/16 14:24	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79	ng/L		02/27/16 14:24	1
Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.60	ng/L		02/27/16 14:24	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68	ng/L		02/27/16 14:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	76		25 - 150				02/26/16 08:58	02/27/16 14:24	1
13C4 PFOA	81		25 - 150				02/26/16 08:58	02/27/16 14:24	1
13C4 PFOS	111		25 - 150				02/26/16 08:58	02/27/16 14:24	1
13C4-PFHpA	77		25 - 150				02/26/16 08:58	02/27/16 14:24	1
13C5 PFNA	79		25 - 150				02/26/16 08:58	02/27/16 14:24	1
18O2 PFHxS	97		25 - 150				02/26/16 08:58	02/27/16 14:24	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	2.7	1.2	ng/L		02/29/16 23:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		25 - 150				02/26/16 08:58	02/29/16 23:12	1
13C4 PFOA	76		25 - 150				02/26/16 08:58	02/29/16 23:12	1
13C4 PFOS	95		25 - 150				02/26/16 08:58	02/29/16 23:12	1
13C4-PFHpA	79		25 - 150				02/26/16 08:58	02/29/16 23:12	1
13C5 PFNA	67		25 - 150				02/26/16 08:58	02/29/16 23:12	1
18O2 PFHxS	92		25 - 150				02/26/16 08:58	02/29/16 23:12	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-19FB

Date Collected: 02/22/16 13:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-13

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82	ng/L		02/27/16 14:45	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71	ng/L		02/27/16 14:45	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.78	ng/L		02/27/16 14:45	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58	ng/L		02/27/16 14:45	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67	ng/L		02/27/16 14:45	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		25 - 150				02/26/16 08:58	02/27/16 14:45	1
13C4 PFOA	106		25 - 150				02/26/16 08:58	02/27/16 14:45	1
13C4 PFOS	103		25 - 150				02/26/16 08:58	02/27/16 14:45	1
13C4-PFHpA	93		25 - 150				02/26/16 08:58	02/27/16 14:45	1
13C5 PFNA	101		25 - 150				02/26/16 08:58	02/27/16 14:45	1
18O2 PFHxS	107		25 - 150				02/26/16 08:58	02/27/16 14:45	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1	ng/L		02/29/16 23:33	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150				02/26/16 08:58	02/29/16 23:33	1
13C4 PFOA	94		25 - 150				02/26/16 08:58	02/29/16 23:33	1
13C4 PFOS	93		25 - 150				02/26/16 08:58	02/29/16 23:33	1
13C4-PFHpA	95		25 - 150				02/26/16 08:58	02/29/16 23:33	1
13C5 PFNA	88		25 - 150				02/26/16 08:58	02/29/16 23:33	1
18O2 PFHxS	87		25 - 150				02/26/16 08:58	02/29/16 23:33	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-68

Date Collected: 02/22/16 14:31

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-14

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83	ng/L		02/27/16 15:06	1
Perfluoroheptanoic acid (PFHpA)	6.1		2.3	1.8	0.72	ng/L		02/27/16 15:06	1
Perfluorohexanesulfonic acid (PFHxS)	4.7	M	2.3	1.8	0.78	ng/L		02/27/16 15:06	1
Perfluorononanoic acid (PFNA)	2.7		2.3	1.8	0.59	ng/L		02/27/16 15:06	1
Perfluorooctanoic acid (PFOA)	27		2.3	1.8	0.67	ng/L		02/27/16 15:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	77		25 - 150				02/26/16 08:58	02/27/16 15:06	1
13C4 PFOA	103		25 - 150				02/26/16 08:58	02/27/16 15:06	1
13C4 PFOS	105		25 - 150				02/26/16 08:58	02/27/16 15:06	1
13C4-PFHpA	92		25 - 150				02/26/16 08:58	02/27/16 15:06	1
13C5 PFNA	123		25 - 150				02/26/16 08:58	02/27/16 15:06	1
18O2 PFHxS	97		25 - 150				02/26/16 08:58	02/27/16 15:06	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	18	M	3.6	2.7	1.1	ng/L		02/29/16 23:54	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		25 - 150				02/26/16 08:58	02/29/16 23:54	1
13C4 PFOA	89		25 - 150				02/26/16 08:58	02/29/16 23:54	1
13C4 PFOS	87		25 - 150				02/26/16 08:58	02/29/16 23:54	1
13C4-PFHpA	87		25 - 150				02/26/16 08:58	02/29/16 23:54	1
13C5 PFNA	95		25 - 150				02/26/16 08:58	02/29/16 23:54	1
18O2 PFHxS	84		25 - 150				02/26/16 08:58	02/29/16 23:54	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-68FB

Date Collected: 02/22/16 14:16

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-15

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81	ng/L		02/27/16 15:27	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71	ng/L		02/27/16 15:27	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.77	ng/L		02/27/16 15:27	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58	ng/L		02/27/16 15:27	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/27/16 15:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		25 - 150	02/26/16 08:58	02/27/16 15:27	1
13C4 PFOA	108		25 - 150	02/26/16 08:58	02/27/16 15:27	1
13C4 PFOS	116		25 - 150	02/26/16 08:58	02/27/16 15:27	1
13C4-PFHpA	95		25 - 150	02/26/16 08:58	02/27/16 15:27	1
13C5 PFNA	107		25 - 150	02/26/16 08:58	02/27/16 15:27	1
18O2 PFHxS	102		25 - 150	02/26/16 08:58	02/27/16 15:27	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		03/01/16 00:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	105		25 - 150	02/26/16 08:58	03/01/16 00:16	1
13C4 PFOA	103		25 - 150	02/26/16 08:58	03/01/16 00:16	1
13C4 PFOS	106		25 - 150	02/26/16 08:58	03/01/16 00:16	1
13C4-PFHpA	102		25 - 150	02/26/16 08:58	03/01/16 00:16	1
13C5 PFNA	101		25 - 150	02/26/16 08:58	03/01/16 00:16	1
18O2 PFHxS	99		25 - 150	02/26/16 08:58	03/01/16 00:16	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-55

Date Collected: 02/22/16 15:51

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-16

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.3	1.9	0.86	ng/L		03/01/16 00:37	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	1.9	0.75	ng/L		03/01/16 00:37	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.3	1.9	0.81	ng/L		03/01/16 00:37	1
Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61	ng/L		03/01/16 00:37	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2	ng/L		03/01/16 00:37	1
Perfluorooctanoic acid (PFOA)	1.9	U	2.3	1.9	0.70	ng/L		03/01/16 00:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	81		25 - 150	02/26/16 08:58	03/01/16 00:37	1
13C4 PFOA	80		25 - 150	02/26/16 08:58	03/01/16 00:37	1
13C4 PFOS	93		25 - 150	02/26/16 08:58	03/01/16 00:37	1
13C4-PFHpA	84		25 - 150	02/26/16 08:58	03/01/16 00:37	1
13C5 PFNA	82		25 - 150	02/26/16 08:58	03/01/16 00:37	1
18O2 PFHxS	93		25 - 150	02/26/16 08:58	03/01/16 00:37	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-55FB

Date Collected: 02/22/16 15:41

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-17

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81	ng/L		02/27/16 16:10	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71	ng/L		02/27/16 16:10	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.77	ng/L		02/27/16 16:10	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58	ng/L		02/27/16 16:10	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/27/16 16:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		25 - 150	02/26/16 08:58	02/27/16 16:10	1
13C4 PFOA	103		25 - 150	02/26/16 08:58	02/27/16 16:10	1
13C4 PFOS	112		25 - 150	02/26/16 08:58	02/27/16 16:10	1
13C4-PFHpA	95		25 - 150	02/26/16 08:58	02/27/16 16:10	1
13C5 PFNA	101		25 - 150	02/26/16 08:58	02/27/16 16:10	1
18O2 PFHxS	93		25 - 150	02/26/16 08:58	02/27/16 16:10	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		03/01/16 00:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	106		25 - 150	02/26/16 08:58	03/01/16 00:58	1
13C4 PFOA	105		25 - 150	02/26/16 08:58	03/01/16 00:58	1
13C4 PFOS	102		25 - 150	02/26/16 08:58	03/01/16 00:58	1
13C4-PFHpA	106		25 - 150	02/26/16 08:58	03/01/16 00:58	1
13C5 PFNA	95		25 - 150	02/26/16 08:58	03/01/16 00:58	1
18O2 PFHxS	99		25 - 150	02/26/16 08:58	03/01/16 00:58	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-95

Date Collected: 02/22/16 16:36

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-18

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	J	2.4	1.9	0.89	ng/L		02/27/16 16:31	1
Perfluoroheptanoic acid (PFHpA)	9.9		2.4	1.9	0.78	ng/L		02/27/16 16:31	1
Perfluorohexanesulfonic acid (PFHxS)	5.2	M	2.4	1.9	0.85	ng/L		02/27/16 16:31	1
Perfluorononanoic acid (PFNA)	1.5	J	2.4	1.9	0.64	ng/L		02/27/16 16:31	1
Perfluorooctanoic acid (PFOA)	42	M	2.4	1.9	0.73	ng/L		02/27/16 16:31	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	50		25 - 150				02/26/16 08:58	02/27/16 16:31	1
13C4 PFOA	46		25 - 150				02/26/16 08:58	02/27/16 16:31	1
13C4 PFOS	88		25 - 150				02/26/16 08:58	02/27/16 16:31	1
13C4-PFHpA	50		25 - 150				02/26/16 08:58	02/27/16 16:31	1
13C5 PFNA	40		25 - 150				02/26/16 08:58	02/27/16 16:31	1
18O2 PFHxS	85		25 - 150				02/26/16 08:58	02/27/16 16:31	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	M	3.9	2.9	1.2	ng/L		03/01/16 01:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	72		25 - 150				02/26/16 08:58	03/01/16 01:19	1
13C4 PFOA	60		25 - 150				02/26/16 08:58	03/01/16 01:19	1
13C4 PFOS	100		25 - 150				02/26/16 08:58	03/01/16 01:19	1
13C4-PFHpA	69		25 - 150				02/26/16 08:58	03/01/16 01:19	1
13C5 PFNA	42		25 - 150				02/26/16 08:58	03/01/16 01:19	1
18O2 PFHxS	101		25 - 150				02/26/16 08:58	03/01/16 01:19	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-95FB

Date Collected: 02/22/16 16:21

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-19

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.3	U	2.9	2.3	1.1	ng/L		02/27/16 16:52	1
Perfluoroheptanoic acid (PFHpA)	2.3	U	2.9	2.3	0.94	ng/L		02/27/16 16:52	1
Perfluorohexanesulfonic acid (PFHxS)	2.3	U	2.9	2.3	1.0	ng/L		02/27/16 16:52	1
Perfluorononanoic acid (PFNA)	2.3	U	2.9	2.3	0.77	ng/L		02/27/16 16:52	1
Perfluorooctanoic acid (PFOA)	2.3	U	2.9	2.3	0.88	ng/L		02/27/16 16:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		25 - 150	02/26/16 08:58	02/27/16 16:52	1
13C4 PFOA	98		25 - 150	02/26/16 08:58	02/27/16 16:52	1
13C4 PFOS	105		25 - 150	02/26/16 08:58	02/27/16 16:52	1
13C4-PFHpA	93		25 - 150	02/26/16 08:58	02/27/16 16:52	1
13C5 PFNA	97		25 - 150	02/26/16 08:58	02/27/16 16:52	1
18O2 PFHxS	100		25 - 150	02/26/16 08:58	02/27/16 16:52	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3.5	U	4.7	3.5	1.5	ng/L		03/01/16 01:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	113		25 - 150	02/26/16 08:58	03/01/16 01:41	1
13C4 PFOA	111		25 - 150	02/26/16 08:58	03/01/16 01:41	1
13C4 PFOS	108		25 - 150	02/26/16 08:58	03/01/16 01:41	1
13C4-PFHpA	110		25 - 150	02/26/16 08:58	03/01/16 01:41	1
13C5 PFNA	106		25 - 150	02/26/16 08:58	03/01/16 01:41	1
18O2 PFHxS	104		25 - 150	02/26/16 08:58	03/01/16 01:41	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-6

Date Collected: 02/22/16 17:01

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-20

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80	ng/L		02/27/16 17:13	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70	ng/L		02/27/16 17:13	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76	ng/L		02/27/16 17:13	1
Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57	ng/L		02/27/16 17:13	1
Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66	ng/L		02/27/16 17:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	69		25 - 150	02/26/16 08:58	02/27/16 17:13	1
13C4 PFOA	65		25 - 150	02/26/16 08:58	02/27/16 17:13	1
13C4 PFOS	96		25 - 150	02/26/16 08:58	02/27/16 17:13	1
13C4-PFHpA	69		25 - 150	02/26/16 08:58	02/27/16 17:13	1
13C5 PFNA	54		25 - 150	02/26/16 08:58	02/27/16 17:13	1
18O2 PFHxS	99		25 - 150	02/26/16 08:58	02/27/16 17:13	1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1	ng/L		03/01/16 02:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	83		25 - 150	02/26/16 08:58	03/01/16 02:02	1
13C4 PFOA	73		25 - 150	02/26/16 08:58	03/01/16 02:02	1
13C4 PFOS	105		25 - 150	02/26/16 08:58	03/01/16 02:02	1
13C4-PFHpA	81		25 - 150	02/26/16 08:58	03/01/16 02:02	1
13C5 PFNA	54		25 - 150	02/26/16 08:58	03/01/16 02:02	1
18O2 PFHxS	105		25 - 150	02/26/16 08:58	03/01/16 02:02	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-6FB

Date Collected: 02/22/16 16:51

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-21

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.3	U	2.8	2.3	1.0	ng/L		02/27/16 17:56	1
Perfluoroheptanoic acid (PFHpA)	2.3	U	2.8	2.3	0.91	ng/L		02/27/16 17:56	1
Perfluorohexanesulfonic acid (PFHxS)	2.3	U	2.8	2.3	0.99	ng/L		02/27/16 17:56	1
Perfluorononanoic acid (PFNA)	2.3	U	2.8	2.3	0.74	ng/L		02/27/16 17:56	1
Perfluorooctanesulfonic acid (PFOS)	3.4	U	4.5	3.4	1.5	ng/L		02/27/16 17:56	1
Perfluorooctanoic acid (PFOA)	2.3	U	2.8	2.3	0.85	ng/L		02/27/16 17:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		25 - 150	02/26/16 08:58	02/27/16 17:56	1
13C4 PFOA	99		25 - 150	02/26/16 08:58	02/27/16 17:56	1
13C4 PFOS	103		25 - 150	02/26/16 08:58	02/27/16 17:56	1
13C4-PFHpA	95		25 - 150	02/26/16 08:58	02/27/16 17:56	1
13C5 PFNA	97		25 - 150	02/26/16 08:58	02/27/16 17:56	1
18O2 PFHxS	98		25 - 150	02/26/16 08:58	02/27/16 17:56	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-37

Date Collected: 02/22/16 10:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-22

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		02/27/16 18:17	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		02/27/16 18:17	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87	ng/L		02/27/16 18:17	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		02/27/16 18:17	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/27/16 18:17	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		02/27/16 18:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	79		25 - 150	02/26/16 08:58	02/27/16 18:17	1
13C4 PFOA	67		25 - 150	02/26/16 08:58	02/27/16 18:17	1
13C4 PFOS	114		25 - 150	02/26/16 08:58	02/27/16 18:17	1
13C4-PFHpA	78		25 - 150	02/26/16 08:58	02/27/16 18:17	1
13C5 PFNA	44		25 - 150	02/26/16 08:58	02/27/16 18:17	1
18O2 PFHxS	114		25 - 150	02/26/16 08:58	02/27/16 18:17	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-37FB

Date Collected: 02/22/16 10:27

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-23

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.91	ng/L		02/27/16 18:38	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		02/27/16 18:38	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86	ng/L		02/27/16 18:38	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		02/27/16 18:38	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/27/16 18:38	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74	ng/L		02/27/16 18:38	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		25 - 150				02/26/16 08:58	02/27/16 18:38	1
13C4 PFOA	101		25 - 150				02/26/16 08:58	02/27/16 18:38	1
13C4 PFOS	117		25 - 150				02/26/16 08:58	02/27/16 18:38	1
13C4-PFHpA	82		25 - 150				02/26/16 08:58	02/27/16 18:38	1
13C5 PFNA	98		25 - 150				02/26/16 08:58	02/27/16 18:38	1
18O2 PFHxS	90		25 - 150				02/26/16 08:58	02/27/16 18:38	1

Client Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DUP-022216

Date Collected: 02/22/16 10:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-24

Matrix: Water

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.3	1.9	0.85	ng/L		02/27/16 18:59	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	1.9	0.75	ng/L		02/27/16 18:59	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	1.9	0.81	ng/L		02/27/16 18:59	1
Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61	ng/L		02/27/16 18:59	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2	ng/L		02/27/16 18:59	1
Perfluorooctanoic acid (PFOA)	1.9	U	2.3	1.9	0.70	ng/L		02/27/16 18:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	65		25 - 150	02/26/16 08:58	02/27/16 18:59	1
13C4 PFOA	59		25 - 150	02/26/16 08:58	02/27/16 18:59	1
13C4 PFOS	113		25 - 150	02/26/16 08:58	02/27/16 18:59	1
13C4-PFHpA	62		25 - 150	02/26/16 08:58	02/27/16 18:59	1
13C5 PFNA	57		25 - 150	02/26/16 08:58	02/27/16 18:59	1
18O2 PFHxS	101		25 - 150	02/26/16 08:58	02/27/16 18:59	1

Default Detection Limits

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.5	0.92	ng/L	WS-LC-0025
Perfluoroheptanoic acid (PFHpA)	2.5	0.80	ng/L	WS-LC-0025
Perfluorohexanesulfonic acid (PFHxS)	2.5	0.87	ng/L	WS-LC-0025
Perfluorononanoic acid (PFNA)	2.5	0.65	ng/L	WS-LC-0025
Perfluorooctanesulfonic acid (PFOS)	4.0	1.3	ng/L	WS-LC-0025
Perfluorooctanoic acid (PFOA)	2.5	0.75	ng/L	WS-LC-0025

Isotope Dilution Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		3C2 PFHx (25-150)	3C4 PFO/ (25-150)	3C4 PFO/ (25-150)	3C4-PFHp (25-150)	3C5 PFN/ (25-150)	3O2 PFHx (25-150)
320-17406-1	BC_2_22_16	101	126	87	121	116	104
320-17406-2	DW-1	49	57	87	51	56	110
320-17406-3	DW-1FB	116	129	91	121	111	110
320-17406-4	DW-56	77	71	84	85	66	96
320-17406-4 - RA	DW-56	88	77	108	97	63	115
320-17406-5	DW-56FB	98	110	130	103	106	110
320-17406-5 - RA	DW-56FB	105	104	98	103	96	94
320-17406-6	DW-80	62	58	149	59	50	110
320-17406-6 - RA	DW-80	63	54	92	59	43	91
320-17406-7	DW-80FB	104	112	156 Q	97	113	108
320-17406-7 - RA	DW-80FB	110	112	103	108	97	104
320-17406-8	DW-44	73	73	138	72	65	107
320-17406-8 - RA	DW-44	74	68	95	74	55	101
320-17406-9	DW-44FB	91	100	110	96	108	101
320-17406-9 - RA	DW-44FB	99	96	93	94	90	88
320-17406-10	DW-15	65	73	92	64	72	87
320-17406-10 - RA	DW-15	84	76	107	83	71	103
320-17406-11	DW-15FB	94	103	98	98	104	100
320-17406-11 - RA	DW-15FB	95	93	93	92	90	91
320-17406-12	DW-19	76	81	111	77	79	97
320-17406-12 - RA	DW-19	81	76	95	79	67	92
320-17406-13	DW-19FB	94	106	103	93	101	107
320-17406-13 - RA	DW-19FB	95	94	93	95	88	87
320-17406-14	DW-68	77	103	105	92	123	97
320-17406-14 - RA	DW-68	79	89	87	87	95	84
320-17406-15	DW-68FB	93	108	116	95	107	102
320-17406-15 - RA	DW-68FB	105	103	106	102	101	99
320-17406-16	DW-55	81	80	93	84	82	93
320-17406-17	DW-55FB	90	103	112	95	101	93
320-17406-17 - RA	DW-55FB	106	105	102	106	95	99
320-17406-18	DW-95	50	46	88	50	40	85
320-17406-18 - RA	DW-95	72	60	100	69	42	101
320-17406-19	DW-95FB	97	98	105	93	97	100
320-17406-19 - RA	DW-95FB	113	111	108	110	106	104
320-17406-20	DW-6	69	65	96	69	54	99
320-17406-20 - RA	DW-6	83	73	105	81	54	105
320-17406-21	DW-6FB	91	99	103	95	97	98
320-17406-22	DW-37	79	67	114	78	44	114
320-17406-23	DW-37FB	88	101	117	82	98	90
320-17406-24	DUP-022216	65	59	113	62	57	101
LCS 320-101543/2-A	Lab Control Sample	103	99	134	108	100	106
LCS 320-101659/2-A	Lab Control Sample	92	99	117	91	102	96
LCS 320-101659/2-A - RA	Lab Control Sample	91	89	92	94	85	86
LCSD 320-101543/3-A	Lab Control Sample Dup	106	101	150	110	109	109
LCSD 320-101659/3-A	Lab Control Sample Dup	90	91	117	90	102	97
LCSD 320-101659/3-A - RA	Lab Control Sample Dup	95	87	84	91	85	90
MB 320-101543/1-A	Method Blank	114	116	141	110	109	113
MB 320-101659/1-A	Method Blank	95	111	98	99	113	98
MB 320-101659/1-A - RA	Method Blank	107	106	109	109	99	106

TestAmerica Sacramento

Isotope Dilution Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Surrogate Legend

$^{13}\text{C}_2 \text{ PFHxA} = ^{13}\text{C}_2 \text{ PFHxA}$

$^{13}\text{C}_4 \text{ PFOA} = ^{13}\text{C}_4 \text{ PFOA}$

$^{13}\text{C}_4 \text{ PFOS} = ^{13}\text{C}_4 \text{ PFOS}$

$^{13}\text{C}_4\text{-PFHpA} = ^{13}\text{C}_4\text{-PFHpA}$

$^{13}\text{C}_5 \text{ PFNA} = ^{13}\text{C}_5 \text{ PFNA}$

$^{18}\text{O}_2 \text{ PFHxS} = ^{18}\text{O}_2 \text{ PFHxS}$

QC Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-101543/1-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 101543

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		02/26/16 20:38	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		02/26/16 20:38	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87	ng/L		02/26/16 20:38	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		02/26/16 20:38	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3	ng/L		02/26/16 20:38	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		02/26/16 20:38	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		25 - 150	02/25/16 10:17	02/26/16 20:38	1
13C4 PFOA	116		25 - 150	02/25/16 10:17	02/26/16 20:38	1
13C4 PFOS	141		25 - 150	02/25/16 10:17	02/26/16 20:38	1
13C4-PFHpA	110		25 - 150	02/25/16 10:17	02/26/16 20:38	1
13C5 PFNA	109		25 - 150	02/25/16 10:17	02/26/16 20:38	1
18O2 PFHxS	113		25 - 150	02/25/16 10:17	02/26/16 20:38	1

Lab Sample ID: LCS 320-101543/2-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 101543

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	42.3		ng/L		120	50 - 150
Perfluoroheptanoic acid (PFHpA)	40.0	36.8		ng/L		92	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	37.8	30.7		ng/L		81	60 - 140
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	60 - 140
Perfluorooctanesulfonic acid (PFOS)	38.2	28.7		ng/L		75	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.6		ng/L		101	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	103		25 - 150
13C4 PFOA	99		25 - 150
13C4 PFOS	134		25 - 150
13C4-PFHpA	108		25 - 150
13C5 PFNA	100		25 - 150
18O2 PFHxS	106		25 - 150

Lab Sample ID: LCSD 320-101543/3-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 101543

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	35.4	40.8		ng/L		115	50 - 150	4	30
Perfluoroheptanoic acid (PFHpA)	40.0	34.5		ng/L		86	60 - 140	6	30
Perfluorohexanesulfonic acid (PFHxS)	37.8	30.8		ng/L		81	60 - 140	0	30
Perfluorononanoic acid (PFNA)	40.0	39.2		ng/L		98	60 - 140	4	30

TestAmerica Sacramento

QC Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-101543/3-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 101543

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	38.2	27.5		ng/L		72	60 - 140	4	30
Perfluorooctanoic acid (PFOA)	40.0	39.1		ng/L		98	60 - 140	4	30
Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits						
13C2 PFHxA	106		25 - 150						
13C4 PFOA	101		25 - 150						
13C4 PFOS	150		25 - 150						
13C4-PFHpA	110		25 - 150						
13C5 PFNA	109		25 - 150						
18O2 PFHxS	109		25 - 150						

Lab Sample ID: MB 320-101659/1-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 101659

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		02/27/16 10:31	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		02/27/16 10:31	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87	ng/L		02/27/16 10:31	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		02/27/16 10:31	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		02/27/16 10:31	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150				02/26/16 08:58	02/27/16 10:31	1
13C4 PFOA	111		25 - 150				02/26/16 08:58	02/27/16 10:31	1
13C4 PFOS	98		25 - 150				02/26/16 08:58	02/27/16 10:31	1
13C4-PFHpA	99		25 - 150				02/26/16 08:58	02/27/16 10:31	1
13C5 PFNA	113		25 - 150				02/26/16 08:58	02/27/16 10:31	1
18O2 PFHxS	98		25 - 150				02/26/16 08:58	02/27/16 10:31	1

Lab Sample ID: LCS 320-101659/2-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 101659

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanesulfonic acid (PFBS)	35.4	37.0		ng/L		105	50 - 150		
Perfluoroheptanoic acid (PFHpA)	40.0	37.3		ng/L		93	60 - 140		
Perfluorohexanesulfonic acid (PFHxS)	37.8	34.2		ng/L		90	60 - 140		
Perfluorononanoic acid (PFNA)	40.0	41.8		ng/L		105	60 - 140		
Perfluorooctanoic acid (PFOA)	40.0	40.1		ng/L		100	60 - 140		
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits						
13C2 PFHxA	92		25 - 150						
13C4 PFOA	99		25 - 150						
13C4 PFOS	117		25 - 150						
13C4-PFHpA	91		25 - 150						

TestAmerica Sacramento

QC Sample Results

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Method: WS-LC-0025 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-101659/2-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 101659

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C5 PFNA	102		25 - 150
18O2 PFHxS	96		25 - 150

Lab Sample ID: LCSD 320-101659/3-A

Matrix: Water

Analysis Batch: 101820

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 101659

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	35.4	38.2		ng/L		108	50 - 150	3	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.5		ng/L		106	60 - 140	13	30
Perfluorohexanesulfonic acid (PFHxS)	37.8	33.3		ng/L		88	60 - 140	3	30
Perfluorononanoic acid (PFNA)	40.0	38.6		ng/L		97	60 - 140	8	30
Perfluorooctanoic acid (PFOA)	40.0	39.5		ng/L		99	60 - 140	2	30

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C2 PFHxA	90		25 - 150
13C4 PFOA	91		25 - 150
13C4 PFOS	117		25 - 150
13C4-PFHpA	90		25 - 150
13C5 PFNA	102		25 - 150
18O2 PFHxS	97		25 - 150

Method: WS-LC-0025 - Perfluorinated Hydrocarbons - RA

Lab Sample ID: MB 320-101659/1-A

Matrix: Water

Analysis Batch: 101944

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 101659

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS) - RA	3.0	U	4.0	3.0	1.3	ng/L		02/29/16 19:18	1

	MB	MB		Prepared	Analyzed	Dil Fac
Isotope Dilution	%Recovery	Qualifier	Limits			
13C2 PFHxA - RA	107		25 - 150	02/26/16 08:58	02/29/16 19:18	1
13C4 PFOA - RA	106		25 - 150	02/26/16 08:58	02/29/16 19:18	1
13C4 PFOS - RA	109		25 - 150	02/26/16 08:58	02/29/16 19:18	1
13C4-PFHpA - RA	109		25 - 150	02/26/16 08:58	02/29/16 19:18	1
13C5 PFNA - RA	99		25 - 150	02/26/16 08:58	02/29/16 19:18	1
18O2 PFHxS - RA	106		25 - 150	02/26/16 08:58	02/29/16 19:18	1

Lab Sample ID: LCS 320-101659/2-A

Matrix: Water

Analysis Batch: 101944

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 101659

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS) - RA	38.2	37.6		ng/L		98	60 - 140

TestAmerica Sacramento

QC Sample Results

Client: Earth Toxics, Inc

TestAmerica Job ID: 320-17406-1

Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

LCS LCS

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C2 PFHxA - RA	91		25 - 150
13C4 PFOA - RA	89		25 - 150
13C4 PFOS - RA	92		25 - 150
13C4-PFHpA - RA	94		25 - 150
13C5 PFNA - RA	85		25 - 150
18O2 PFHxS - RA	86		25 - 150

Lab Sample ID: LCSD 320-101659/3-A

Matrix: Water

Analysis Batch: 101944

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 101659

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorooctanesulfonic acid (PFOS) - RA	38.2	42.2		ng/L		110	60 - 140	11	30

LCSD LCSD

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
13C2 PFHxA - RA	95		25 - 150
13C4 PFOA - RA	87		25 - 150
13C4 PFOS - RA	84		25 - 150
13C4-PFHpA - RA	91		25 - 150
13C5 PFNA - RA	85		25 - 150
18O2 PFHxS - RA	90		25 - 150

QC Association Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

LCMS

Prep Batch: 101543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17406-1	BC_2_22_16	Total/NA	Water	3535	
320-17406-2	DW-1	Total/NA	Water	3535	
320-17406-3	DW-1FB	Total/NA	Water	3535	
320-17406-4	DW-56	Total/NA	Water	3535	
320-17406-4 - RA	DW-56	Total/NA	Water	3535	
LCS 320-101543/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-101543/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-101543/1-A	Method Blank	Total/NA	Water	3535	

Prep Batch: 101659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17406-5	DW-56FB	Total/NA	Water	3535	
320-17406-5 - RA	DW-56FB	Total/NA	Water	3535	
320-17406-6	DW-80	Total/NA	Water	3535	
320-17406-6 - RA	DW-80	Total/NA	Water	3535	
320-17406-7	DW-80FB	Total/NA	Water	3535	
320-17406-7 - RA	DW-80FB	Total/NA	Water	3535	
320-17406-8	DW-44	Total/NA	Water	3535	
320-17406-8 - RA	DW-44	Total/NA	Water	3535	
320-17406-9	DW-44FB	Total/NA	Water	3535	
320-17406-9 - RA	DW-44FB	Total/NA	Water	3535	
320-17406-10	DW-15	Total/NA	Water	3535	
320-17406-10 - RA	DW-15	Total/NA	Water	3535	
320-17406-11	DW-15FB	Total/NA	Water	3535	
320-17406-11 - RA	DW-15FB	Total/NA	Water	3535	
320-17406-12	DW-19	Total/NA	Water	3535	
320-17406-12 - RA	DW-19	Total/NA	Water	3535	
320-17406-13	DW-19FB	Total/NA	Water	3535	
320-17406-13 - RA	DW-19FB	Total/NA	Water	3535	
320-17406-14	DW-68	Total/NA	Water	3535	
320-17406-14 - RA	DW-68	Total/NA	Water	3535	
320-17406-15	DW-68FB	Total/NA	Water	3535	
320-17406-15 - RA	DW-68FB	Total/NA	Water	3535	
320-17406-16	DW-55	Total/NA	Water	3535	
320-17406-17	DW-55FB	Total/NA	Water	3535	
320-17406-17 - RA	DW-55FB	Total/NA	Water	3535	
320-17406-18	DW-95	Total/NA	Water	3535	
320-17406-18 - RA	DW-95	Total/NA	Water	3535	
320-17406-19	DW-95FB	Total/NA	Water	3535	
320-17406-19 - RA	DW-95FB	Total/NA	Water	3535	
320-17406-20	DW-6	Total/NA	Water	3535	
320-17406-20 - RA	DW-6	Total/NA	Water	3535	
320-17406-21	DW-6FB	Total/NA	Water	3535	
320-17406-22	DW-37	Total/NA	Water	3535	
320-17406-23	DW-37FB	Total/NA	Water	3535	
320-17406-24	DUP-022216	Total/NA	Water	3535	
LCS 320-101659/2-A	Lab Control Sample	Total/NA	Water	3535	
LCS 320-101659/2-A - RA	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-101659/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
LCSD 320-101659/3-A - RA	Lab Control Sample Dup	Total/NA	Water	3535	
MB 320-101659/1-A	Method Blank	Total/NA	Water	3535	

TestAmerica Sacramento

QC Association Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

LCMS (Continued)

Prep Batch: 101659 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-101659/1-A - RA	Method Blank	Total/NA	Water	3535	

Analysis Batch: 101820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17406-1	BC_2_22_16	Total/NA	Water	WS-LC-0025	101543
320-17406-2	DW-1	Total/NA	Water	WS-LC-0025	101543
320-17406-3	DW-1FB	Total/NA	Water	WS-LC-0025	101543
320-17406-4	DW-56	Total/NA	Water	WS-LC-0025	101543
320-17406-5	DW-56FB	Total/NA	Water	WS-LC-0025	101659
320-17406-6	DW-80	Total/NA	Water	WS-LC-0025	101659
320-17406-7	DW-80FB	Total/NA	Water	WS-LC-0025	101659
320-17406-8	DW-44	Total/NA	Water	WS-LC-0025	101659
320-17406-9	DW-44FB	Total/NA	Water	WS-LC-0025	101659
320-17406-10	DW-15	Total/NA	Water	WS-LC-0025	101659
320-17406-11	DW-15FB	Total/NA	Water	WS-LC-0025	101659
320-17406-12	DW-19	Total/NA	Water	WS-LC-0025	101659
320-17406-13	DW-19FB	Total/NA	Water	WS-LC-0025	101659
320-17406-14	DW-68	Total/NA	Water	WS-LC-0025	101659
320-17406-15	DW-68FB	Total/NA	Water	WS-LC-0025	101659
320-17406-17	DW-55FB	Total/NA	Water	WS-LC-0025	101659
320-17406-18	DW-95	Total/NA	Water	WS-LC-0025	101659
320-17406-19	DW-95FB	Total/NA	Water	WS-LC-0025	101659
320-17406-20	DW-6	Total/NA	Water	WS-LC-0025	101659
320-17406-21	DW-6FB	Total/NA	Water	WS-LC-0025	101659
320-17406-22	DW-37	Total/NA	Water	WS-LC-0025	101659
320-17406-23	DW-37FB	Total/NA	Water	WS-LC-0025	101659
320-17406-24	DUP-022216	Total/NA	Water	WS-LC-0025	101659
LCS 320-101543/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	101543
LCS 320-101659/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025	101659
LCSD 320-101543/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	101543
LCSD 320-101659/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	101659
MB 320-101543/1-A	Method Blank	Total/NA	Water	WS-LC-0025	101543
MB 320-101659/1-A	Method Blank	Total/NA	Water	WS-LC-0025	101659

Analysis Batch: 101944

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17406-4 - RA	DW-56	Total/NA	Water	WS-LC-0025	101543
320-17406-5 - RA	DW-56FB	Total/NA	Water	WS-LC-0025	101659
320-17406-6 - RA	DW-80	Total/NA	Water	WS-LC-0025	101659
320-17406-7 - RA	DW-80FB	Total/NA	Water	WS-LC-0025	101659
320-17406-8 - RA	DW-44	Total/NA	Water	WS-LC-0025	101659
320-17406-9 - RA	DW-44FB	Total/NA	Water	WS-LC-0025	101659
320-17406-10 - RA	DW-15	Total/NA	Water	WS-LC-0025	101659
320-17406-11 - RA	DW-15FB	Total/NA	Water	WS-LC-0025	101659
320-17406-12 - RA	DW-19	Total/NA	Water	WS-LC-0025	101659
320-17406-13 - RA	DW-19FB	Total/NA	Water	WS-LC-0025	101659
320-17406-14 - RA	DW-68	Total/NA	Water	WS-LC-0025	101659
320-17406-15 - RA	DW-68FB	Total/NA	Water	WS-LC-0025	101659
320-17406-16	DW-55	Total/NA	Water	WS-LC-0025	101659
320-17406-17 - RA	DW-55FB	Total/NA	Water	WS-LC-0025	101659
320-17406-18 - RA	DW-95	Total/NA	Water	WS-LC-0025	101659

TestAmerica Sacramento

QC Association Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

LCMS (Continued)

Analysis Batch: 101944 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-17406-19 - RA	DW-95FB	Total/NA	Water	WS-LC-0025	101659
320-17406-20 - RA	DW-6	Total/NA	Water	WS-LC-0025	101659
LCS 320-101659/2-A - RA	Lab Control Sample	Total/NA	Water	WS-LC-0025	101659
LCSD 320-101659/3-A - RA	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025	101659
MB 320-101659/1-A - RA	Method Blank	Total/NA	Water	WS-LC-0025	101659

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: BC_2_22_16

Date Collected: 02/22/16 11:02

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			489.6 mL	1.00 mL	101543	02/25/16 10:17	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	489.6 mL	1.00 mL	101820	02/27/16 02:59	JRB	TAL SAC
Instrument ID: A4										

Client Sample ID: DW-1

Date Collected: 02/22/16 11:31

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			546.1 mL	1.00 mL	101543	02/25/16 10:17	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	546.1 mL	1.00 mL	101820	02/27/16 03:20	JRB	TAL SAC
Instrument ID: A4										

Client Sample ID: DW-1FB

Date Collected: 02/22/16 11:21

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			508.3 mL	1.00 mL	101543	02/25/16 10:17	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	508.3 mL	1.00 mL	101820	02/27/16 03:41	JRB	TAL SAC
Instrument ID: A4										

Client Sample ID: DW-56

Date Collected: 02/22/16 12:06

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			538 mL	1.00 mL	101543	02/25/16 10:17	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	538 mL	1.00 mL	101820	02/27/16 10:09	JRB	TAL SAC
Instrument ID: A4										
Total/NA	Prep	3535	RA		538 mL	1.00 mL	101543	02/25/16 10:17	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	538 mL	1.00 mL	101944	02/29/16 18:57	JRB	TAL SAC
Instrument ID: A6										

Client Sample ID: DW-56FB

Date Collected: 02/22/16 11:56

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			507.4 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	507.4 mL	1.00 mL	101820	02/27/16 11:34	JRB	TAL SAC
Instrument ID: A4										
Total/NA	Prep	3535	RA		507.4 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-56FB

Date Collected: 02/22/16 11:56

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025	RA	1	507.4 mL	1.00 mL	101944	02/29/16 20:22	JRB	TAL SAC
Instrument ID: A6										

Client Sample ID: DW-80

Date Collected: 02/22/16 12:31

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			562.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	562.5 mL	1.00 mL	101820	02/27/16 11:56	JRB	TAL SAC
Instrument ID: A4										
Total/NA	Prep	3535	RA		562.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	562.5 mL	1.00 mL	101944	02/29/16 20:43	JRB	TAL SAC
Instrument ID: A6										

Client Sample ID: DW-80FB

Date Collected: 02/22/16 12:21

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			493 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	493 mL	1.00 mL	101820	02/27/16 12:17	JRB	TAL SAC
Instrument ID: A4										
Total/NA	Prep	3535	RA		493 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	493 mL	1.00 mL	101944	02/29/16 21:05	JRB	TAL SAC
Instrument ID: A6										

Client Sample ID: DW-44

Date Collected: 02/22/16 12:56

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			570.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	570.5 mL	1.00 mL	101820	02/27/16 12:38	JRB	TAL SAC
Instrument ID: A4										
Total/NA	Prep	3535	RA		570.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	570.5 mL	1.00 mL	101944	02/29/16 21:26	JRB	TAL SAC
Instrument ID: A6										

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-44FB

Date Collected: 02/22/16 12:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			499.2 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	499.2 mL	1.00 mL	101820	02/27/16 12:59	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		499.2 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	499.2 mL	1.00 mL	101944	02/29/16 21:47	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-15

Date Collected: 02/22/16 13:26

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			572.1 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	572.1 mL	1.00 mL	101820	02/27/16 13:20	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		572.1 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	572.1 mL	1.00 mL	101944	02/29/16 22:08	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-15FB

Date Collected: 02/22/16 13:16

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			505.7 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	505.7 mL	1.00 mL	101820	02/27/16 14:03	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		505.7 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	505.7 mL	1.00 mL	101944	02/29/16 22:51	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-19

Date Collected: 02/22/16 14:01

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			547.8 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	547.8 mL	1.00 mL	101820	02/27/16 14:24	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		547.8 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	547.8 mL	1.00 mL	101944	02/29/16 23:12	JRB	TAL SAC
		Instrument ID: A6								

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-19FB

Date Collected: 02/22/16 13:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			560.9 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	560.9 mL	1.00 mL	101820	02/27/16 14:45	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		560.9 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	560.9 mL	1.00 mL	101944	02/29/16 23:33	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-68

Date Collected: 02/22/16 14:31

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			555.4 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	555.4 mL	1.00 mL	101820	02/27/16 15:06	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		555.4 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	555.4 mL	1.00 mL	101944	02/29/16 23:54	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-68FB

Date Collected: 02/22/16 14:16

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			566.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	566.5 mL	1.00 mL	101820	02/27/16 15:27	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		566.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	566.5 mL	1.00 mL	101944	03/01/16 00:16	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-55

Date Collected: 02/22/16 15:51

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			536 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	536 mL	1.00 mL	101944	03/01/16 00:37	JRB	TAL SAC
		Instrument ID: A6								

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-55FB

Date Collected: 02/22/16 15:41

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			567 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	567 mL	1.00 mL	101820	02/27/16 16:10	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		567 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	567 mL	1.00 mL	101944	03/01/16 00:58	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-95

Date Collected: 02/22/16 16:36

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			513.2 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	513.2 mL	1.00 mL	101820	02/27/16 16:31	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		513.2 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	513.2 mL	1.00 mL	101944	03/01/16 01:19	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-95FB

Date Collected: 02/22/16 16:21

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425.6 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	425.6 mL	1.00 mL	101820	02/27/16 16:52	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		425.6 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	425.6 mL	1.00 mL	101944	03/01/16 01:41	JRB	TAL SAC
		Instrument ID: A6								

Client Sample ID: DW-6

Date Collected: 02/22/16 17:01

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-20

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			570.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	570.5 mL	1.00 mL	101820	02/27/16 17:13	JRB	TAL SAC
		Instrument ID: A4								
Total/NA	Prep	3535	RA		570.5 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025	RA	1	570.5 mL	1.00 mL	101944	03/01/16 02:02	JRB	TAL SAC
		Instrument ID: A6								

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Client Sample ID: DW-6FB

Date Collected: 02/22/16 16:51

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-21

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			439.9 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	439.9 mL	1.00 mL	101820	02/27/16 17:56	JRB	TAL SAC
Instrument ID: A4										

Client Sample ID: DW-37

Date Collected: 02/22/16 10:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			499.6 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	499.6 mL	1.00 mL	101820	02/27/16 18:17	JRB	TAL SAC
Instrument ID: A4										

Client Sample ID: DW-37FB

Date Collected: 02/22/16 10:27

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-23

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			504 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	504 mL	1.00 mL	101820	02/27/16 18:38	JRB	TAL SAC
Instrument ID: A4										

Client Sample ID: DUP-022216

Date Collected: 02/22/16 10:46

Date Received: 02/24/16 09:45

Lab Sample ID: 320-17406-24

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			537.7 mL	1.00 mL	101659	02/26/16 08:58	HJA	TAL SAC
Total/NA	Analysis	WS-LC-0025		1	537.7 mL	1.00 mL	101820	02/27/16 18:59	JRB	TAL SAC
Instrument ID: A4										

Laboratory References:

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

Certification Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
New Jersey	NELAP	2	CA005	06-30-16

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
New Jersey	NELAP	2	CO004	06-30-16

Method Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC

Protocol References:

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe--NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-17406-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-17406-1	BC_2_22_16	Water	02/22/16 11:02	02/24/16 09:45
320-17406-2	DW-1	Water	02/22/16 11:31	02/24/16 09:45
320-17406-3	DW-1FB	Water	02/22/16 11:21	02/24/16 09:45
320-17406-4	DW-56	Water	02/22/16 12:06	02/24/16 09:45
320-17406-5	DW-56FB	Water	02/22/16 11:56	02/24/16 09:45
320-17406-6	DW-80	Water	02/22/16 12:31	02/24/16 09:45
320-17406-7	DW-80FB	Water	02/22/16 12:21	02/24/16 09:45
320-17406-8	DW-44	Water	02/22/16 12:56	02/24/16 09:45
320-17406-9	DW-44FB	Water	02/22/16 12:46	02/24/16 09:45
320-17406-10	DW-15	Water	02/22/16 13:26	02/24/16 09:45
320-17406-11	DW-15FB	Water	02/22/16 13:16	02/24/16 09:45
320-17406-12	DW-19	Water	02/22/16 14:01	02/24/16 09:45
320-17406-13	DW-19FB	Water	02/22/16 13:46	02/24/16 09:45
320-17406-14	DW-68	Water	02/22/16 14:31	02/24/16 09:45
320-17406-15	DW-68FB	Water	02/22/16 14:16	02/24/16 09:45
320-17406-16	DW-55	Water	02/22/16 15:51	02/24/16 09:45
320-17406-17	DW-55FB	Water	02/22/16 15:41	02/24/16 09:45
320-17406-18	DW-95	Water	02/22/16 16:36	02/24/16 09:45
320-17406-19	DW-95FB	Water	02/22/16 16:21	02/24/16 09:45
320-17406-20	DW-6	Water	02/22/16 17:01	02/24/16 09:45
320-17406-21	DW-6FB	Water	02/22/16 16:51	02/24/16 09:45
320-17406-22	DW-37	Water	02/22/16 10:46	02/24/16 09:45
320-17406-23	DW-37FB	Water	02/22/16 10:27	02/24/16 09:45
320-17406-24	DUP-022216	Water	02/22/16 10:46	02/24/16 09:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Instrument ID: A4 Analysis Batch Number: 101820Lab Sample ID: CCV 320-101820/43 Client Sample ID: _____Date Analyzed: 02/27/16 13:41 Lab File ID: 26FEB2016A4A_047.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFOS	12.07	Baseline	westendor fc	02/28/16 13:46

Lab Sample ID: 320-17406-14 Client Sample ID: DW-68Date Analyzed: 02/27/16 15:06 Lab File ID: 26FEB2016A4A_051.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	10.18	Isomers	barnettj	02/29/16 10:26

Lab Sample ID: 320-17406-18 Client Sample ID: DW-95Date Analyzed: 02/27/16 16:31 Lab File ID: 26FEB2016A4A_055.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	10.18	Isomers	barnettj	02/29/16 10:30
Perfluorooctanoic acid (PFOA)	11.22	Isomers	barnettj	02/29/16 10:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Instrument ID: A6 Analysis Batch Number: 101944Lab Sample ID: 320-17406-14 RA Client Sample ID: DW-68 RADate Analyzed: 02/29/16 23:54 Lab File ID: 29FEB2016A6B_021.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.29	Isomers	westendor fc	03/11/16 10:34

Lab Sample ID: 320-17406-18 RA Client Sample ID: DW-95 RADate Analyzed: 03/01/16 01:19 Lab File ID: 29FEB2016A6B_025.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	11.30	Isomers	westendor fc	03/11/16 10:35

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00027	08/19/16	02/19/16	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00003	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.1 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00007	0.1 mL	13C8_FOSA	1 ug/mL
					LCMPFBA_00004	0.1 mL	13C4_PFBA	1 ug/mL
					LCMPFDA_00004	0.1 mL	13C2_PFDA	1 ug/mL
					LCMPFDoA_00004	0.1 mL	13C2_PFDoA	1 ug/mL
					LCMPFHxA_00005	0.1 mL	13C2_PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	18O2_PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5_PFNA	1 ug/mL
					LCMPFOA_00008	0.1 mL	13C4_PFOA	1 ug/mL
					LCMPFOS_00010	0.1 mL	13C4_PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.1 mL	13C2_PFUdA	1 ug/mL
.LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00007	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8_FOSA	50 ug/mL
.LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4_PFBA	50 ug/mL
.LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2_PFDA	50 ug/mL
.LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2_PFDoA	50 ug/mL
.LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2_PFHxA	50 ug/mL
.LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2_PFHxS	47.3 ug/mL
.LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5_PFNA	50 ug/mL
.LCMPFOA_00008	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4_PFOA	50 ug/mL
.LCMPFOS_00010	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4_PFOS	47.8 ug/mL
.LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2_PFUdA	50 ug/mL
LCMPFCSU_00028	08/25/16	02/25/16	Methanol, Lot Baker 115491	10000 uL	LCM2PFHxDA_00003	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	200 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00007	200 uL	13C8_FOSA	1 ug/mL
					LCMPFBA_00004	200 uL	13C4_PFBA	1 ug/mL
					LCMPFDA_00006	200 uL	13C2_PFDA	1 ug/mL
					LCMPFDoA_00004	200 uL	13C2_PFDoA	1 ug/mL
					LCMPFHxA_00007	200 uL	13C2_PFHxA	1 ug/mL
					LCMPFHxS_00004	200 uL	18O2_PFHxS	0.946 ug/mL
					LCMPFNA_00004	200 uL	13C5_PFNA	1 ug/mL
					LCMPFOA_00008	200 uL	13C4_PFOA	1 ug/mL
					LCMPFOS_00010	200 uL	13C4_PFOS	0.956 ug/mL
					LCMPFUdA_00005	200 uL	13C2_PFUdA	1 ug/mL
.LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCM5PFPEA 00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA 00007	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA 00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA 00006	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA 00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA 00007	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS 00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA 00004	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA 00008	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS 00010	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA 00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00018	06/29/16	12/30/15	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.473 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.478 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8_FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4_PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2_PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2_PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2_PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2_PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5_PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4_PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4_PFOS	0.956 ug/mL
					LCMPFUDa_00005	0.2 mL	13C2_PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8_FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4_PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2_PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2_PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2_PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2_PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5_PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4_PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4_PFOS	47.8 ug/mL
..LCMPFUDa_00005	10/31/19	Wellington Laboratories, Lot MPFUDa1014			(Purchased Reagent)		13C2_PFUnA	50 ug/mL
.LCPFCSU_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSU_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUDA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18		Wellington Laboratories, Lot PFBA0313		(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19		Wellington Laboratories, Lot LPFBS1014		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00003	06/18/18		Wellington Laboratories, Lot PFDA0613		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18		Wellington Laboratories, Lot PFDoA0113		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18		Wellington Laboratories, Lot LPFDS0913		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19		Wellington Laboratories, Lot PFHpA0514		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17		Wellington Laboratories, Lot LPFHpS1112		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19		Wellington Laboratories, Lot PFHxA0514		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19		Wellington Laboratories, Lot LPFHxS0514		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19		Wellington Laboratories, Lot PFNA0514		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18		Wellington Laboratories, Lot PFOA1013		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17		Wellington Laboratories, Lot PFODA0807		(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19		Wellington Laboratories, Lot LPFOS0614		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18		Wellington Laboratories, Lot FOSA0714I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18		Wellington Laboratories, Lot PFPeA0113		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFUdA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00018	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.946 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.956 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS_00004	0.2 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17		Wellington Laboratories, Lot M2PFTeDA1112		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20		Wellington Laboratories, Lot M4PFHPA0515		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00005	10/31/19		Wellington Laboratories, Lot MPFUDa1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSF_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSF_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctandecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSF_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDaA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00019	06/29/16	01/08/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
					LCPFCSU_00040	50 uL	13C2 PFUnA	50 ng/mL
							Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid (PFHpA)	0.964 ng/mL
							Perfluoroheptanoic acid	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.946 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.956 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00005	0.2 mL	13C2 PFUnA	1 ug/mL
					(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM8FOSA 00006	12/15/16		Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00004	10/31/19		Wellington Laboratories, Lot MPFBA1014		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA 00004	04/13/19		Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00004	07/17/19		Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00005	04/13/19		Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00004	07/25/18		Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00003	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00007	04/10/20		Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00009	05/15/20		Wellington Laboratories, Lot MPFOS0515		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00005	10/31/19		Wellington Laboratories, Lot MPFUDa1014		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA 00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA 00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA 00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA 00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA 00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA 00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA 00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA 00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFFDA 00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA 00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA 00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpa_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA 00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA 00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA 00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA 00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA 00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpa	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00040	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.73 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctandecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.78 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00005	10/31/19	Wellington Laboratories, Lot MPFUDa1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00040	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFCSP_00039	0.5 mL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0946 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0956 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
Perfluorotridecanoic acid	0.1 ug/mL							
Perfluoroundecanoic acid	0.1 ug/mL							
..LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDaA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL					
LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL					
...LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFDA_00003	06/18/18		Wellington Laboratories, Lot PFDA0613		(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00003	01/03/18		Wellington Laboratories, Lot PFDoA0113		(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDSA_00001	09/13/18		Wellington Laboratories, Lot LPFDS0913		(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00004	05/09/19		Wellington Laboratories, Lot PFHpA0514		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00001	11/21/17		Wellington Laboratories, Lot LPFHpS1112		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00003	05/09/19		Wellington Laboratories, Lot PFHxA0514		(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17		Wellington Laboratories, Lot PFHxDA0707		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxSA_00001	05/09/19		Wellington Laboratories, Lot LPFHxS0514		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
...LCPFNA_00004	05/09/19		Wellington Laboratories, Lot PFNA0514		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00004	10/11/18		Wellington Laboratories, Lot PFOA1013		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00004	04/25/17		Wellington Laboratories, Lot PFODA0807		(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
...LCPFOS_00004	06/20/19		Wellington Laboratories, Lot LPFOS0614		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
...LCPFOSA_00005	07/31/18		Wellington Laboratories, Lot FOSA0714I		(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00003	01/03/18		Wellington Laboratories, Lot PFPeA0113		(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00017	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.92 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	19.12 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00005	10/31/19	Wellington Laboratories, Lot MPFUDa1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBFA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHFA_00004	0.1 mL	Perfluoroheptanoic acid (PFHFA)	1 ug/mL
					LCPFHFA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA_00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA_00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA_00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00016	06/29/16	12/30/15	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00024	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFCSU_00039	250 uL	13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
							Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.3 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.8 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
Perfluoroundecanoic acid	50 ng/mL							
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
					(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
					(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)			
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA 00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA 00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA 00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA 00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA 00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA 00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA 00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA 00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTTrDA 00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA 00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA 00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA 00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA 00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA 00001	11/21/17	Wellington Laboratories, Lot LPFHpS1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFTeDA_00003	06/19/18		Wellington Laboratories, Lot PFTeDA0613		(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00003	12/10/18		Wellington Laboratories, Lot PFTrDA1213		(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18		Wellington Laboratories, Lot PFUdA0613		(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L6_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDaA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	400 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	189.2 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	191.2 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00003	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPeA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00003	05/22/20	Wellington Laboratories, Lot M4PFHPA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00005	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPPCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDa 00003	01/03/18	Wellington Laboratories, Lot PFDa0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDSA 00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpa_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA 00001	11/21/17	Wellington Laboratories, Lot LPFHps1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxSA_00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
..LCPFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctandecanoic acid	50 ug/mL
..LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
..LCPFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA 00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA 00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTTrDA 00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00003	06/19/18	Wellington Laboratories, Lot PFUdA0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00015	06/29/16	12/30/15	MeOH/H2O, Lot 090285	2 mL	LCMPFCSU_00024	100 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpa	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDa	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00039	800 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL
							Perfluorododecanoic acid	400 ng/mL
							Perfluorodecane Sulfonic acid	385.6 ng/mL
							Perfluoroheptanoic acid (PFHpA)	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	378.4 ng/mL
							Perfluorononanoic acid (PFNA)	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctadecanoic acid	400 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	382.4 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00024	06/29/16	12/29/15	Methanol, Lot Baker 115491	10 mL	LCM2PFHxDA_00003	0.2 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.2 mL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00004	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.2 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00004	0.2 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00004	0.2 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00005	0.2 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.2 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.2 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00005	0.2 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00003	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHFA0515			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00004	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00004	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00005	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00005	10/31/19	Wellington Laboratories, Lot MPFUDa1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00039	06/30/16	12/30/15	Methanol, Lot 090285	5 mL	LCPFBA_00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDSA_00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHFA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHPSA_00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA_00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00004	0.1 mL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA_00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
					(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
					(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
					(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
					(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
					(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
					(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
					(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
					(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
					(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
					(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
					(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
					(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
					(Purchased Reagent)		13C2-PFTeDA	50 ng/mL
					(Purchased Reagent)		13C4-PFHpA	50 ng/mL
					(Purchased Reagent)		13C5-PFPeA	50 ng/mL
					(Purchased Reagent)		13C8 FOSA	50 ng/mL
					(Purchased Reagent)		13C4 PFBA	50 ng/mL
					(Purchased Reagent)		13C2 PFDA	50 ng/mL
					(Purchased Reagent)		13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
LCPFCIC_00014	03/15/16	09/15/15	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00018	250 uL	13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFACMXB_00006	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00018	03/15/16	09/15/15	Methanol, Lot Fisher 153635	10 mL	LCM2PFTeDA_00002	0.2 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00002	0.2 mL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00003	0.2 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.2 mL	13C8_FOSA	1 ug/mL
					LCMPFBA_00003	0.2 mL	13C4_PFBA	1 ug/mL
					LCMPFDA_00005	0.2 mL	13C2_PFDA	1 ug/mL
					LCMPFDoA_00003	0.2 mL	13C2_PFDoA	1 ug/mL
					LCMPFHxA_00006	0.2 mL	13C2_PFHxA	1 ug/mL
					LCMPFHxS_00003	0.2 mL	18O2_PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.2 mL	13C5_PFNA	1 ug/mL
					LCMPFOA_00007	0.2 mL	13C4_PFOA	1 ug/mL
					LCMPFOS_00007	0.2 mL	13C4_PFOS	0.956 ug/mL
					LCMPFUDa_00004	0.2 mL	13C2_PFUnA	1 ug/mL
					..LCM2PFTeDA_00002	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112	
..LCM4PFHPA_00002	12/10/18	Wellington Laboratories, Lot M4PFHpA1213		(Purchased Reagent)		13C4-PFHpA	50 ug/mL	
..LCM5PFPEA_00003	03/21/18	Wellington Laboratories, Lot M5PFPeA0313		(Purchased Reagent)		13C5-PFPeA	50 ug/mL	
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I		(Purchased Reagent)		13C8_FOSA	50 ug/mL	
..LCMPFBA_00003	01/22/18	Wellington Laboratories, Lot MPFBA0113		(Purchased Reagent)		13C4_PFBA	50 ug/mL	
..LCMPFDA_00005	04/13/19	Wellington Laboratories, Lot MPFDA0414		(Purchased Reagent)		13C2_PFDA	50 ug/mL	
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714		(Purchased Reagent)		13C2_PFDoA	50 ug/mL	
..LCMPFHxA_00006	04/13/19	Wellington Laboratories, Lot MPFHxA0414		(Purchased Reagent)		13C2_PFHxA	50 ug/mL	
..LCMPFHxS_00003	07/25/18	Wellington Laboratories, Lot MPFHxS0713		(Purchased Reagent)		18O2_PFHxS	47.3 ug/mL	
..LCMPFNA_00003	04/13/19	Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5_PFNA	50 ug/mL	
..LCMPFOA_00007	04/10/20	Wellington Laboratories, Lot MPFOA0415		(Purchased Reagent)		13C4_PFOA	50 ug/mL	
..LCMPFOS_00007	10/09/19	Wellington Laboratories, Lot MPFOS1014		(Purchased Reagent)		13C4_PFOS	47.8 ug/mL	
..LCMPFUDa_00004	10/31/19	Wellington Laboratories, Lot MPFUDa1014		(Purchased Reagent)		13C2_PFUnA	50 ug/mL	
.LCPFACMXB_00006	01/08/18		Wellington Laboratories, Lot PFACMXB0312		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCIC_00016	06/16/16	12/22/15	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00023	250 uL	13C2-PFHxDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpa	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00008	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
		Perfluorononanoic acid (PFNA)	50 ng/mL					
		Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL					
		Perfluorooctanoic acid (PFOA)	50 ng/mL					
.LCMPFCSU_00023	06/21/16	12/21/15	Methanol, Lot Baker 115491	5 mL	LCM2PFHxDA_00002	0.1 mL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00003	0.1 mL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00003	0.1 mL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00004	0.1 mL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00006	0.1 mL	13C8 FOSA	1 ug/mL
					LCMPFBA_00004	0.1 mL	13C4 PFBA	1 ug/mL
					LCMPFDA_00005	0.1 mL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00003	0.1 mL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00006	0.1 mL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00004	0.1 mL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00003	0.1 mL	13C5 PFNA	1 ug/mL
					LCMPFOA_00007	0.1 mL	13C4 PFOA	1 ug/mL
					LCMPFOS_00009	0.1 mL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00004	0.1 mL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00002	11/29/17	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00003	11/29/17	Wellington Laboratories, Lot M2PFTeDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00003	05/22/20	Wellington Laboratories, Lot M4PFHpa0515			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00004	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00006	12/15/16	Wellington Laboratories, Lot M8FOSA1214I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00004	10/31/19	Wellington Laboratories, Lot MPFBA1014			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00005	04/13/19	Wellington Laboratories, Lot MPFDA0414			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00003	07/17/19	Wellington Laboratories, Lot MPFDoA0714			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00006	04/13/19	Wellington Laboratories, Lot MPFHxA0414			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00004	07/25/18	Wellington Laboratories, Lot MPFHxS0713			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFNA 00003	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00007	04/10/20	Wellington Laboratories, Lot MPFOA0415			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00009	05/15/20	Wellington Laboratories, Lot MPFOS0515			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00004	10/31/19	Wellington Laboratories, Lot MPFUDa1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00008	06/20/19	Wellington Laboratories, Lot PFACMXB0614			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00041	08/11/16	02/11/16	Methanol, Lot 090285	5 mL	LCPFBA 00003	0.1 mL	Perfluorobutyric acid	1 ug/mL
					LCPFBS 00003	0.1 mL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFBSA_00001	0.1 mL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA 00003	0.1 mL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA 00003	0.1 mL	Perfluorododecanoic acid	1 ug/mL
					LCPFDoS_00003	0.1 mL	PFDoS (Perflouro-1-dodecanesulfonate)	0.968 ug/mL
					LCPFDS 00003	0.1 mL	Perfluorodecane Sulfonate	0.964 ug/mL
					LCPFDSA 00001	0.1 mL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00004	0.1 mL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS 00005	0.1 mL	Perfluoroheptane Sulfonate	0.952 ug/mL
					LCPFHpSA 00001	0.1 mL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA 00003	0.1 mL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA 00004	0.1 mL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS 00003	0.1 mL	Perfluorohexane Sulfonate	0.946 ug/mL
					LCPFHxSA_00001	0.1 mL	Perfluorohexanesulfonic acid (PFHxS)	0.946 ug/mL
					LCPFNA 00004	0.1 mL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00002	0.1 mL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA 00004	0.1 mL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA 00004	0.1 mL	Perfluorooctandecanoic acid	1 ug/mL
					LCPFOS_00004	0.1 mL	Perfluorooctanesulfonic acid (PFOS)	0.956 ug/mL
					LCPFOSA 00005	0.1 mL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA 00003	0.1 mL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	0.1 mL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA 00003	0.1 mL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA 00003	0.1 mL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA 00003	0.1 mL	Perfluoroundecanoic acid	1 ug/mL
.LCPFBA 00003	03/05/18	Wellington Laboratories, Lot PFBA0313			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-17406-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFBFS 00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBFA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA 00003	06/18/18	Wellington Laboratories, Lot PFDA0613			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA 00003	01/03/18	Wellington Laboratories, Lot PFDoA0113			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDoS_00003	10/06/16	Wellington Laboratories, Lot LPFDoS1011			(Purchased Reagent)		PFDoS (Perflouro-1-dodecanesulfonate)	48.4 ug/mL
.LCPFDS 00003	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
.LCPFDSA 00001	09/13/18	Wellington Laboratories, Lot LPFDS0913			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpa_00004	05/09/19	Wellington Laboratories, Lot PFHpA0514			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHps 00005	01/28/19	Wellington Laboratories, Lot LPFHps0114			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
.LCPFHpsA 00001	11/21/17	Wellington Laboratories, Lot LPFHps1112			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA 00003	05/09/19	Wellington Laboratories, Lot PFHxA0514			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA 00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS 00003	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexane Sulfonate	47.3 ug/mL
.LCPFHxSA 00001	05/09/19	Wellington Laboratories, Lot LPFHxS0514			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	47.3 ug/mL
.LCPFNA 00004	05/09/19	Wellington Laboratories, Lot PFNA0514			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA 00004	10/11/18	Wellington Laboratories, Lot PFOA1013			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00004	04/25/17	Wellington Laboratories, Lot PFODA0807			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS_00004	06/20/19	Wellington Laboratories, Lot LPFOS0614			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	47.8 ug/mL
.LCPFOSA 00005	07/31/18	Wellington Laboratories, Lot FOSA0714I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA 00003	01/03/18	Wellington Laboratories, Lot PFPeA0113			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFPes_00002	07/04/17	Wellington Laboratories, Lot LPFPes0712			(Purchased Reagent)		PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA 00003	06/19/18	Wellington Laboratories, Lot PFTeDA0613			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA 00003	12/10/18	Wellington Laboratories, Lot PFTTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA 00003	06/19/18	Wellington Laboratories, Lot PFUDa0613			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LCM2PFHxDA_00002

Rec: 8/14/14 SKV



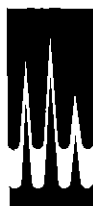
318141

ID: LCM2PFHxDA_00002

Exp: 11/29/17 Prod: SKV

13C2-PFHxDA at 50ug/mL

Scanned: 8/18/14 SKV



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

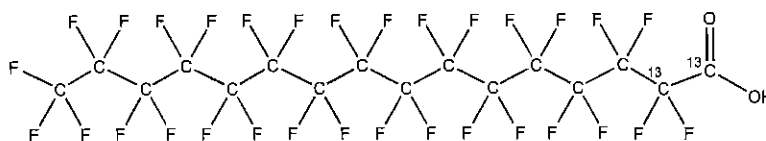
M2PFHxDA

LOT NUMBER:

M2PFHxDA1112

COMPOUND:Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₁₄HF₃₁O₂**MOLECULAR WEIGHT:**

816.11

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C(1,2-¹³C₂)**LAST TESTED:** (mm/dd/yyyy)

11/29/2012

EXPIRY DATE: (mm/dd/yyyy)

11/29/2017

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.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/10/2013

(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.

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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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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.

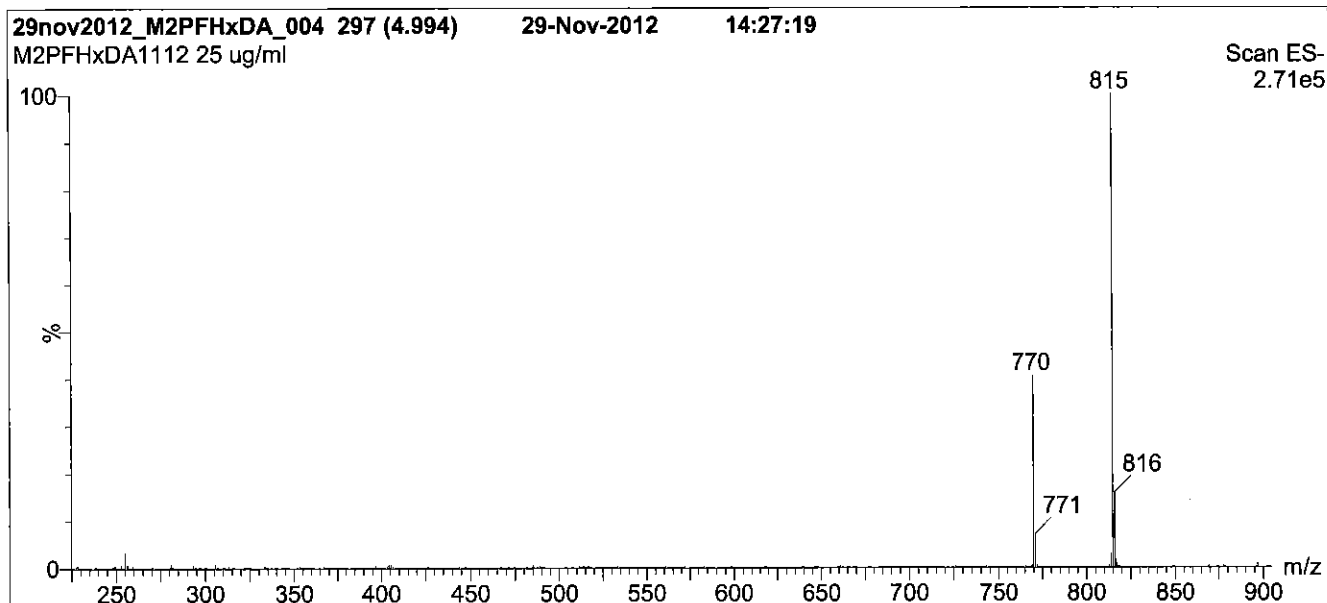
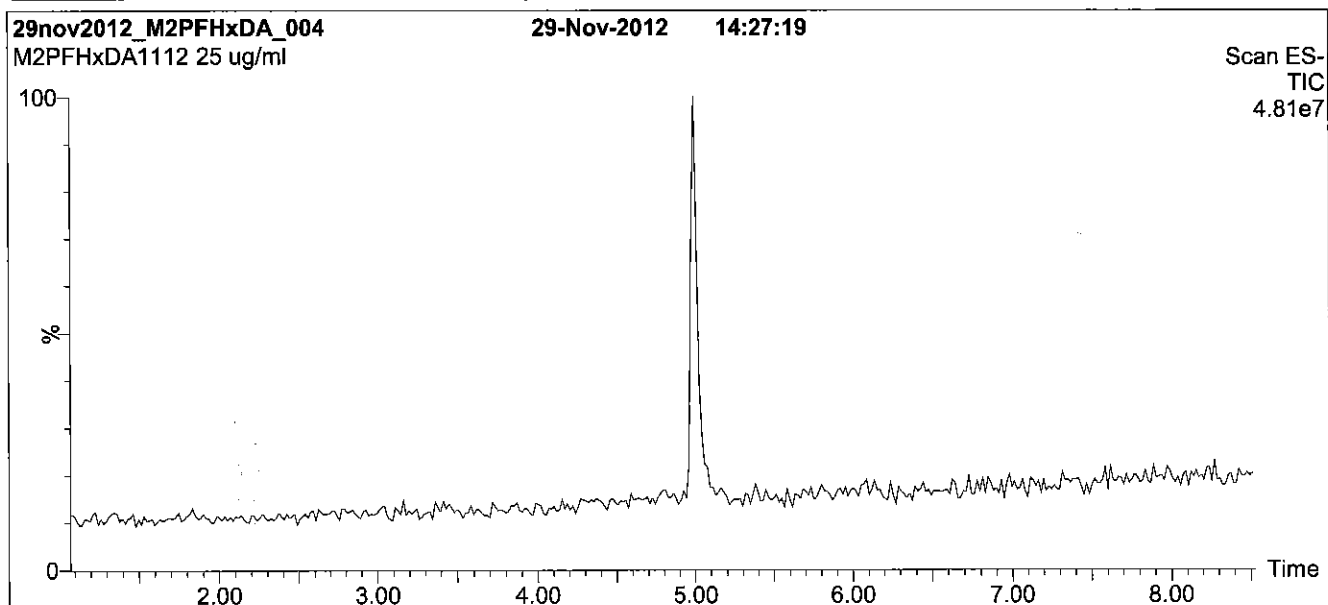
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com****

Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

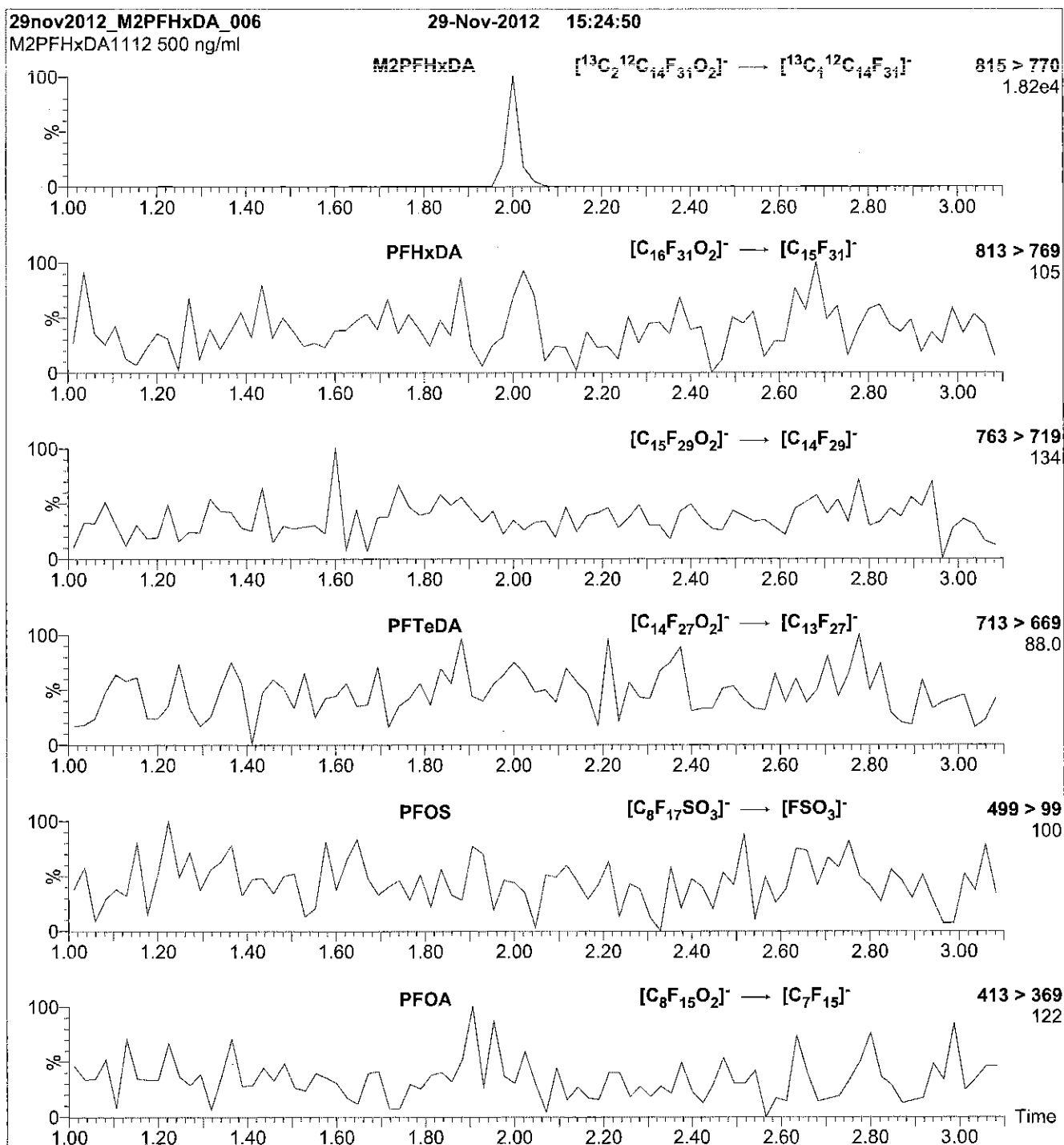
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFHxDA)

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

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFHxDA_00003

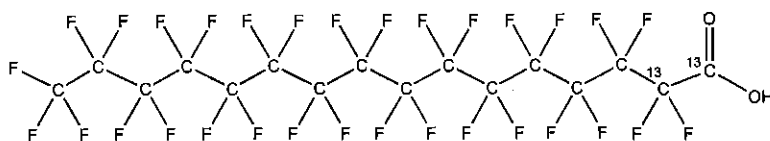


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂ **MOLECULAR WEIGHT:** 816.11
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 11/29/2012 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017
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.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 04/01/2015
 (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.

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.

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

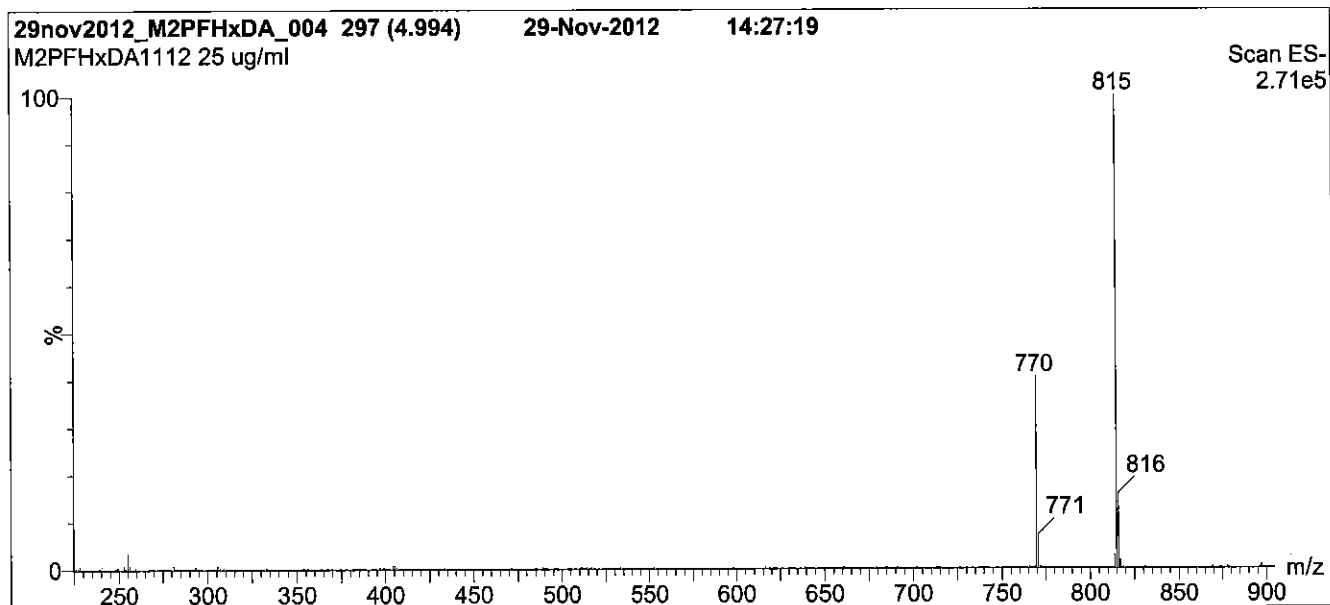
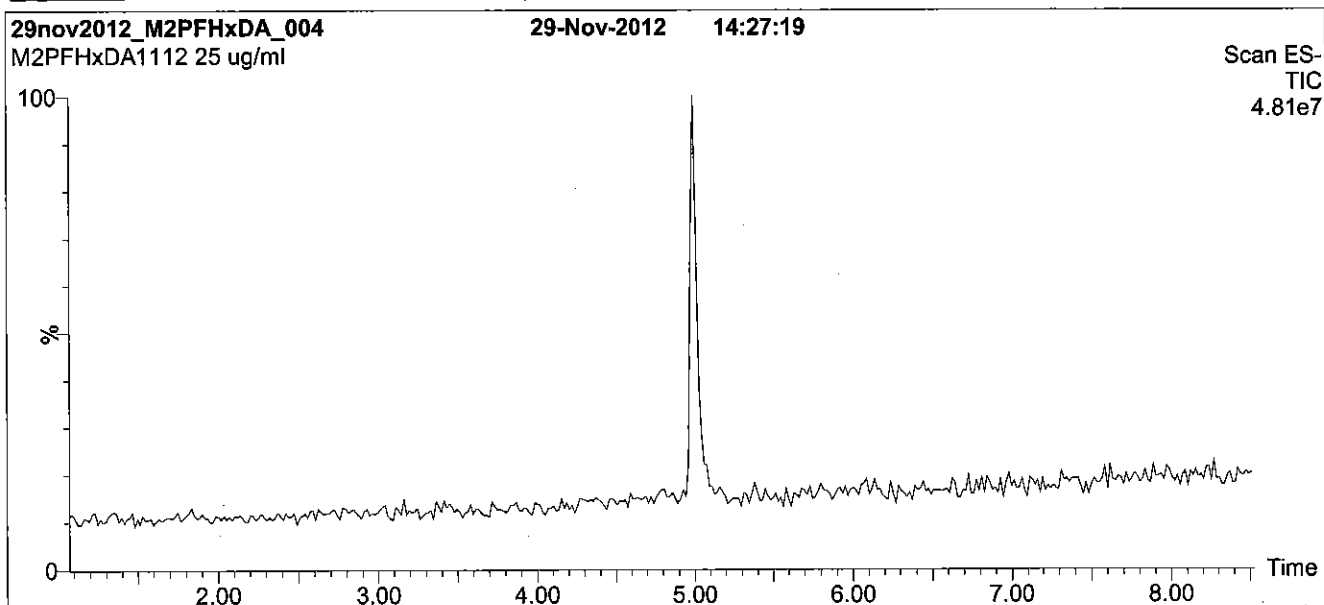
QUALITY MANAGEMENT:

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



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

Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

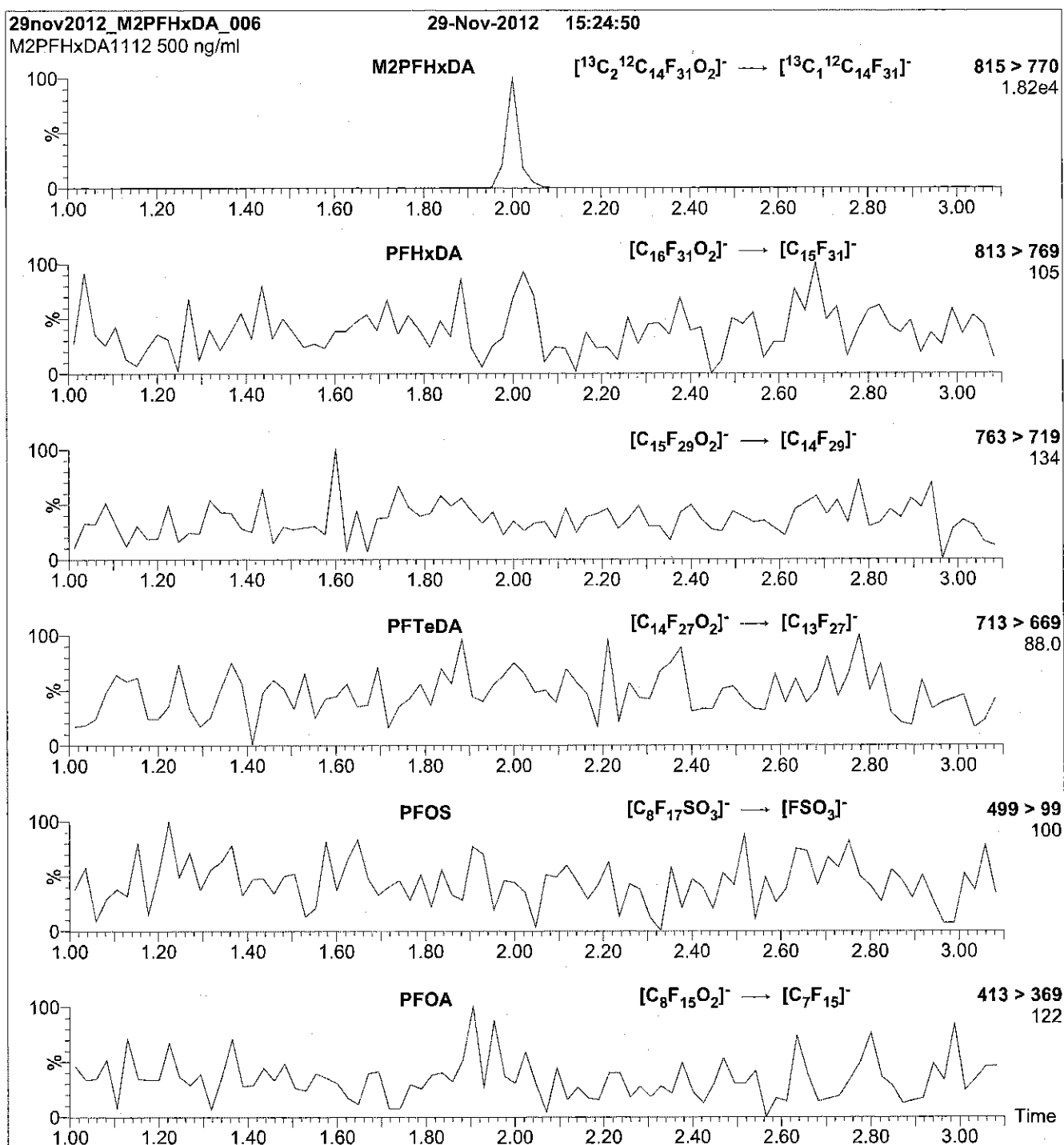
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFHxDA)

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

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

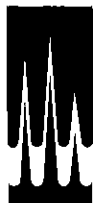
LCM2PFTeDA_00002

Rec: 8/14/14 SKV



318142
ID: LCM2PFTeDA_00002
Exp: 11/29/17 Rptd: SKV
13C2-PFTeDA at 50ug/mL

Scanned: 8/18/14 SK



WELLINGTON LABORATORIES

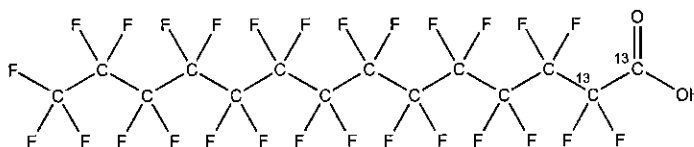
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

LOT NUMBER: M2PFTeDA1112

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}\text{C}_2^{12}\text{C}_{12}\text{HF}_{27}\text{O}_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 716.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/29/2012
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017

ISOTOPIC PURITY: $\geq 99\%$ ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 01/10/2013

(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

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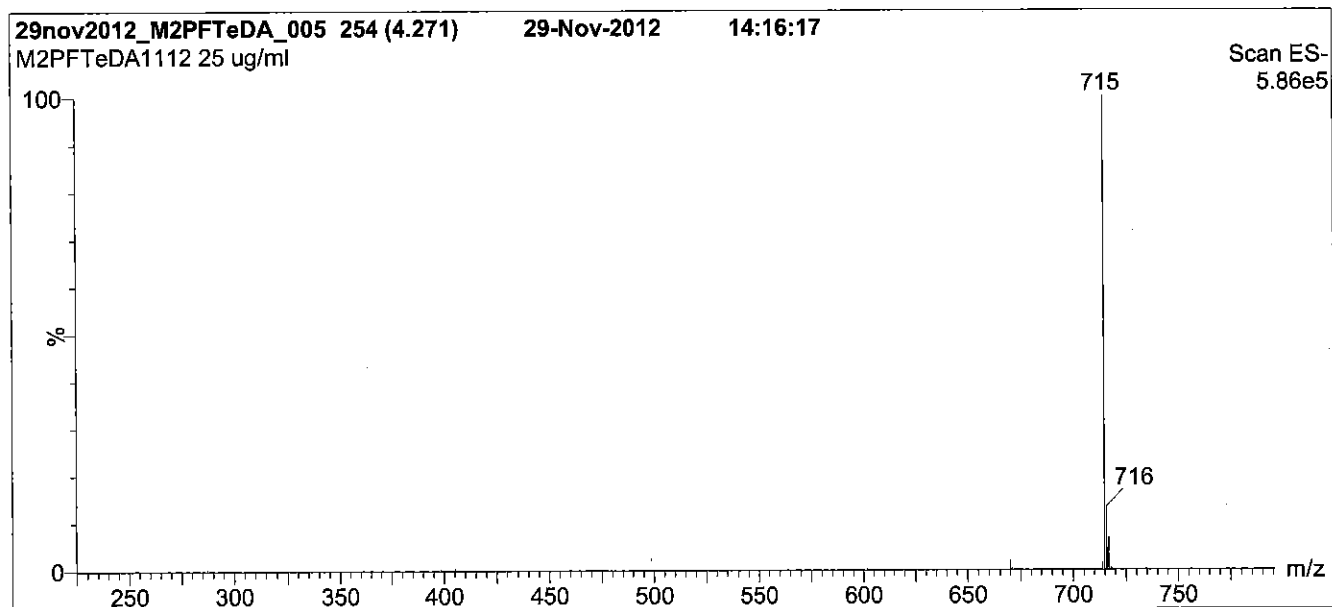
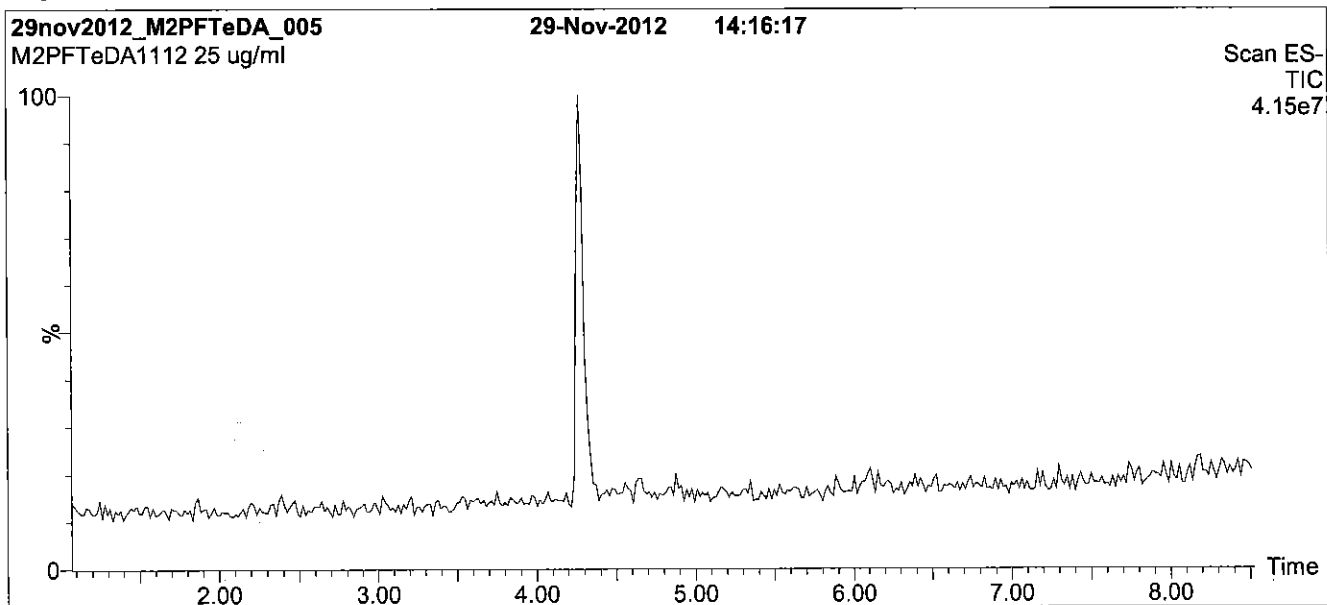
QUALITY MANAGEMENT:

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Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

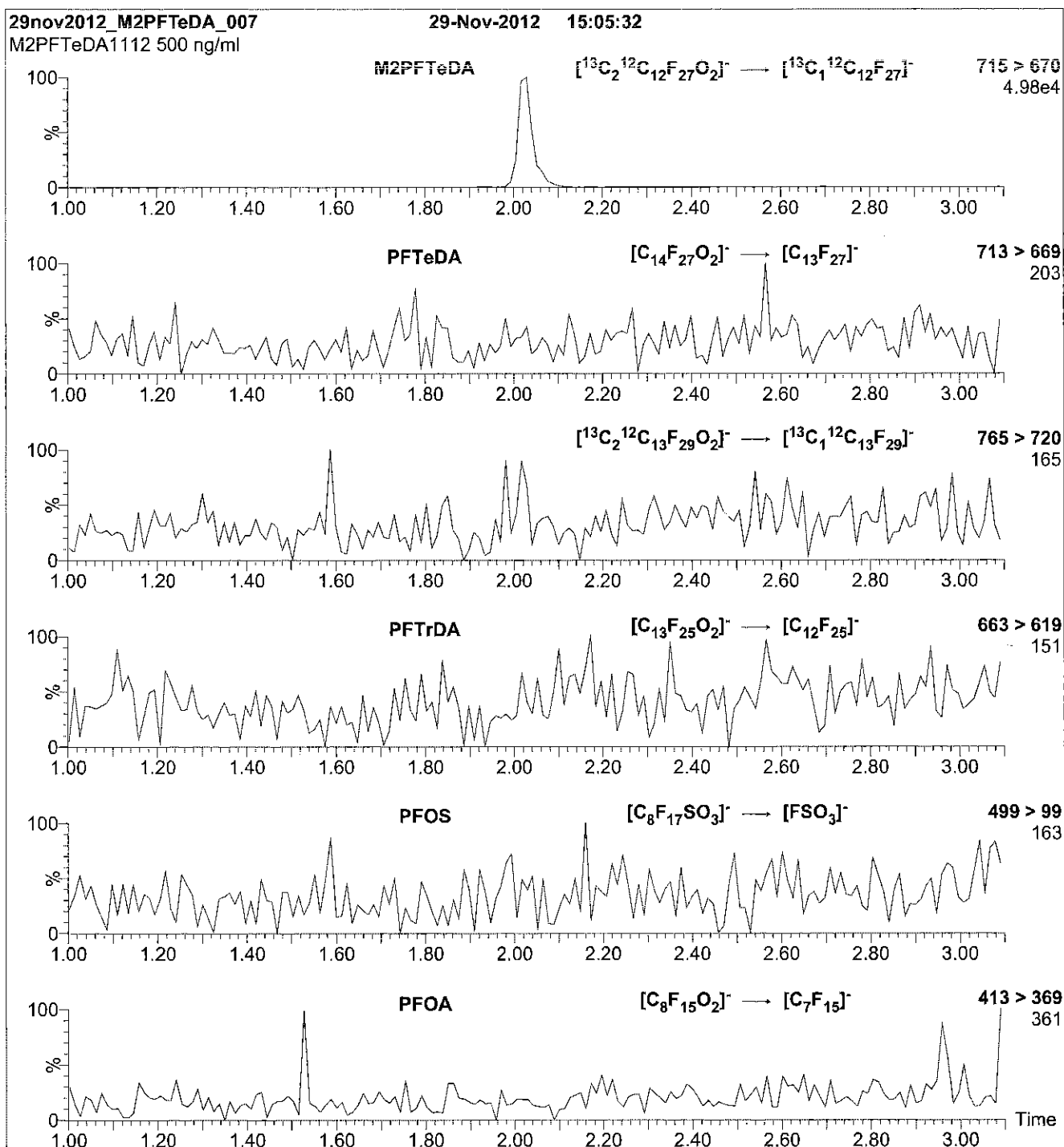
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFTeDA)

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

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

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 14

Reagent

LCM2PFTeDA_00003

r: 12/15 Stv



WELLINGTON LABORATORIES

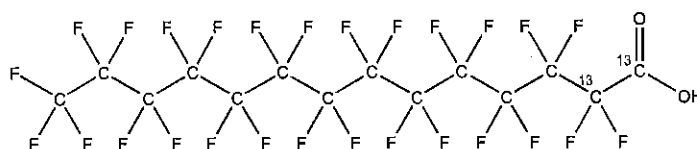
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

LOT NUMBER: M2PFTeDA1112

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂H₂₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 716.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/29/2012
EXPIRY DATE: (mm/dd/yyyy) 11/29/2017

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015
(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.

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

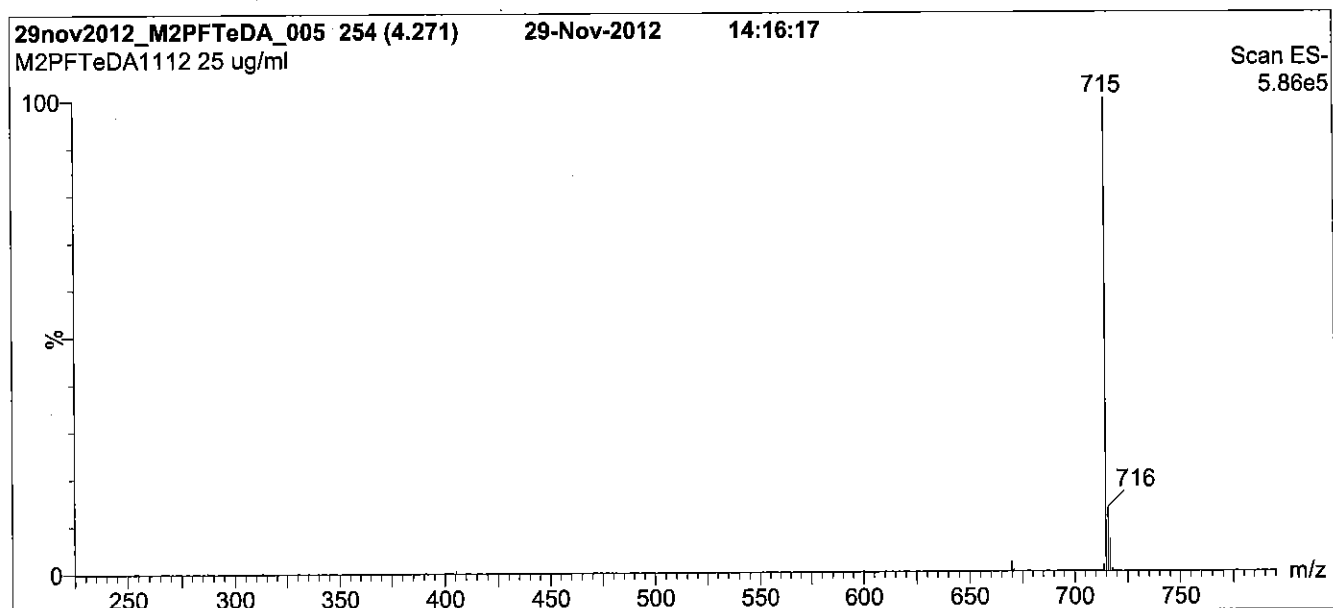
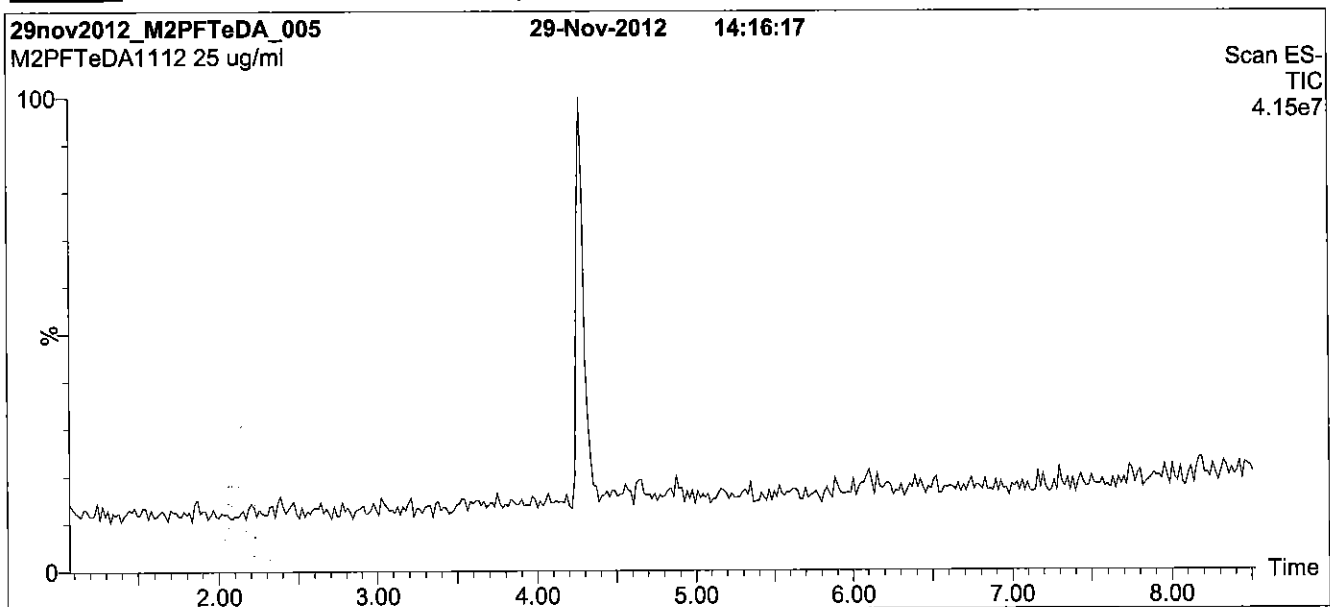
QUALITY MANAGEMENT:

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



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

Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

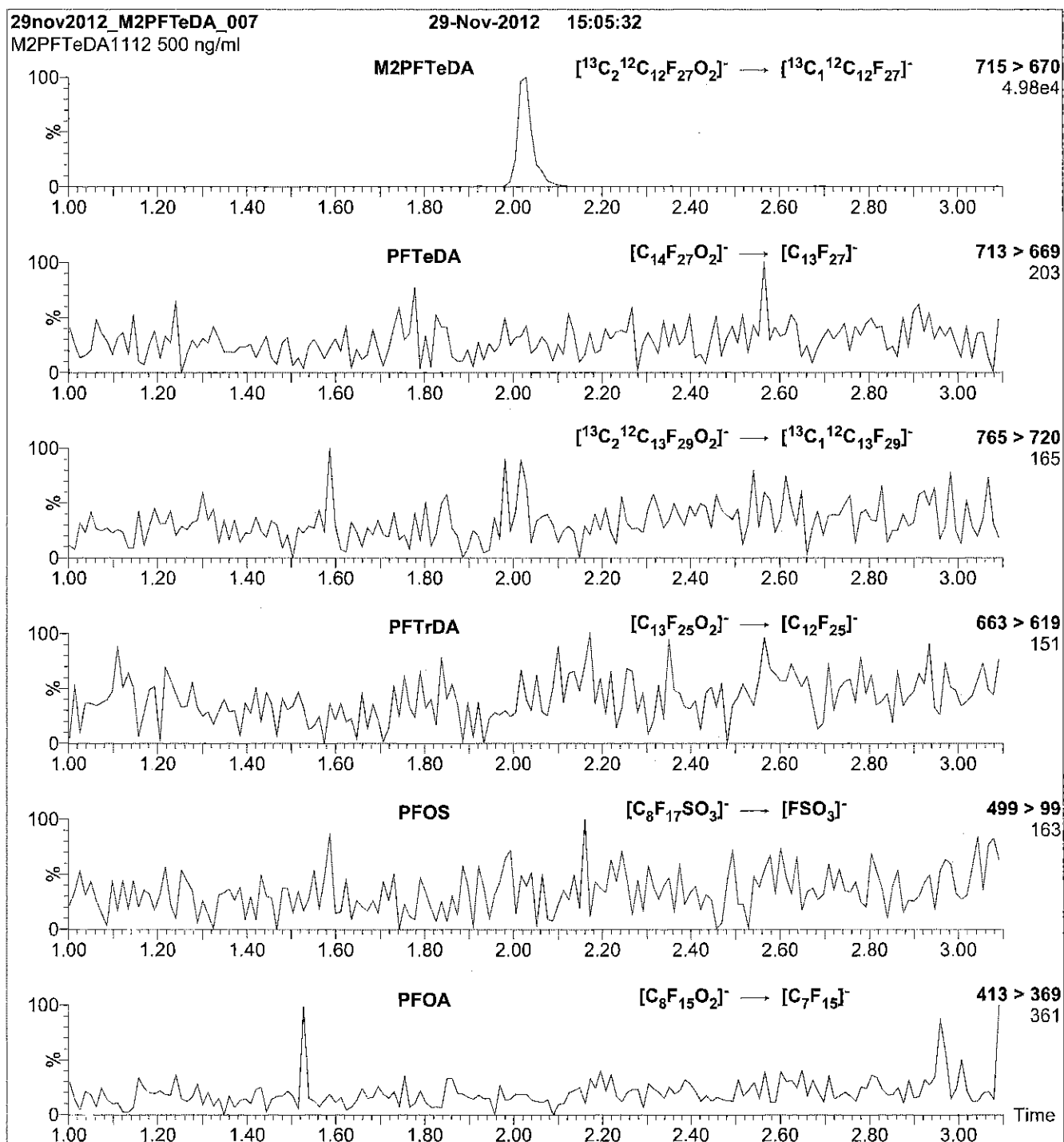
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFTeDA)

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

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

MS Parameters

Collision Gas (mbar) = $3.66\text{e-}3$
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00002



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CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned: 8/14/14 SKV
Rec: 8/14/14 SKV
Scanned 8/14/14 SKV

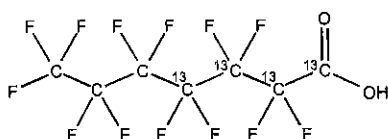
318185
ID: LCM4PFHPA_00002
Exp: 12/10/18 Prod: SKV
13C4-Perfluoroheptanoic a

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

LOT NUMBER: M4PFHpA1213

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
EXPIRY DATE: (mm/dd/yyyy) 12/10/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/11/2013

(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.

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

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TRACEABILITY:

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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.

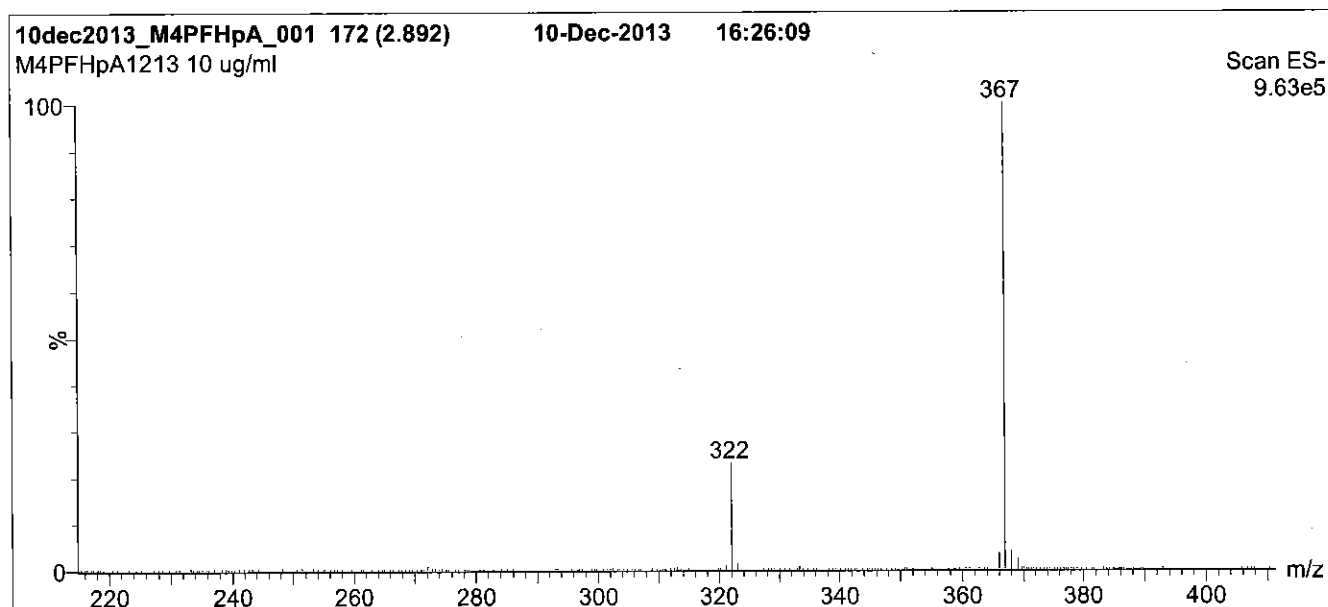
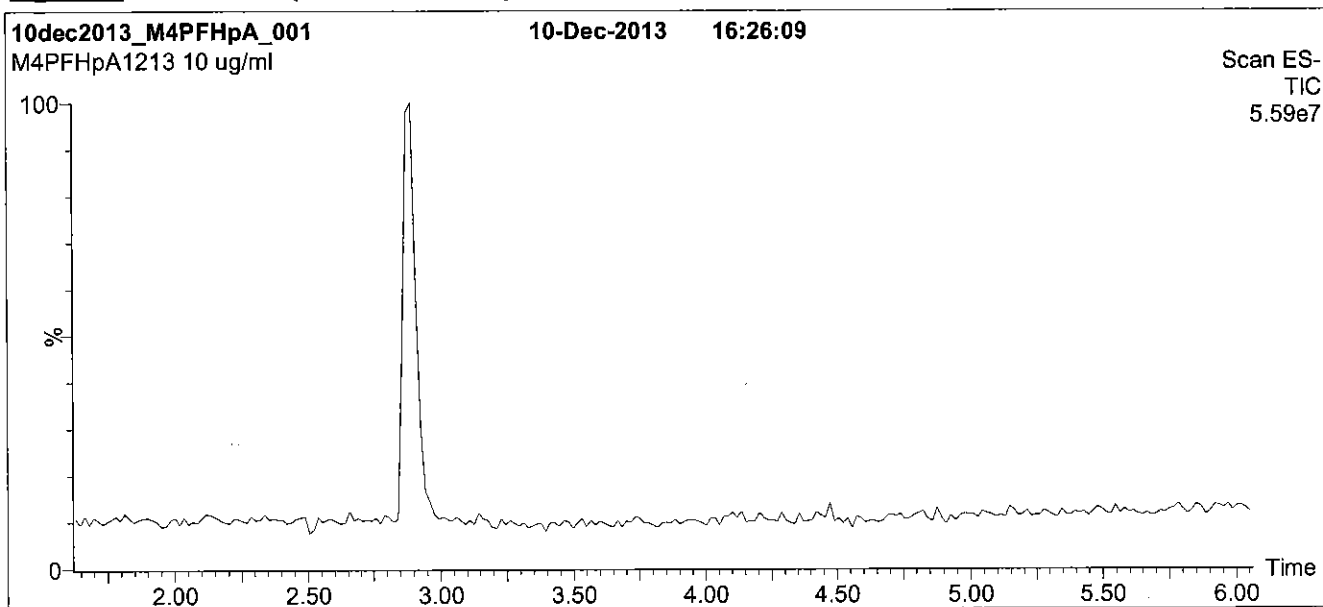
QUALITY MANAGEMENT:

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).



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Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

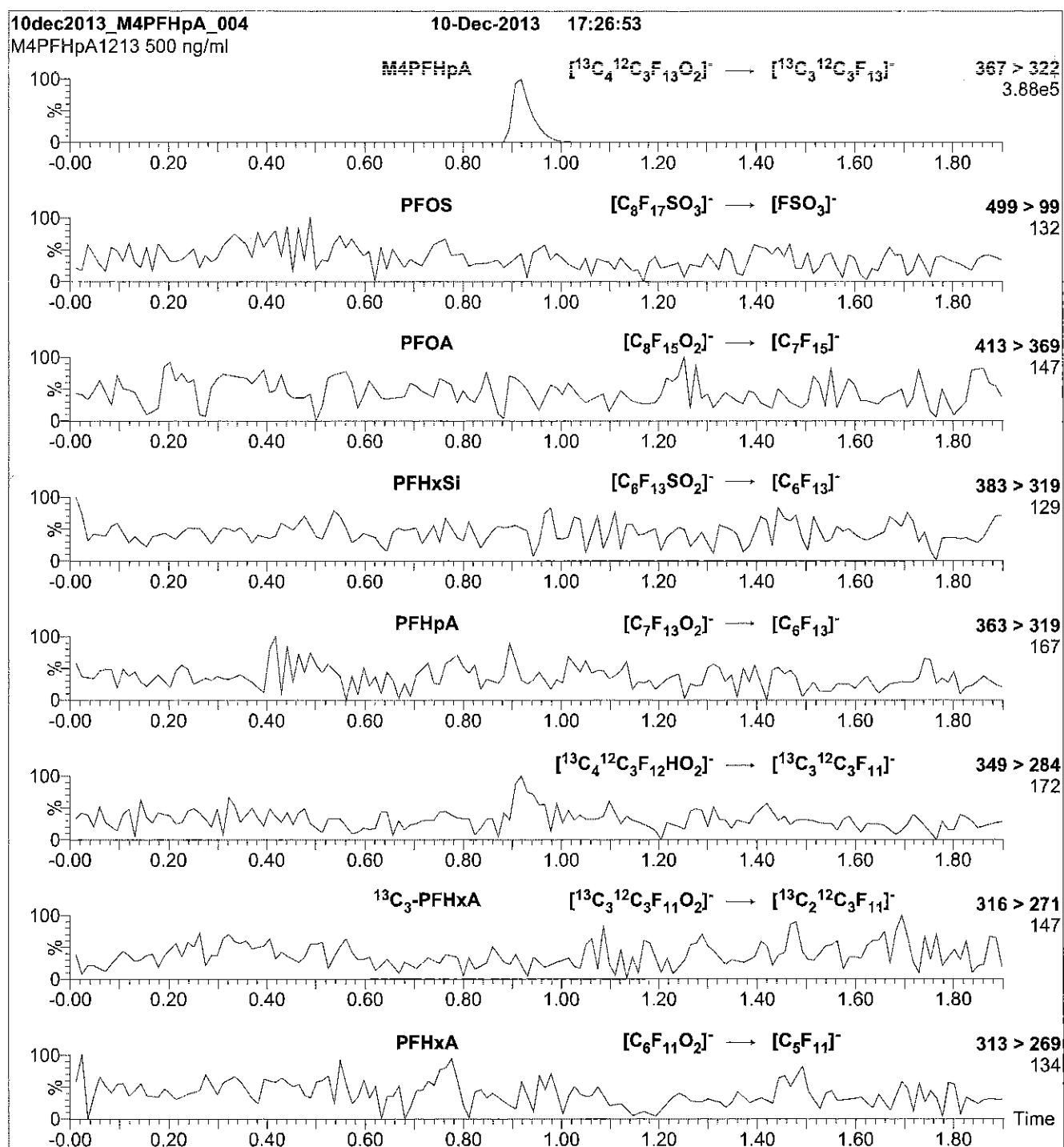
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (215 - 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: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M4PFHpA)

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

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11

Reagent

LCM4PFHPA_00003



WELLINGTON LABORATORIES

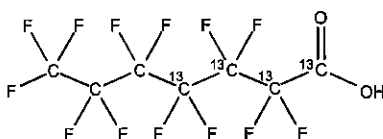
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

LOT NUMBER: M4PFHpA0515

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/22/2015
EXPIRY DATE: (mm/dd/yyyy) 05/22/2020

ISOTOPIC PURITY: ≥99%¹³C
(1,2,3,4-¹³C₄)

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: 05/25/2015
(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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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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.

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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.

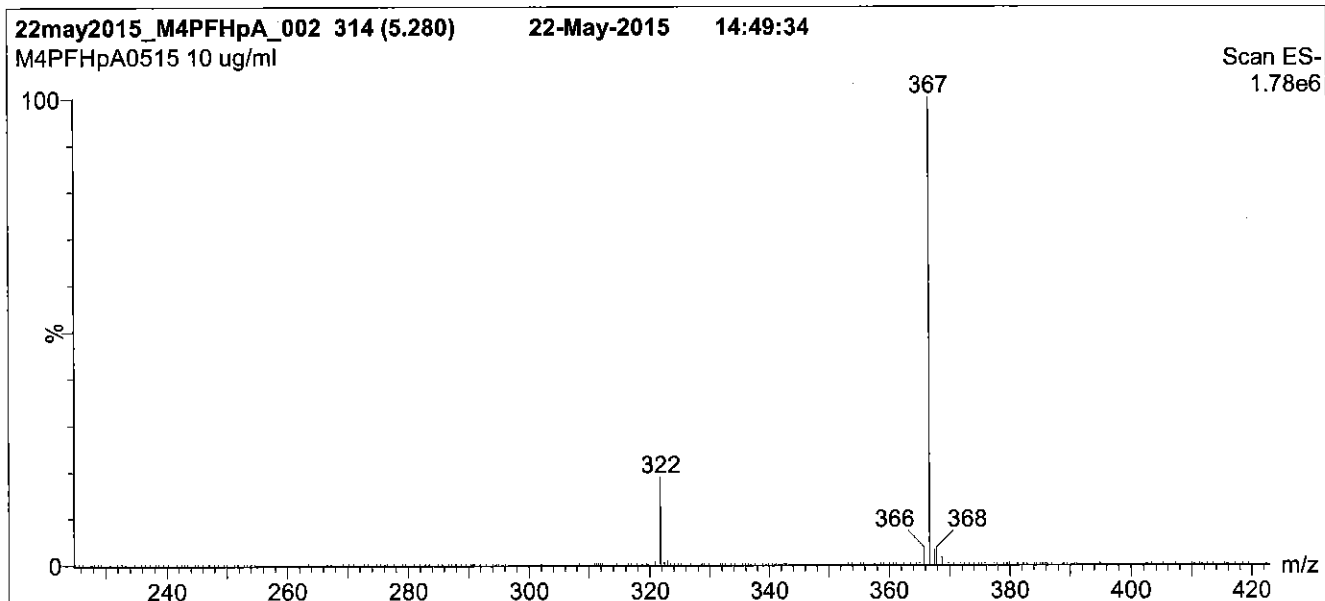
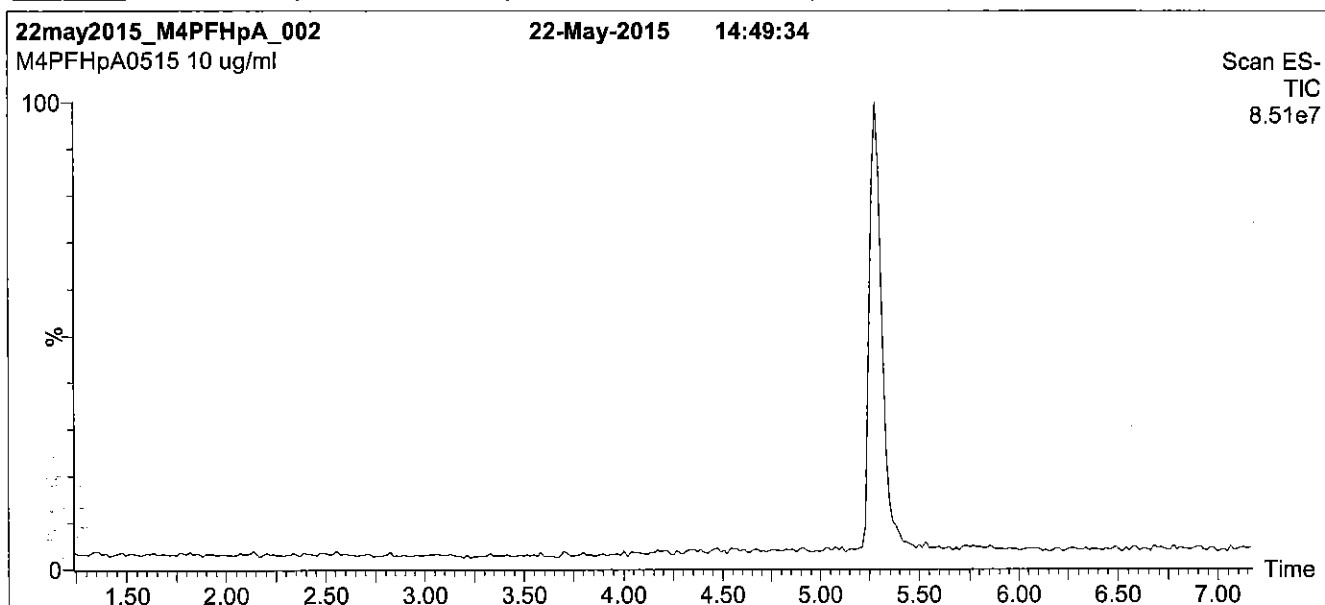
QUALITY MANAGEMENT:

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).



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Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

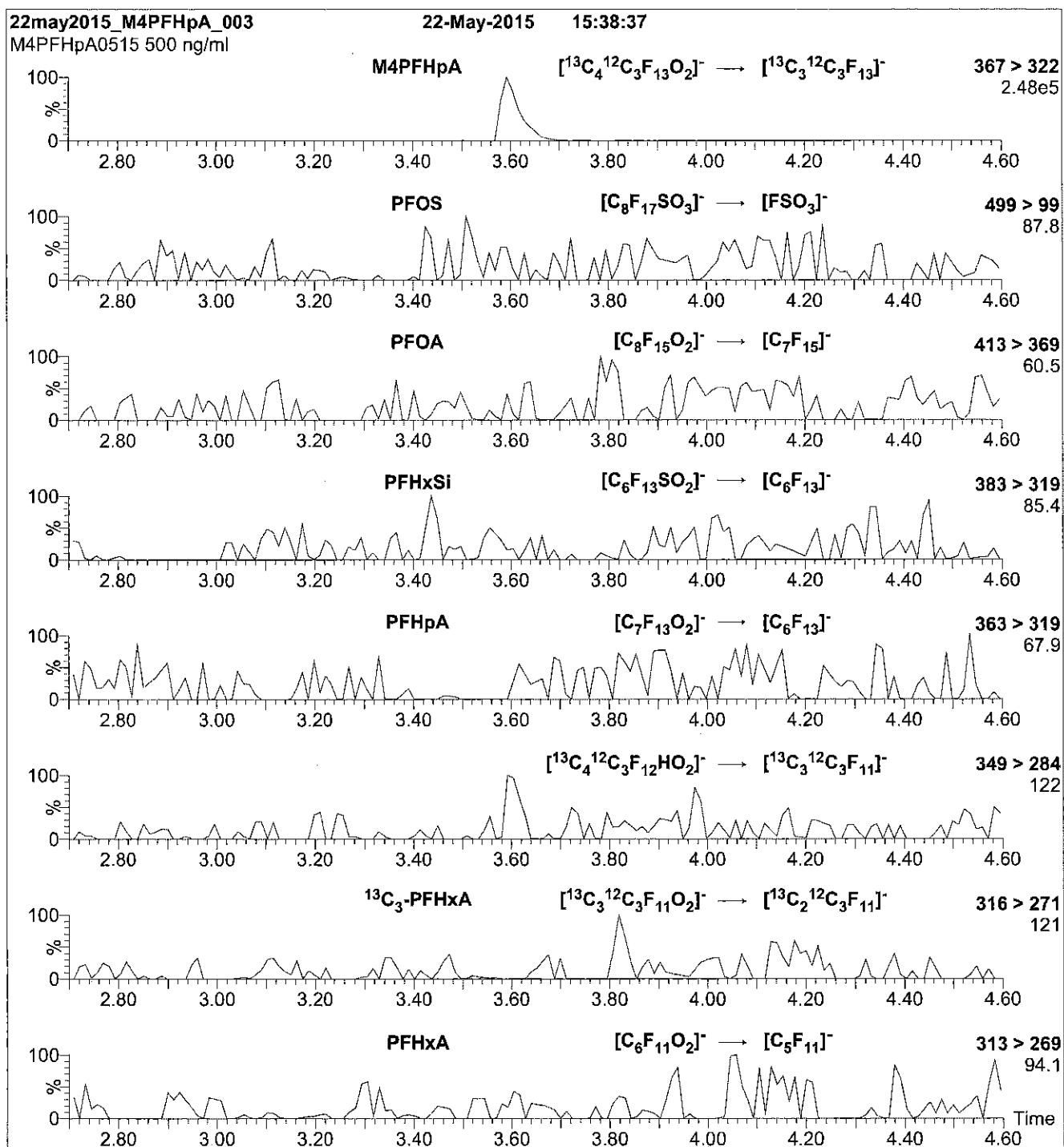
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M4PFHpA)

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

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCM5PFPEA_00003

Rec 8/14/14 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M5PFPeA

LOT NUMBER:

M5PFPeA0313

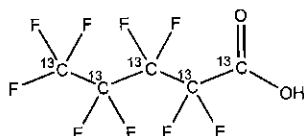
COMPOUND:

Perfluoro-n-[$^{13}\text{C}_5$]pentanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

$^{13}\text{C}_5\text{HF}_9\text{O}_2$

MOLECULAR WEIGHT:

269.01

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

$\geq 99\%$ ^{13}C

LAST TESTED: (mm/dd/yyyy)

03/21/2013

EXPIRY DATE: (mm/dd/yyyy)

03/21/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

($^{13}\text{C}_5$)

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-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/26/2013

(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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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TRACEABILITY:

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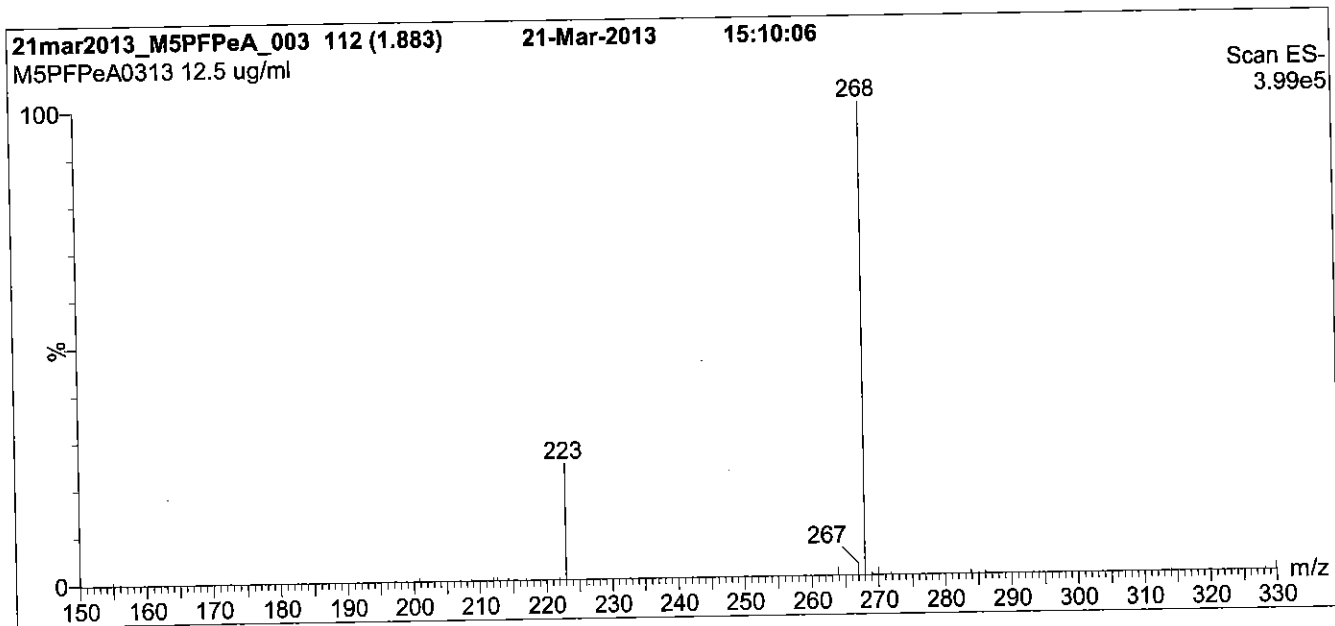
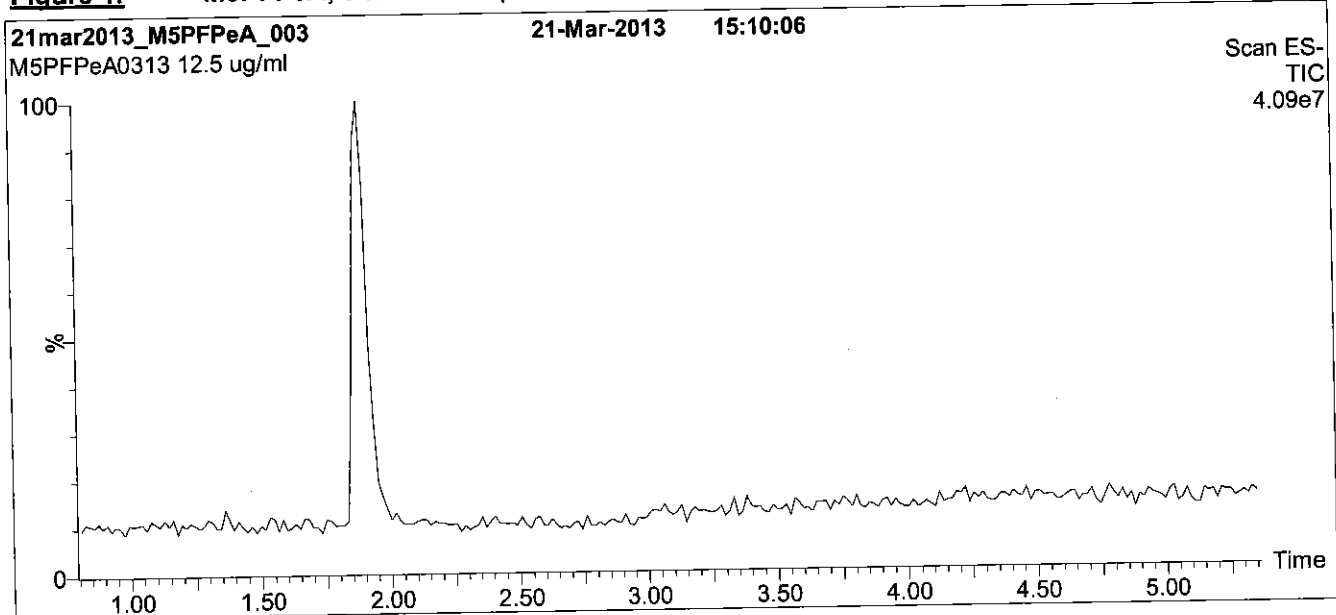
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com****

Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

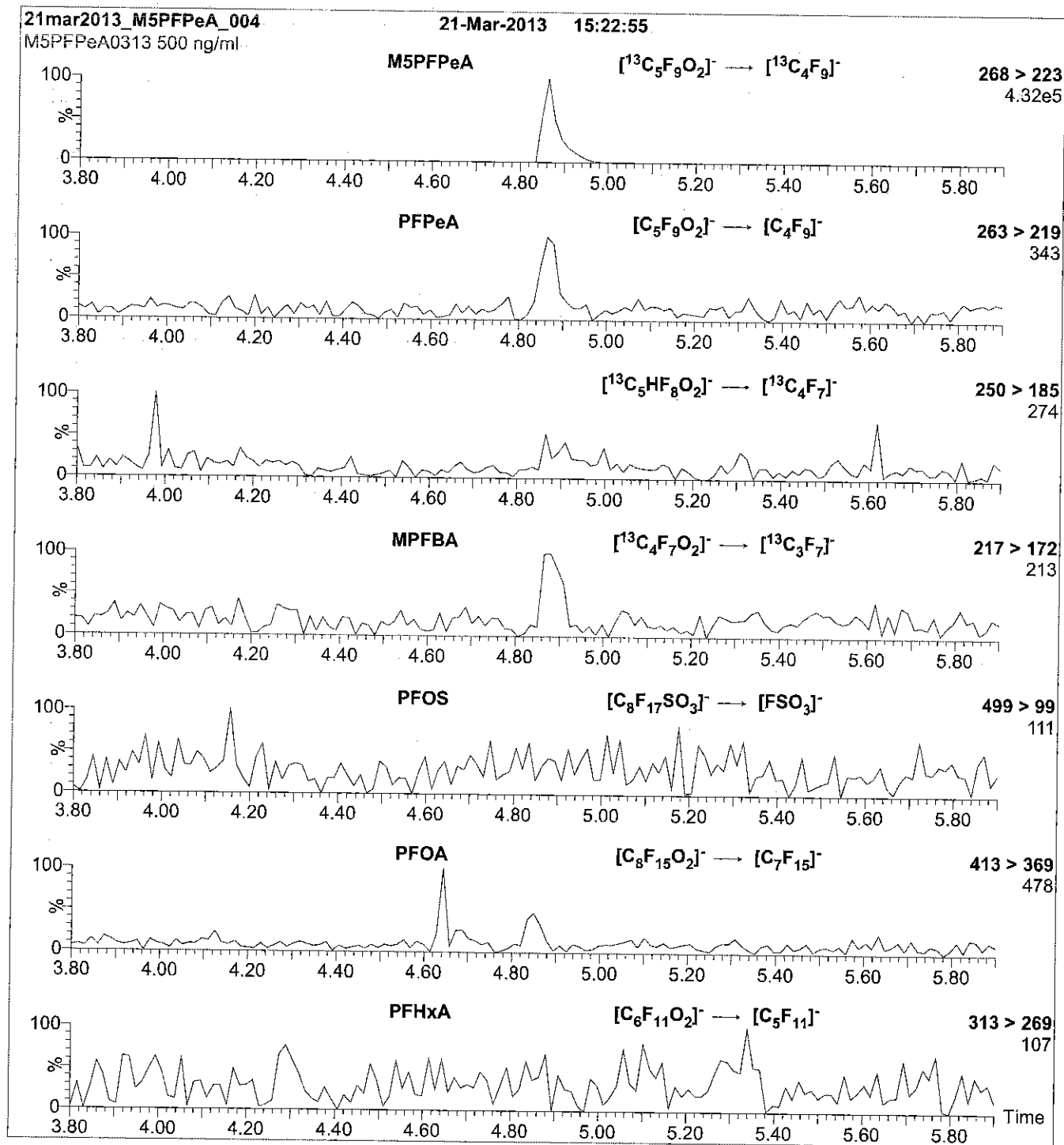
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)

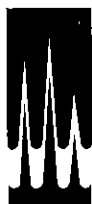
Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.39\text{e-}3$
Collision Energy (eV) = 9

Reagent

LCM5PFPEA_00004



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M5PFPeA

LOT NUMBER:

M5PFPeA0515

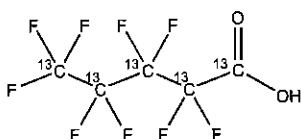
COMPOUND:

Perfluoro-n-[¹³C₅]pentanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₅HF₉O₂

MOLECULAR WEIGHT:

269.01

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

05/22/2015

(¹³C₅)

EXPIRY DATE: (mm/dd/yyyy)

05/22/2020

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 perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/25/2015

(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.

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.

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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.

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.

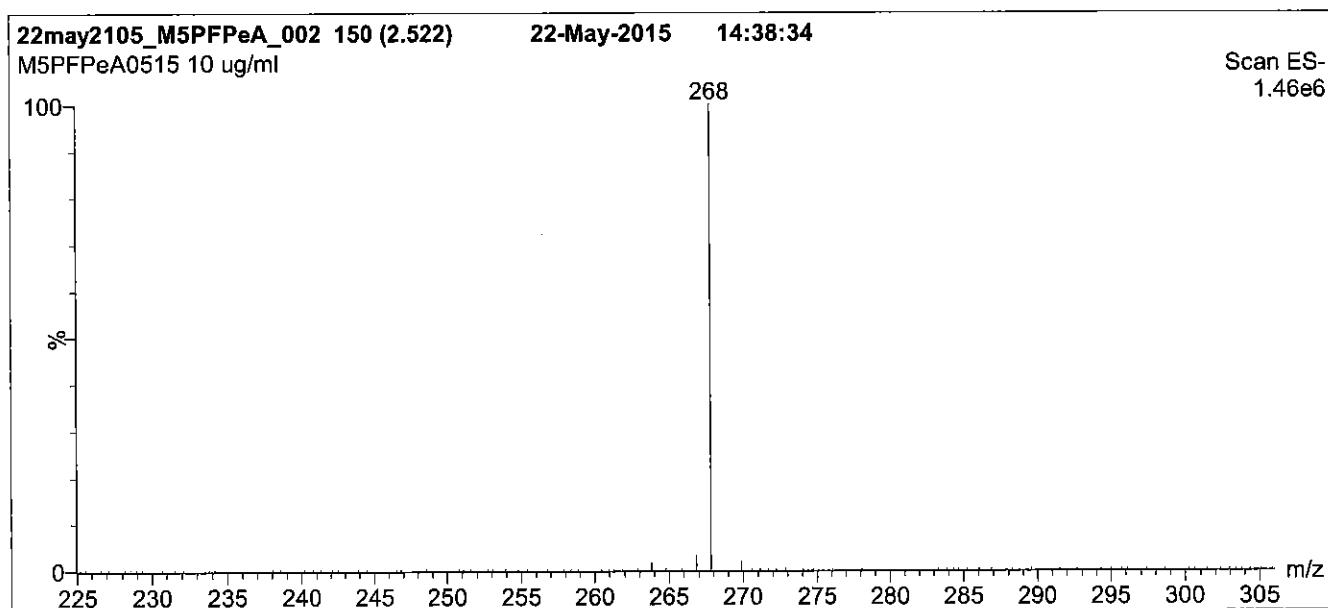
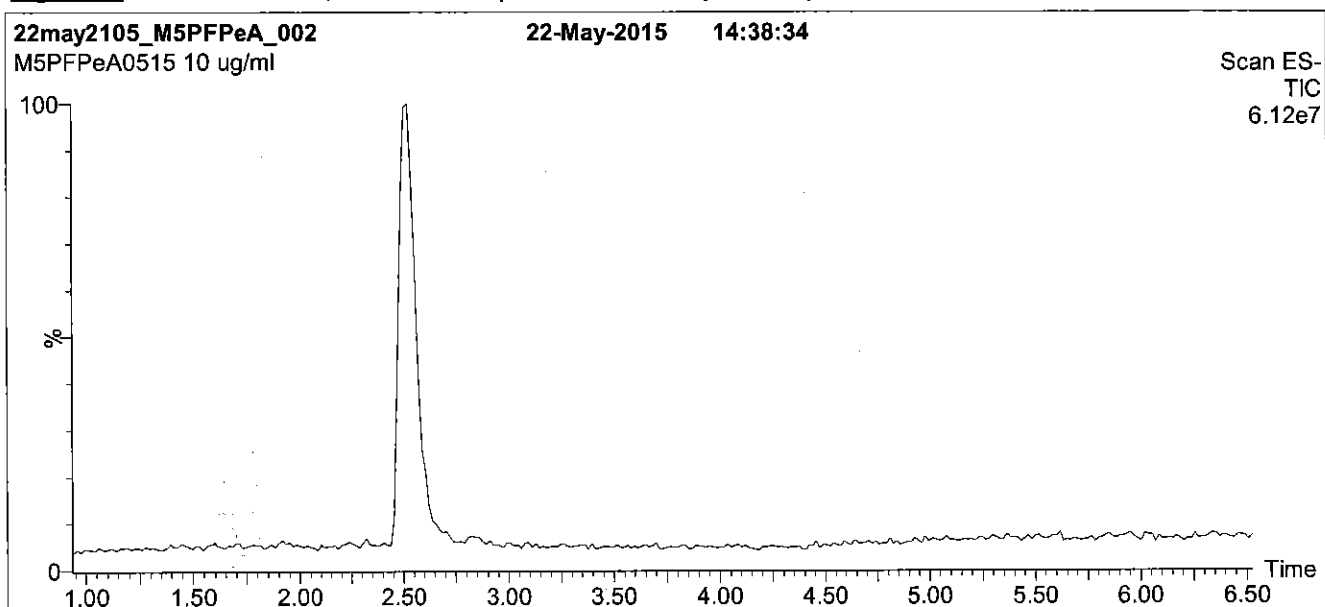
QUALITY MANAGEMENT:

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).



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Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

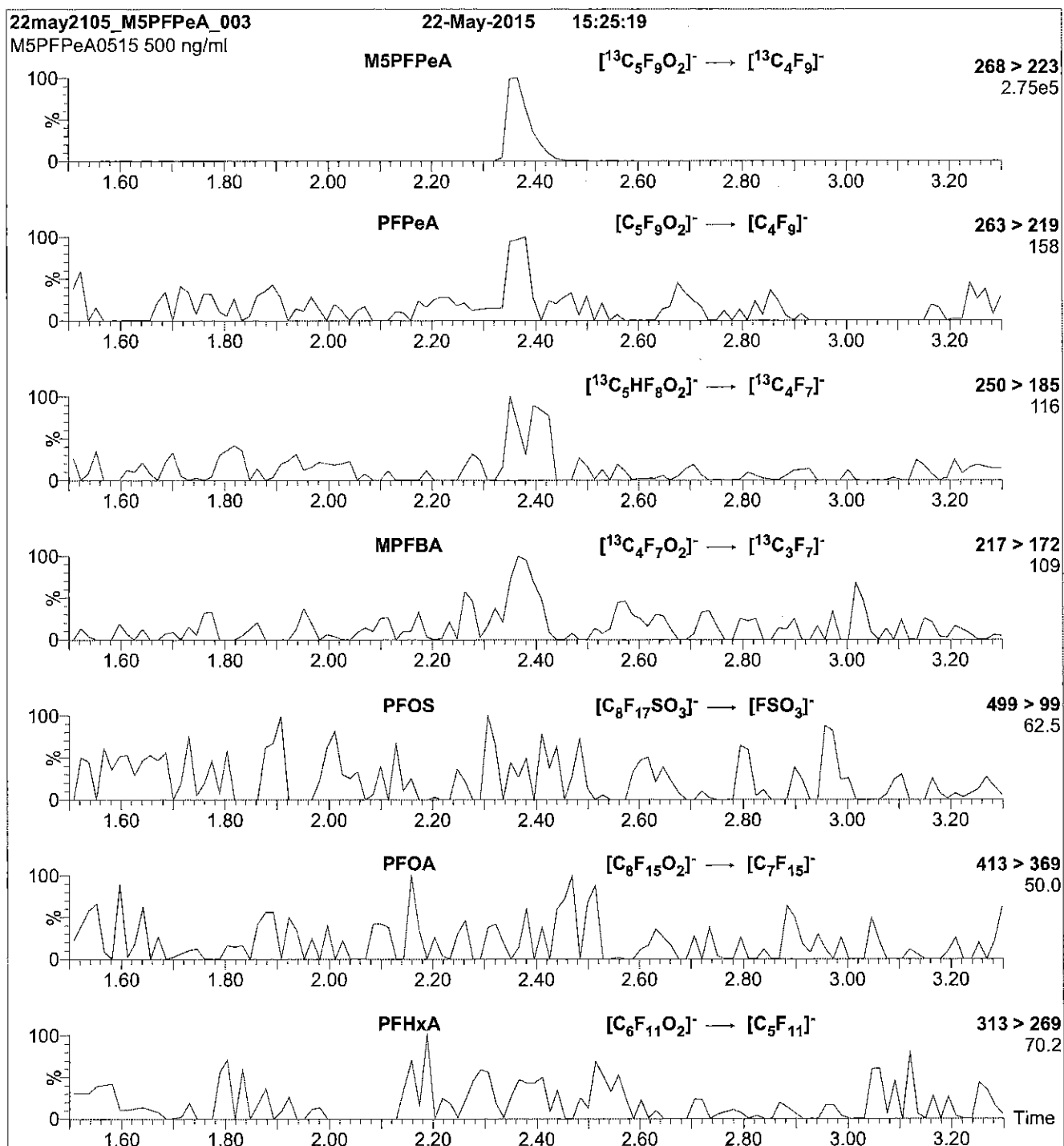
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFPeA)

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

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00006

rec: 9/15/15 sv



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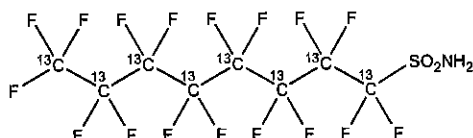
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[¹³C₈]octanesulfonamide

LOT NUMBER: M8FOSA1214I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/15/2014
EXPIRY DATE: (mm/dd/yyyy) 12/15/2016
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₈)

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015
(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.

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.

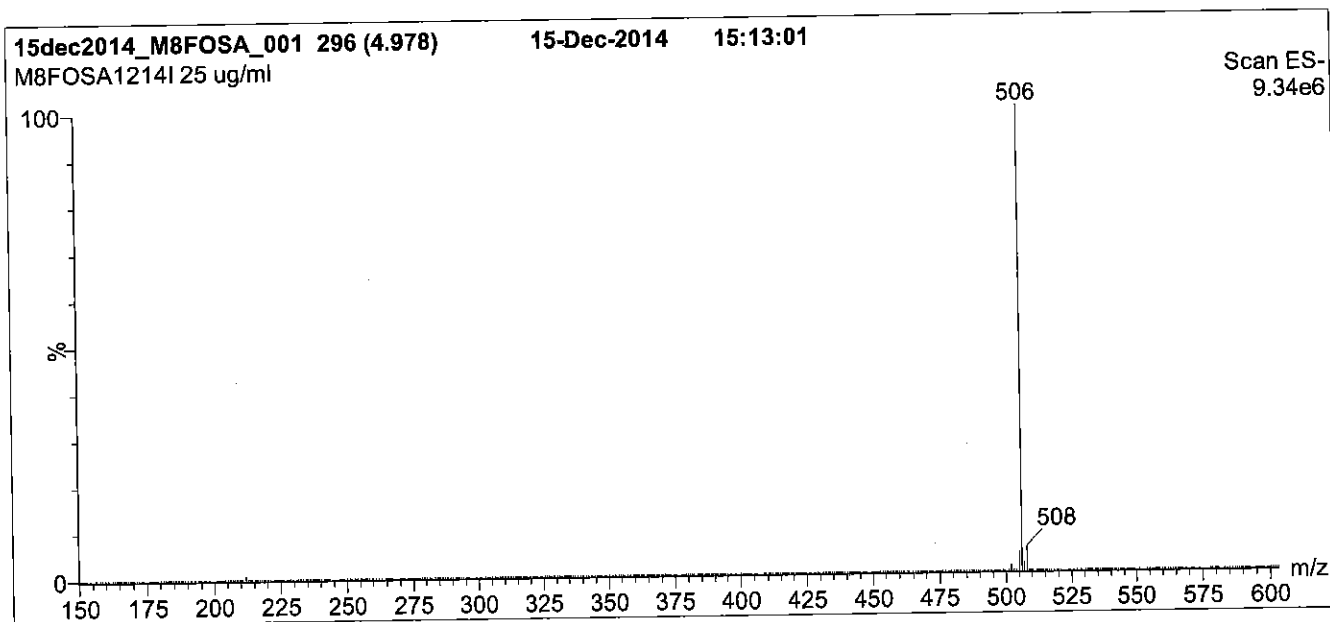
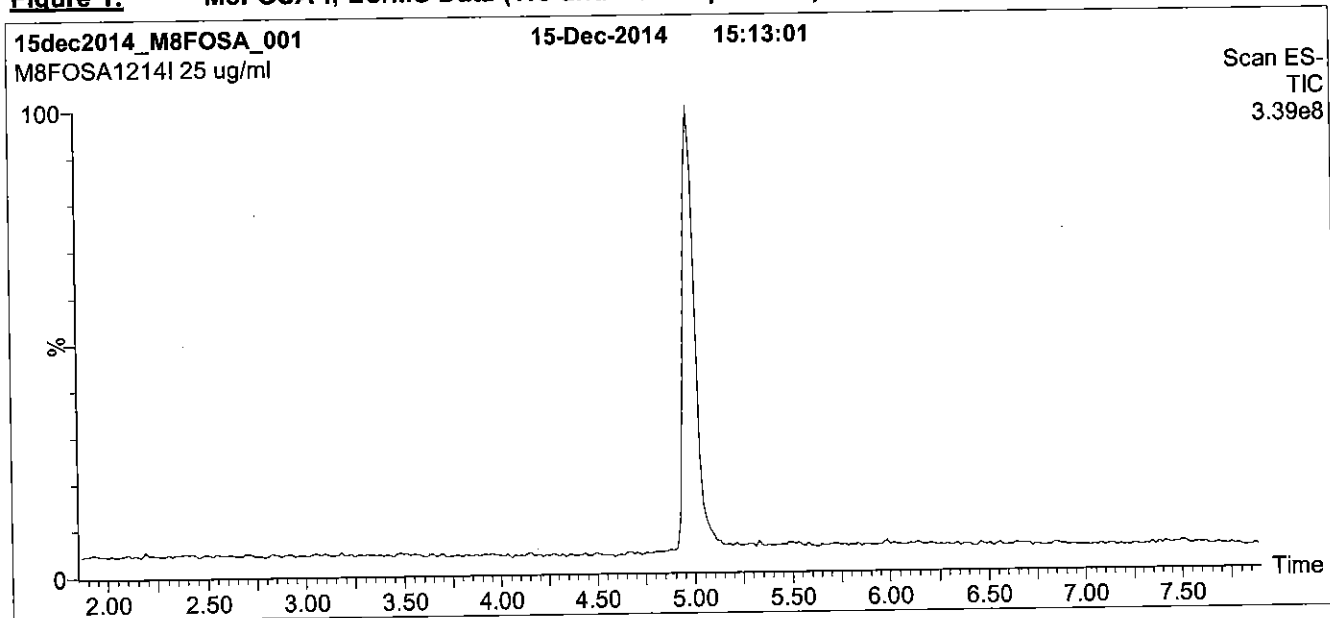
QUALITY MANAGEMENT:

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).



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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)

Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.

Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

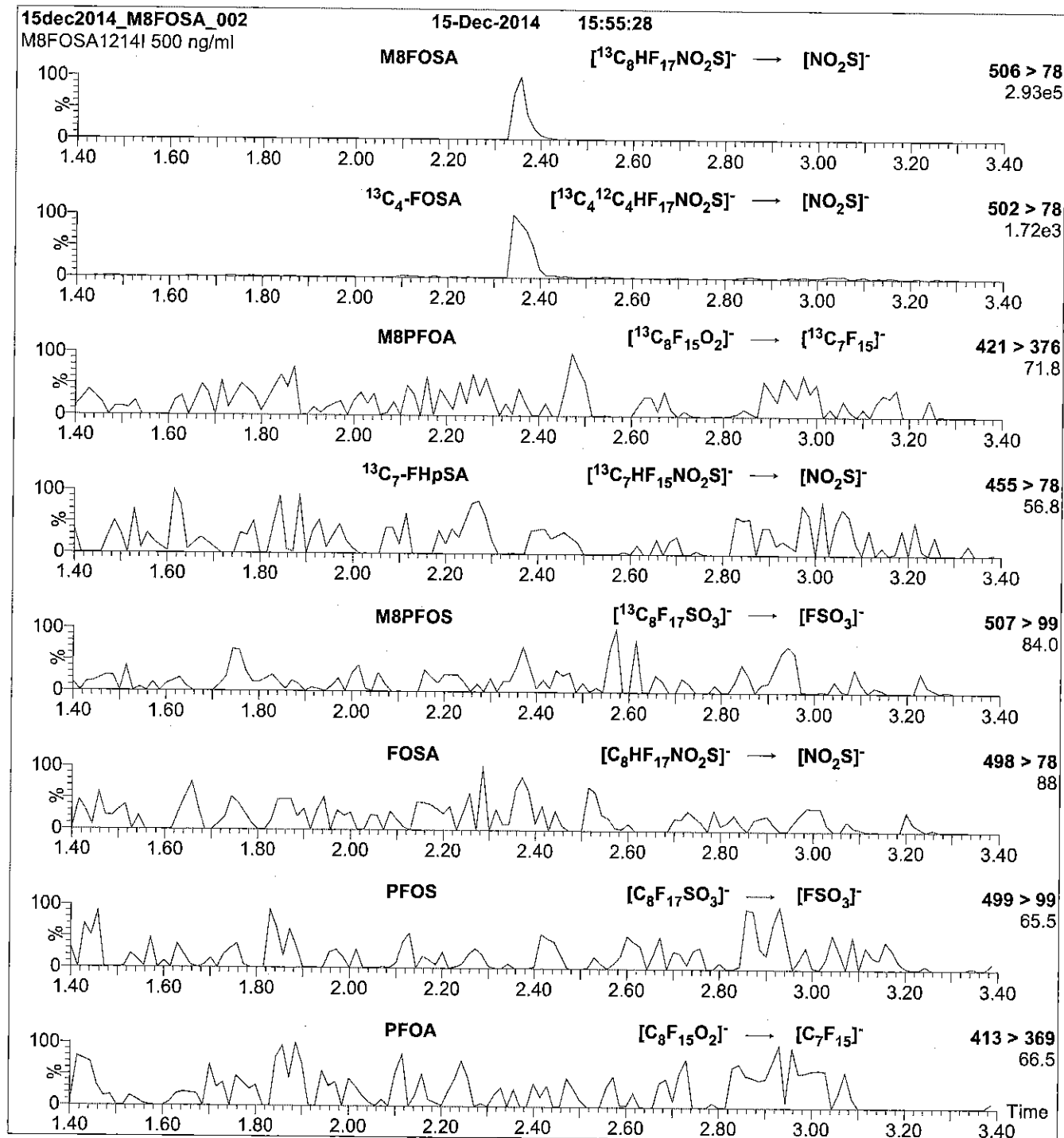
Capillary Voltage (kV) = 2.50

Cone Voltage (V) = 40.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μl (500 ng/ml M8FOSA-I)

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

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

MS Parameters

Collision Gas (mbar) = $3.31\text{e-}3$
 Collision Energy (eV) = 30

Reagent

LCM8FOSA_00007



572887

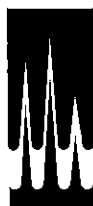
ID: LCM8FOSA_00007

Exp. 12/15/16 Prod: CBW

13C8-Perfluorooctanesulfo

R: 1/25/16

S:



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

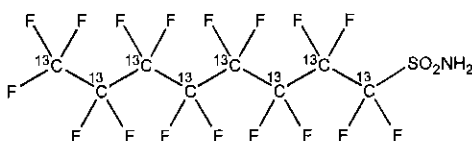
M8FOSA-I

LOT NUMBER:

M8FOSA1214I

COMPOUND:Perfluoro-1-[¹³C₈]octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₈H₂F₁₇NO₂S**MOLECULAR WEIGHT:**

507.09

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C
(¹³C₈)**LAST TESTED:** (mm/dd/yyyy)

12/15/2014

EXPIRY DATE: (mm/dd/yyyy)

12/15/2016

RECOMMENDED STORAGE:

Refrigerate ampoule

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(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:

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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.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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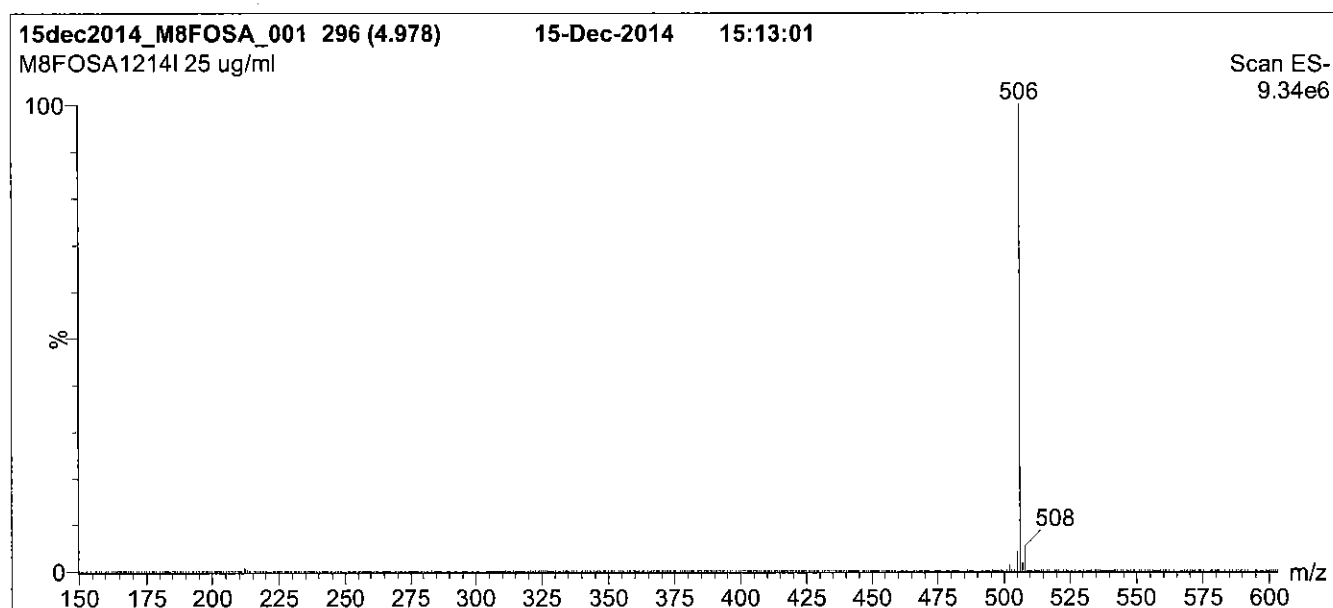
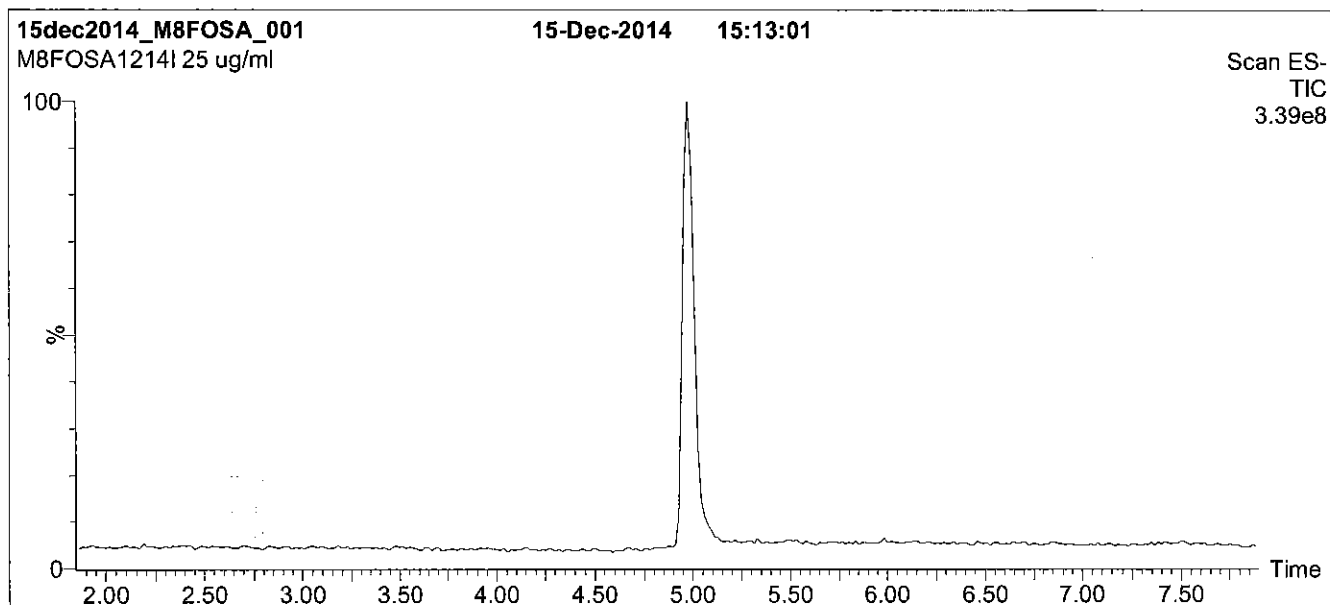
QUALITY MANAGEMENT:

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).



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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

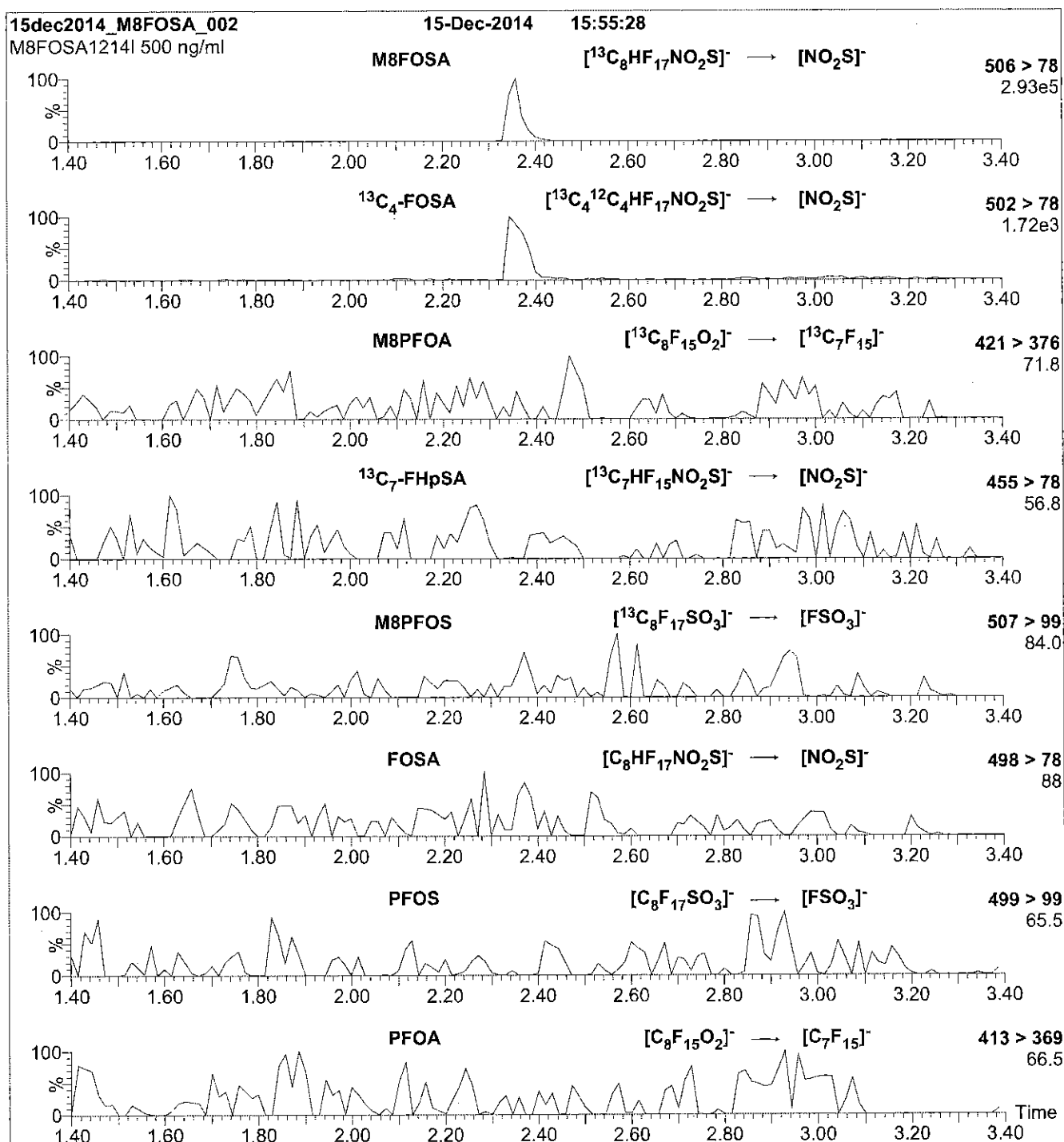
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M8FOSA-I)

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

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

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

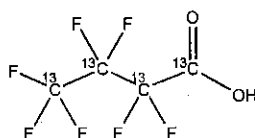
MPFBA

LOT NUMBER:

MPFBA0113

COMPOUND:Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₄HF₇O₂**MOLECULAR WEIGHT:**

218.01

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C(1,2,3,4-¹³C₄)**LAST TESTED:** (mm/dd/yyyy)

01/22/2013

EXPIRY DATE: (mm/dd/yyyy)

01/22/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/28/2013

(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.

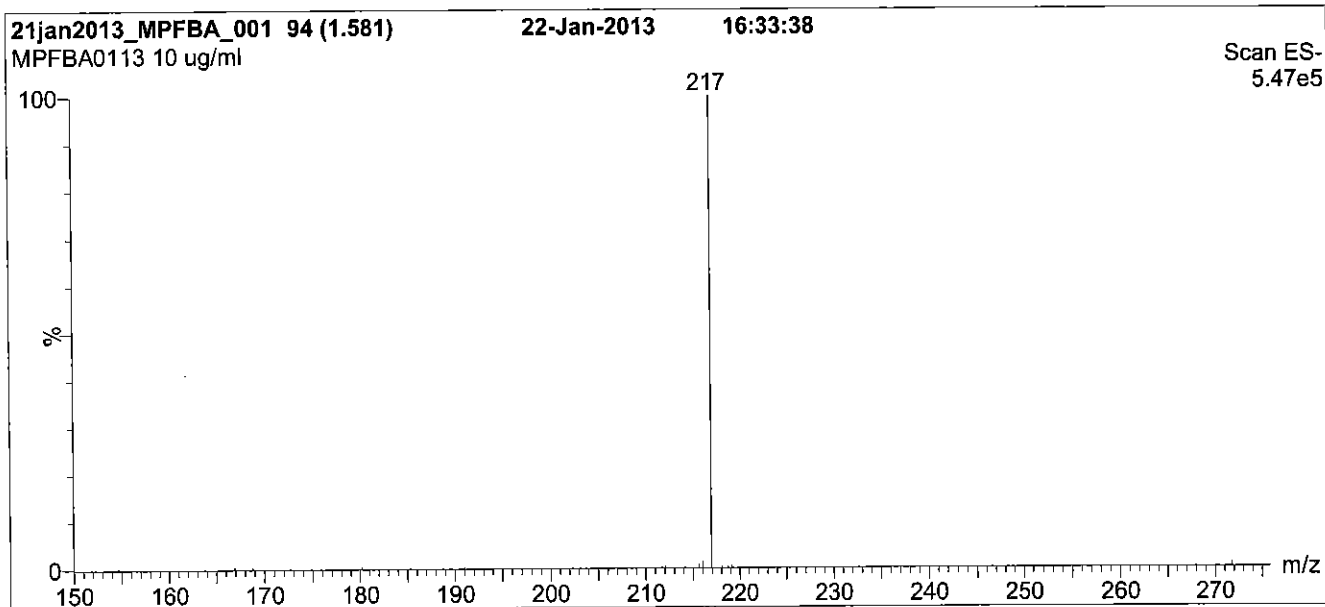
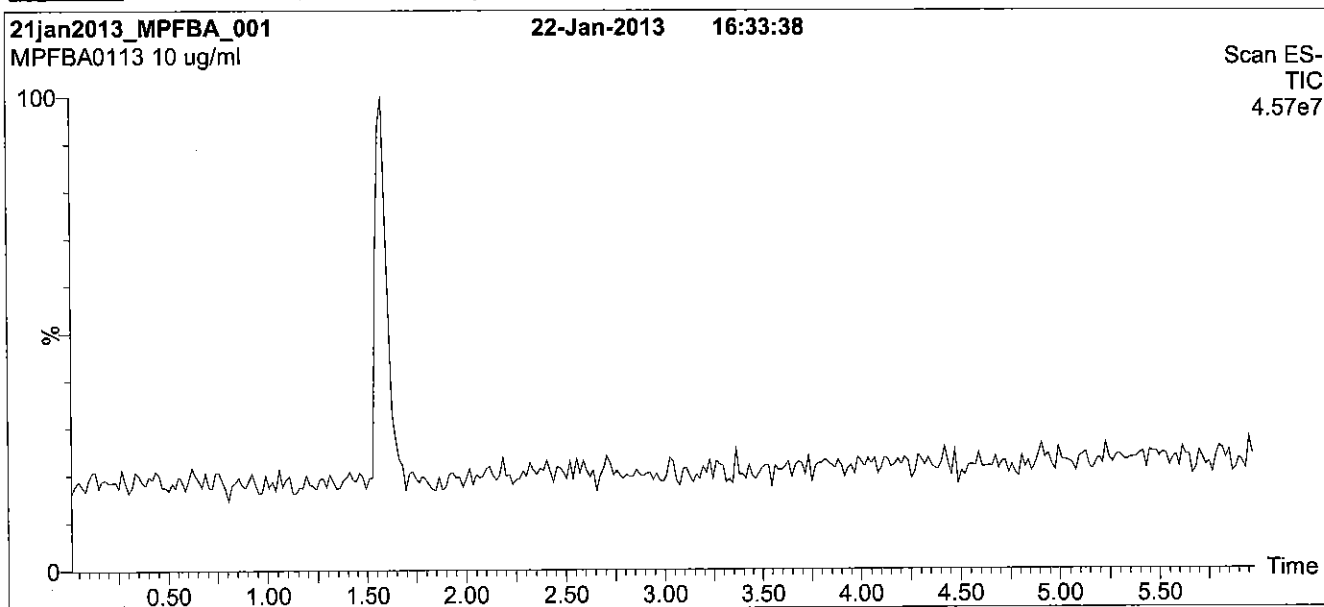
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

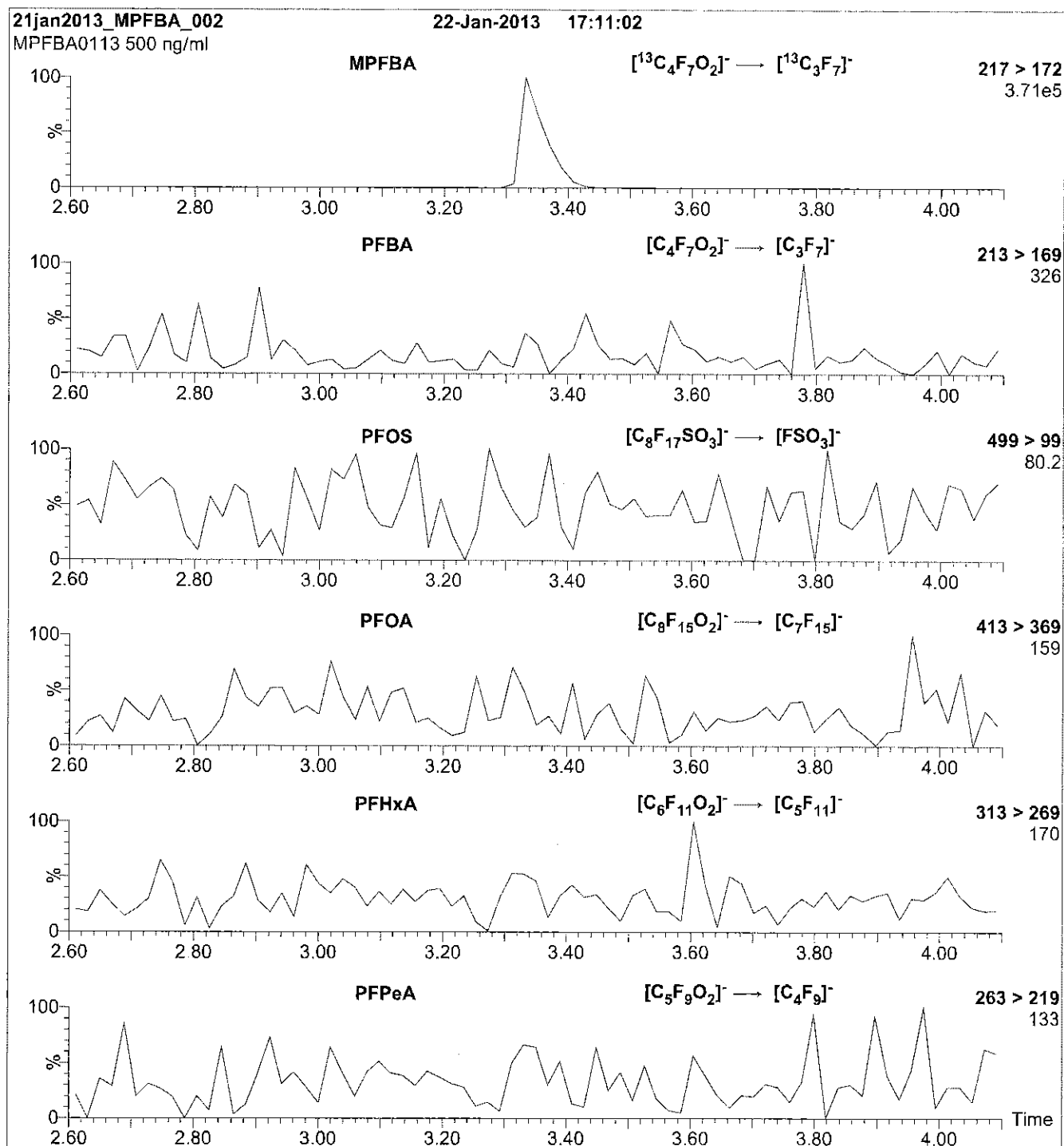
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = $3.24\text{e-}3$
Collision Energy (eV) = 10

Reagent

LCMPFBA_00004

R: 12/15 SW



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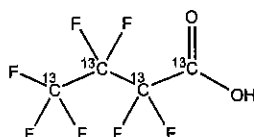
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

LOT NUMBER: MPFBA1014

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 218.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99%¹³C
(1,2,3,4-¹³C₄)

LAST TESTED: (mm/dd/yyyy) 10/31/2014

EXPIRY DATE: (mm/dd/yyyy) 10/31/2019

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: 03/31/2015
(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.

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.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

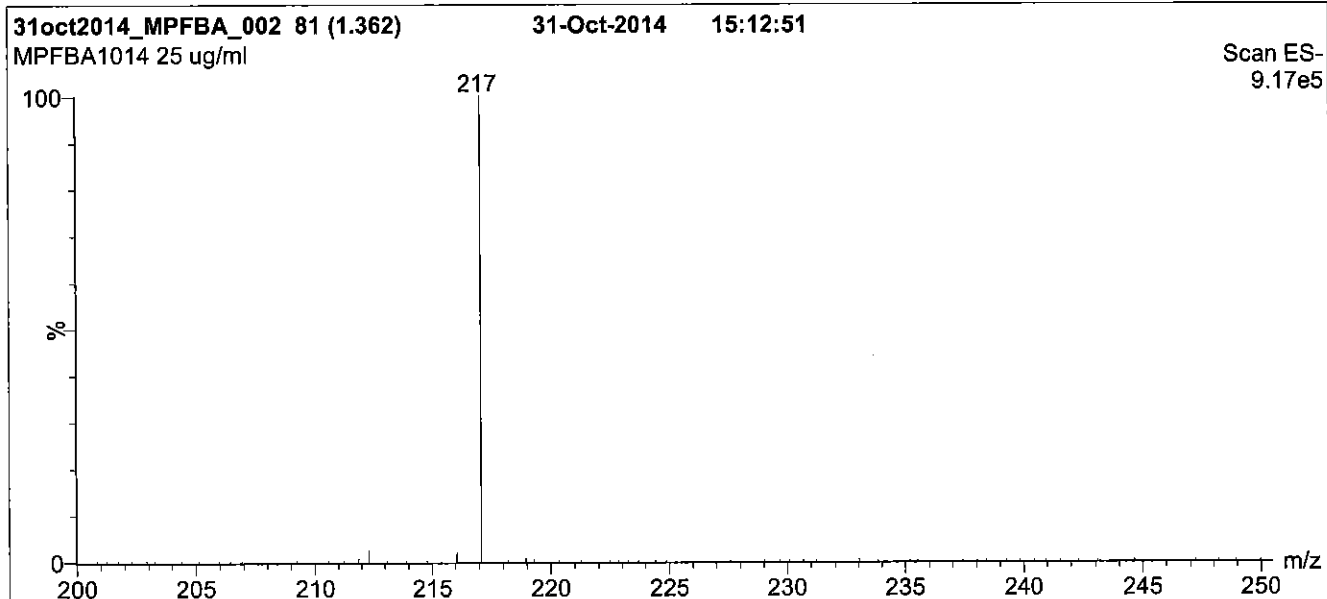
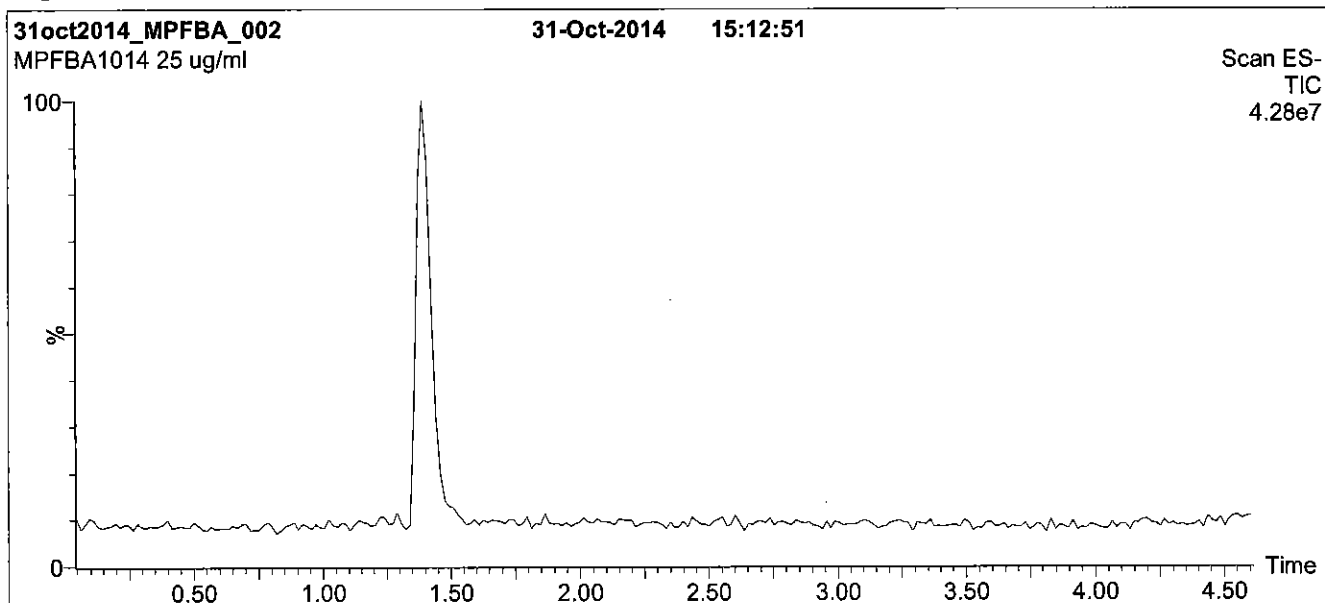
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

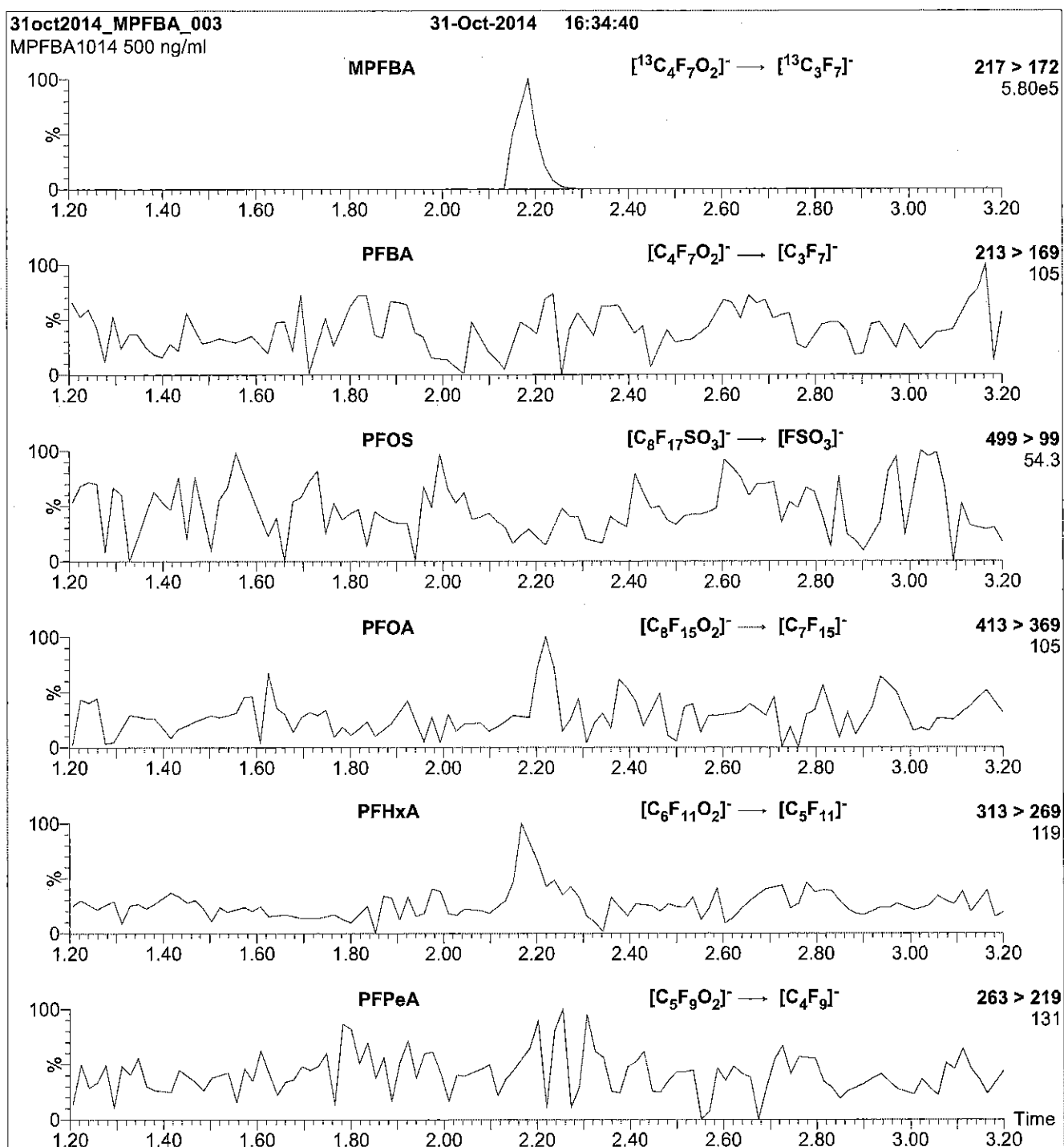
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

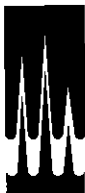
Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00004



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CERTIFICATE OF ANALYSIS DOCUMENTATION

R: 10-20-2011
2011
10-20-2011

12LCMS0262
LCMPFDA-00001

PRODUCT CODE:

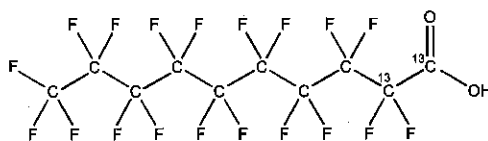
MPFDA

LOT NUMBER:

MPFDA0411

COMPOUND:Perfluoro-n-[1,2-¹³C₂]decanoic acid**STRUCTURE:****CAS #**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₈HF₁₉O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

516.07

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

04/07/2011

(1,2-¹³C₂)**EXPIRY DATE:** (mm/dd/yyyy)

04/07/2014

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/19/2011

(mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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EXPIRY DATE / PERIOD OF VALIDITY:

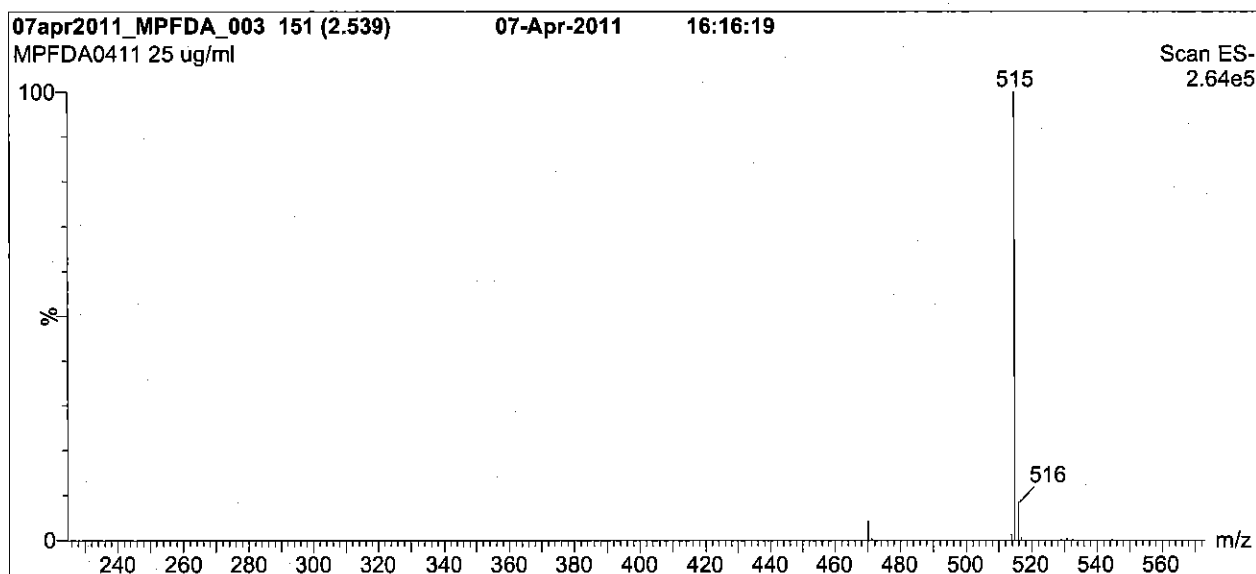
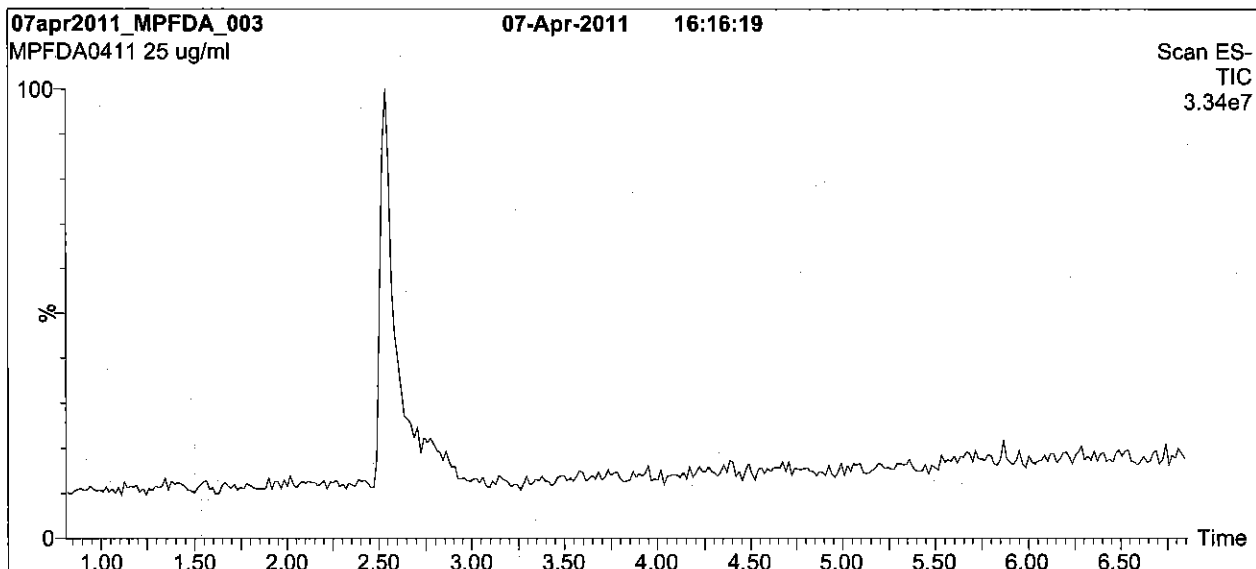
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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

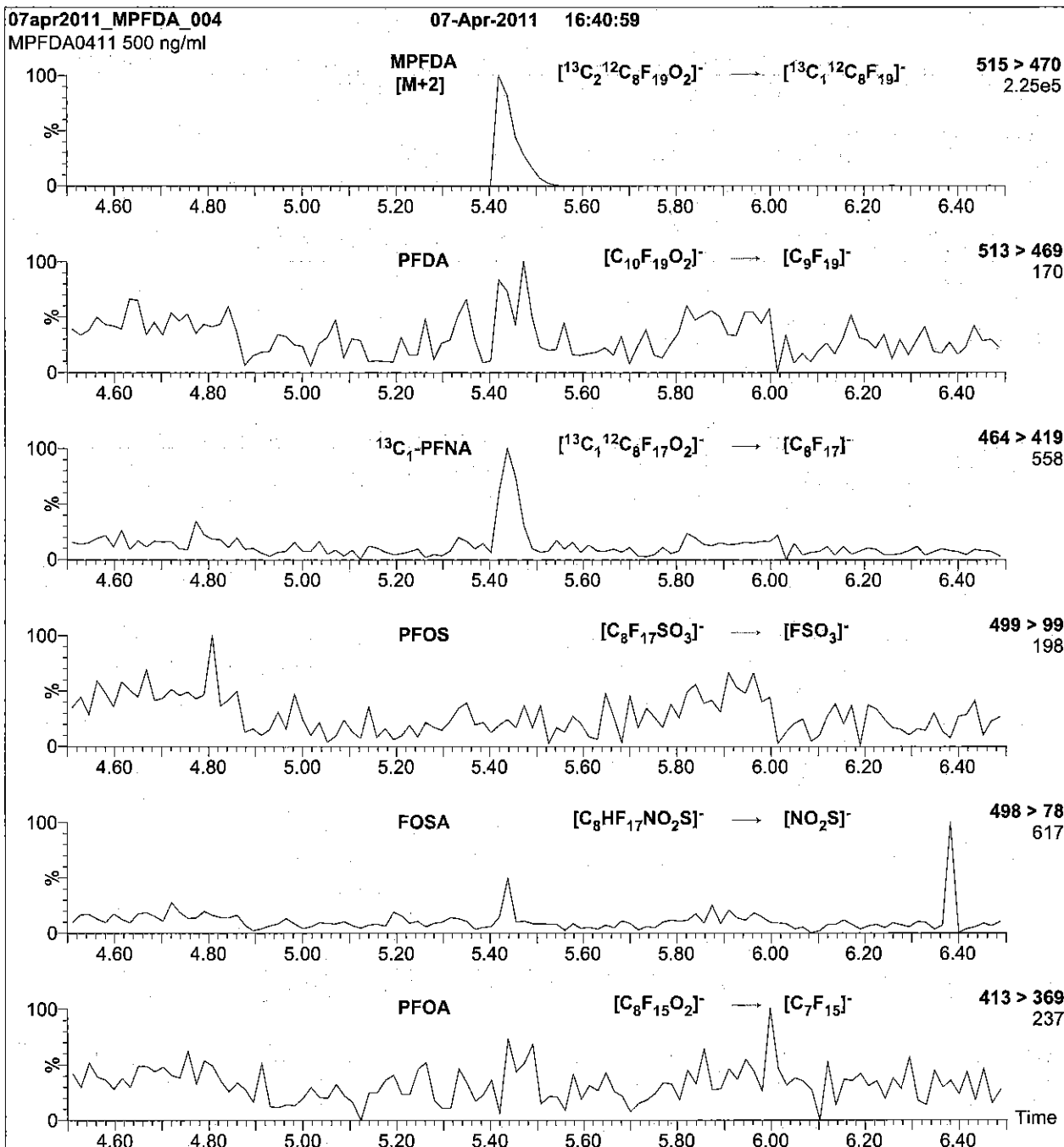
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

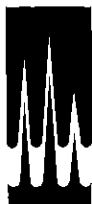
MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00005

PC 4/15/15 SKV



WELLINGTON LABORATORIES

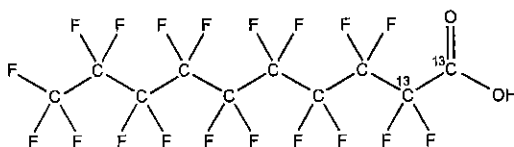
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFDA0414

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₁₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/15/2014
(mm/dd/yyyy)

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

INTENDED USE:

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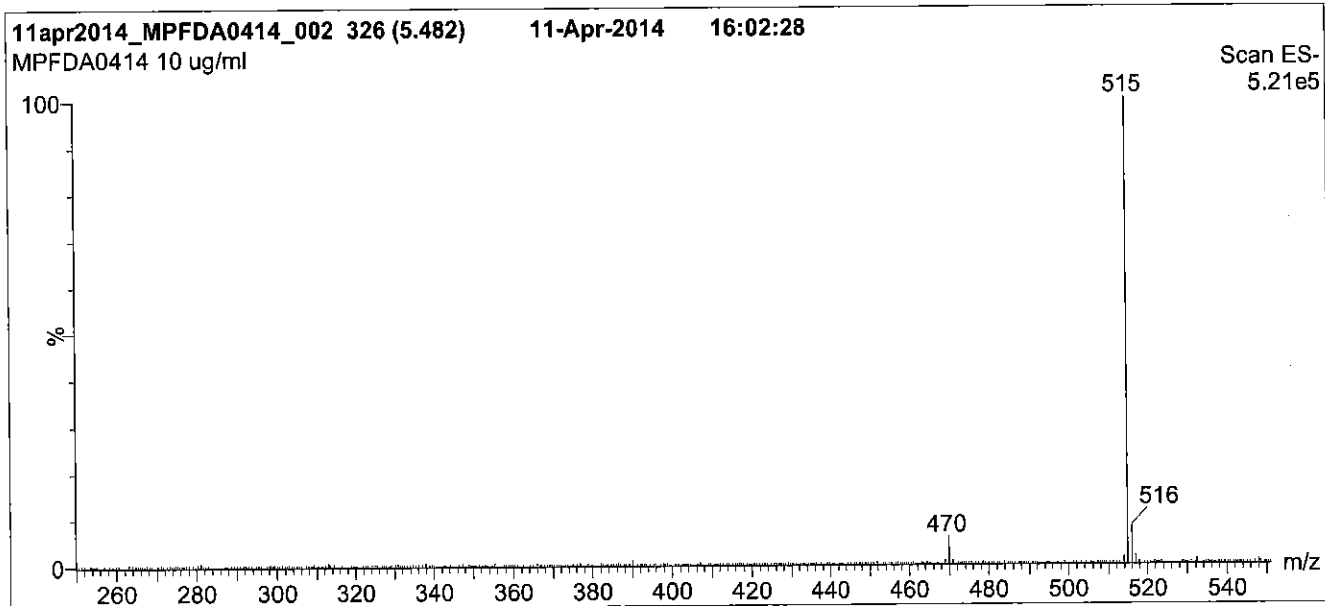
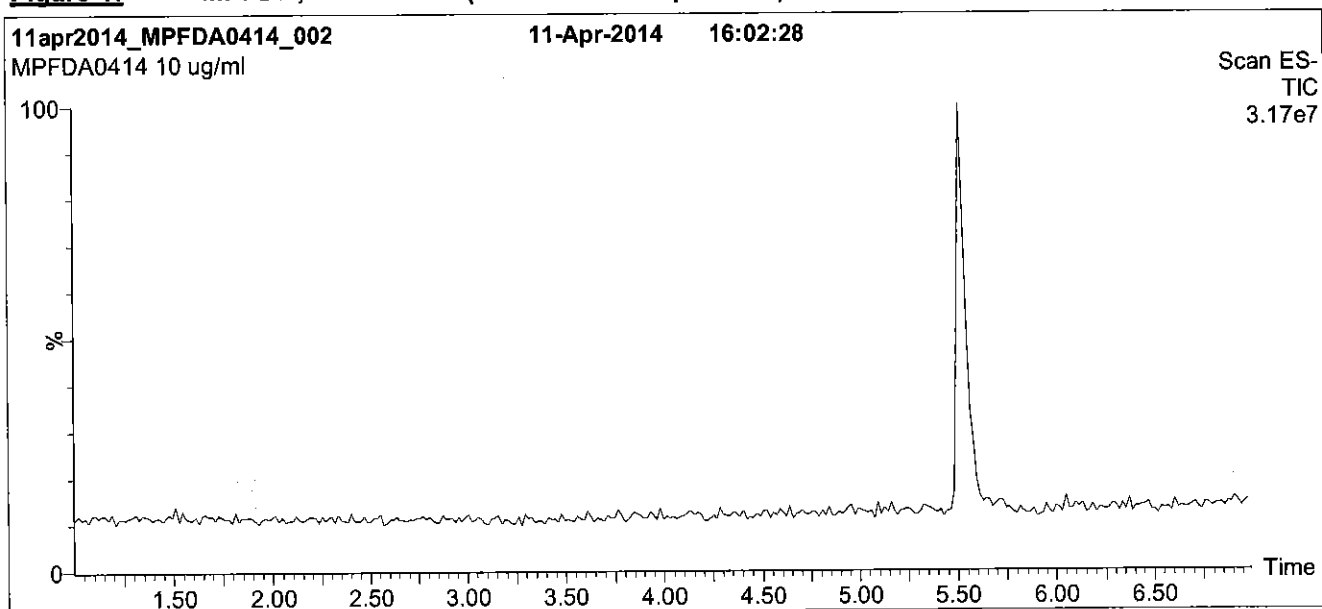
QUALITY MANAGEMENT:

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MS: Micromass Quattro micro API MS

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1.7 μ m, 2.1 x 100 mm

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(both with 10 mM NH₄OAc 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

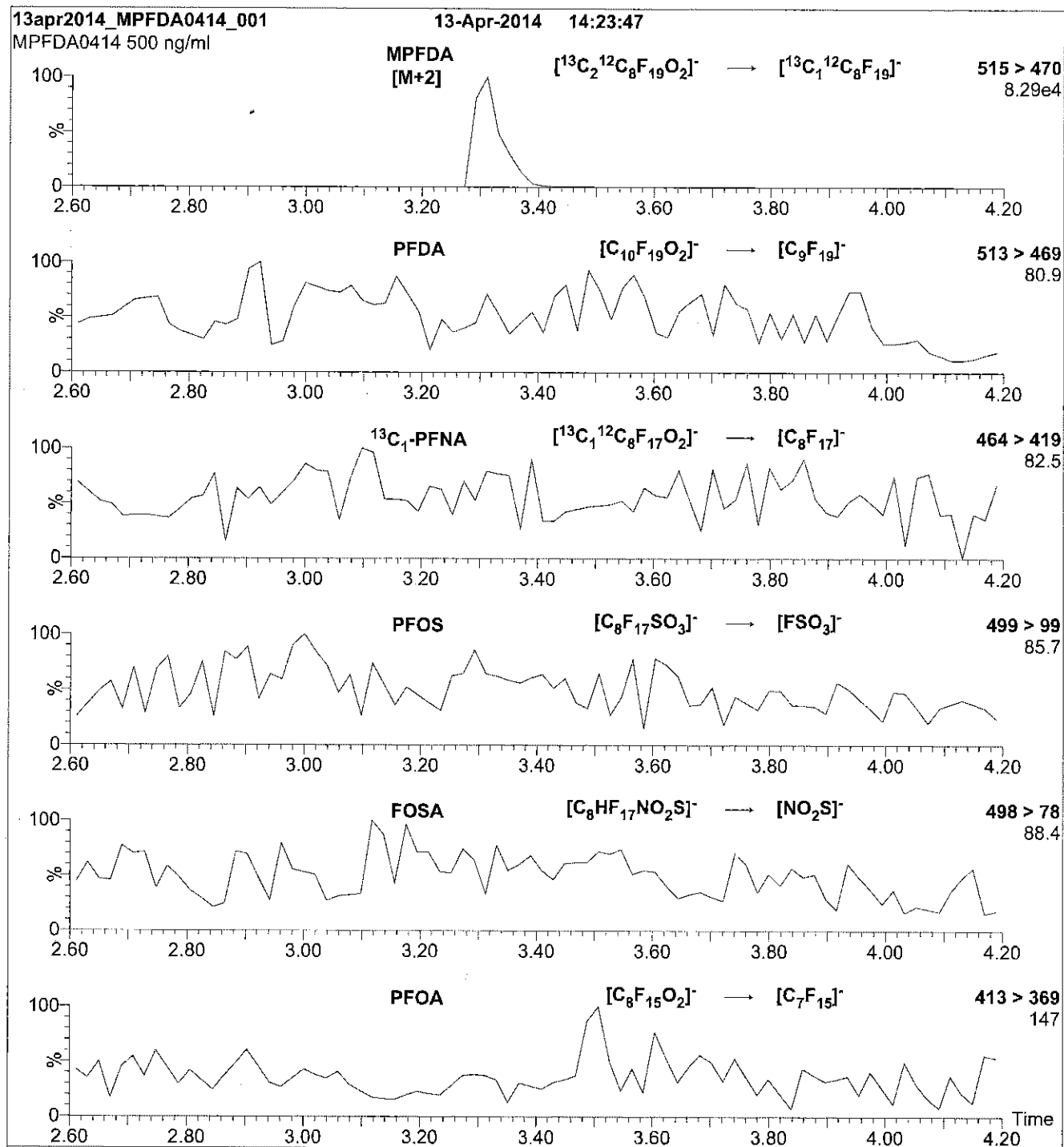
Flow: 300 μ l/min

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) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = $3.31\text{e-}3$
Collision Energy (eV) = 13

Reagent

LCMPFDA_00006



587892

ID: LCMPFDA_00006

Exp: 08/19/20 Prod: CBW Opn: 02/25/16
13C2-Perfluorodecanoic a

R: 2/25/16 CBW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

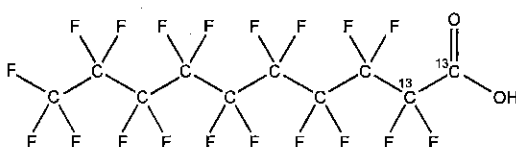
MPFDA

LOT NUMBER:

MPFDA0815

COMPOUND:Perfluoro-n-[1,2-¹³C₂]decanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₈H₁₈O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

516.07

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C(1,2-¹³C₂)**LAST TESTED:** (mm/dd/yyyy)

08/19/2015

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 ¹³C₁-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.

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.

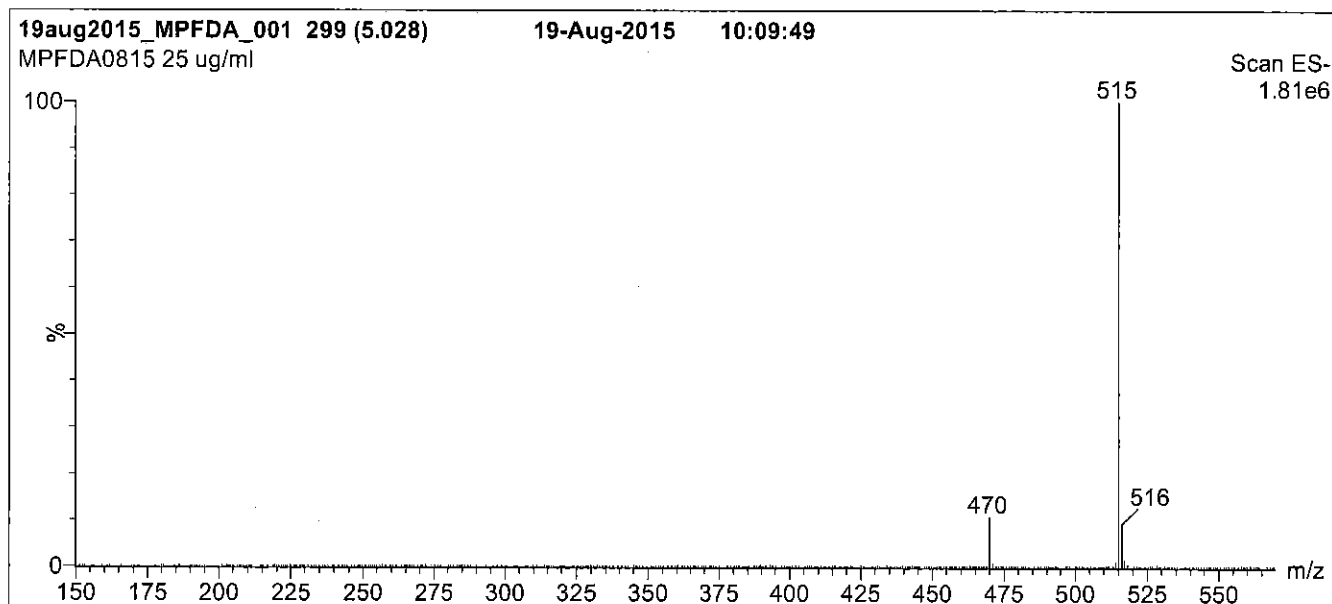
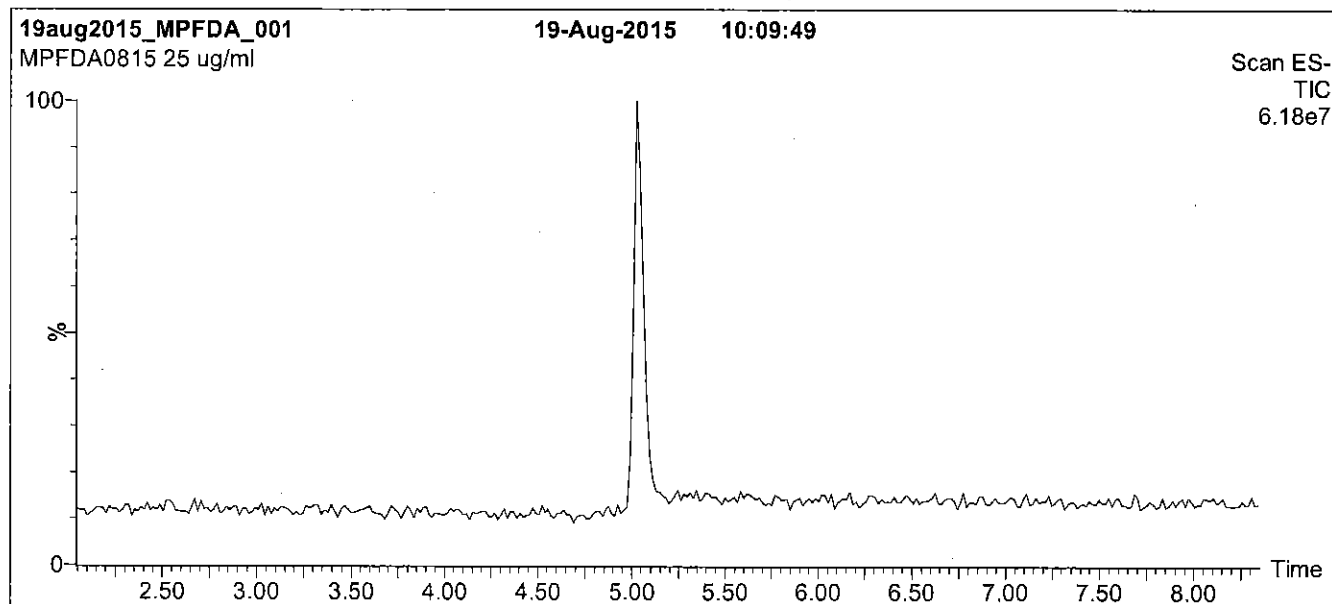
QUALITY MANAGEMENT:

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).



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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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O

(both with 10 mM NH₄OAc buffer)

Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.

Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

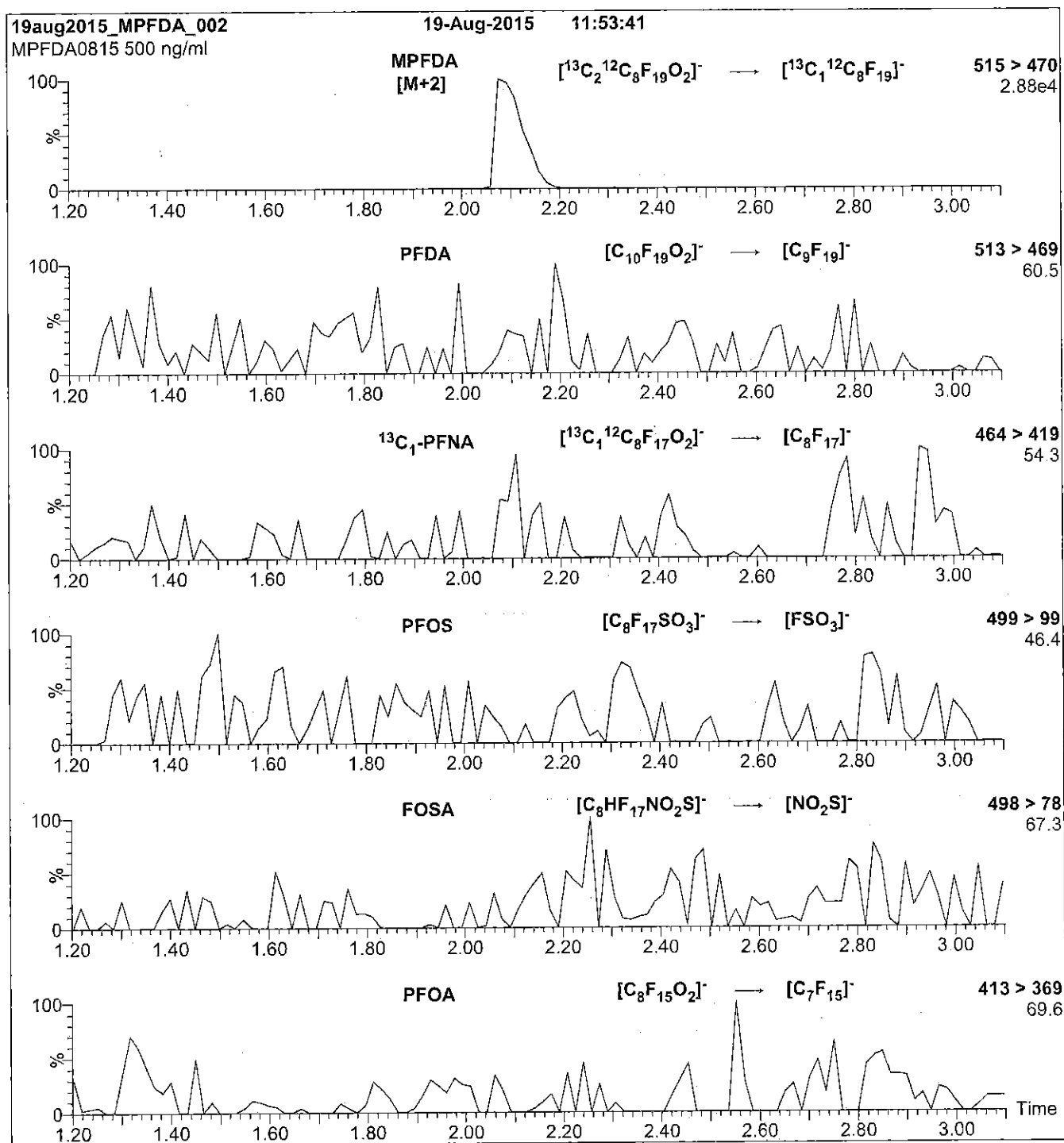
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 15.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFD_oA_00003



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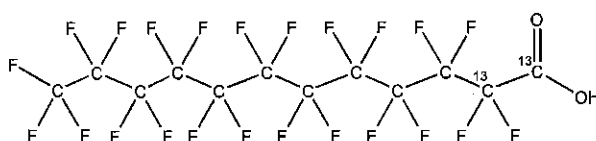
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 616.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/17/2014
EXPIRY DATE: (mm/dd/yyyy) 07/17/2019

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 07/21/2014
(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:

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SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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

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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.

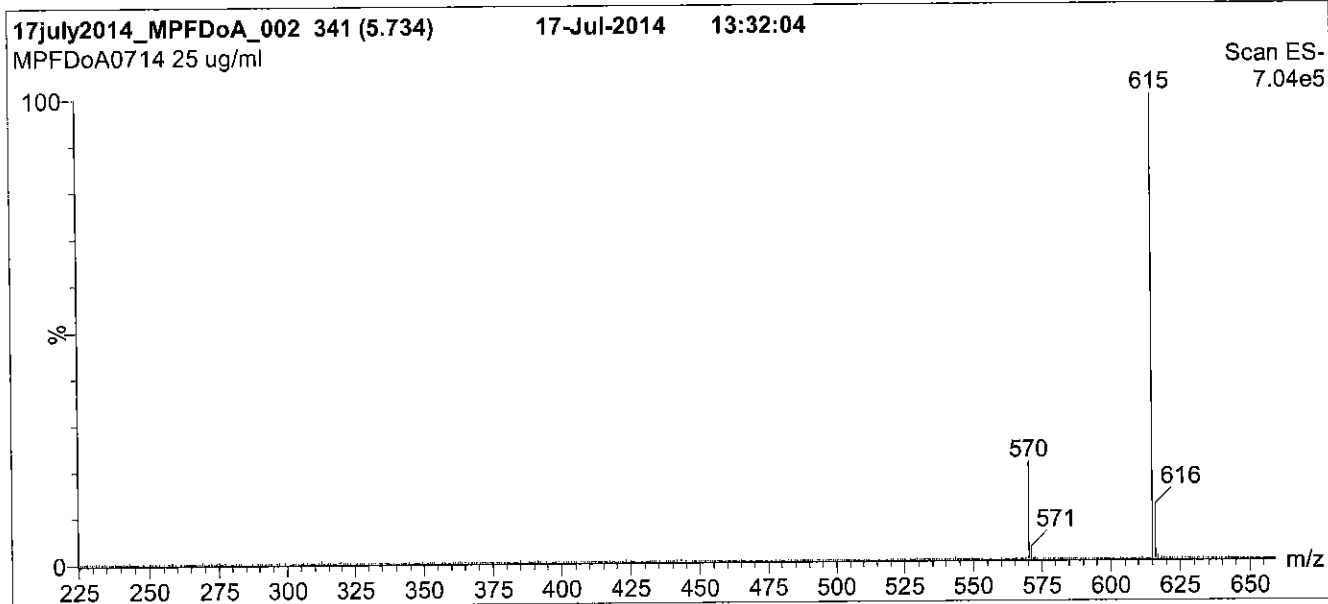
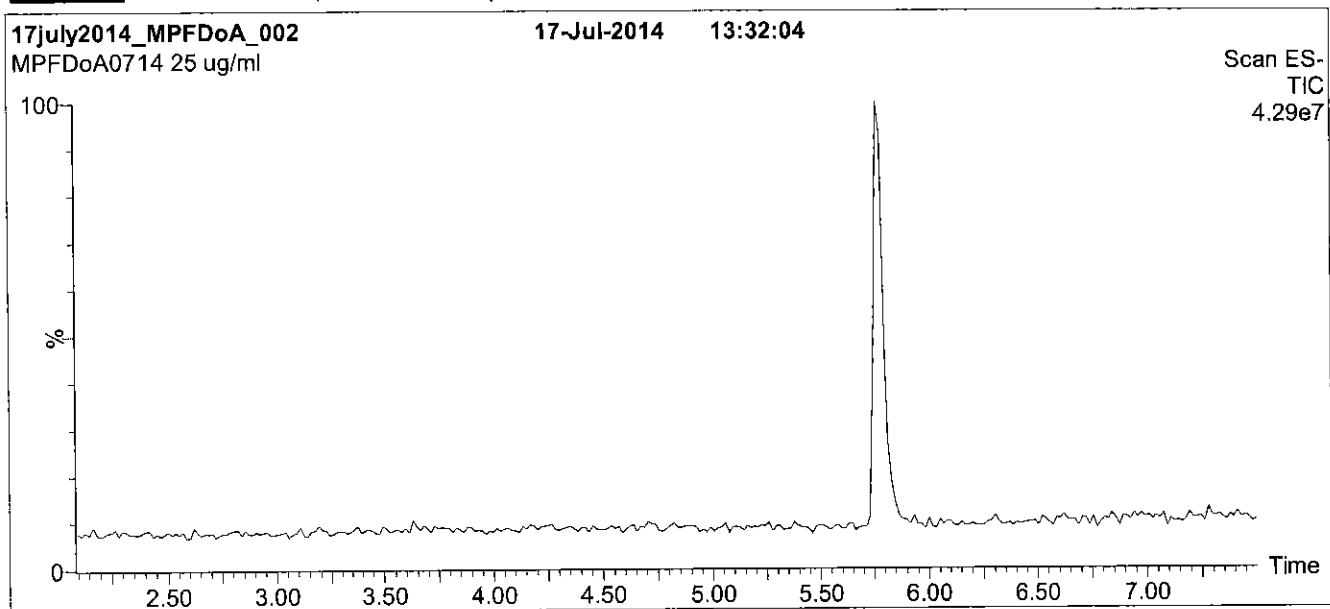
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

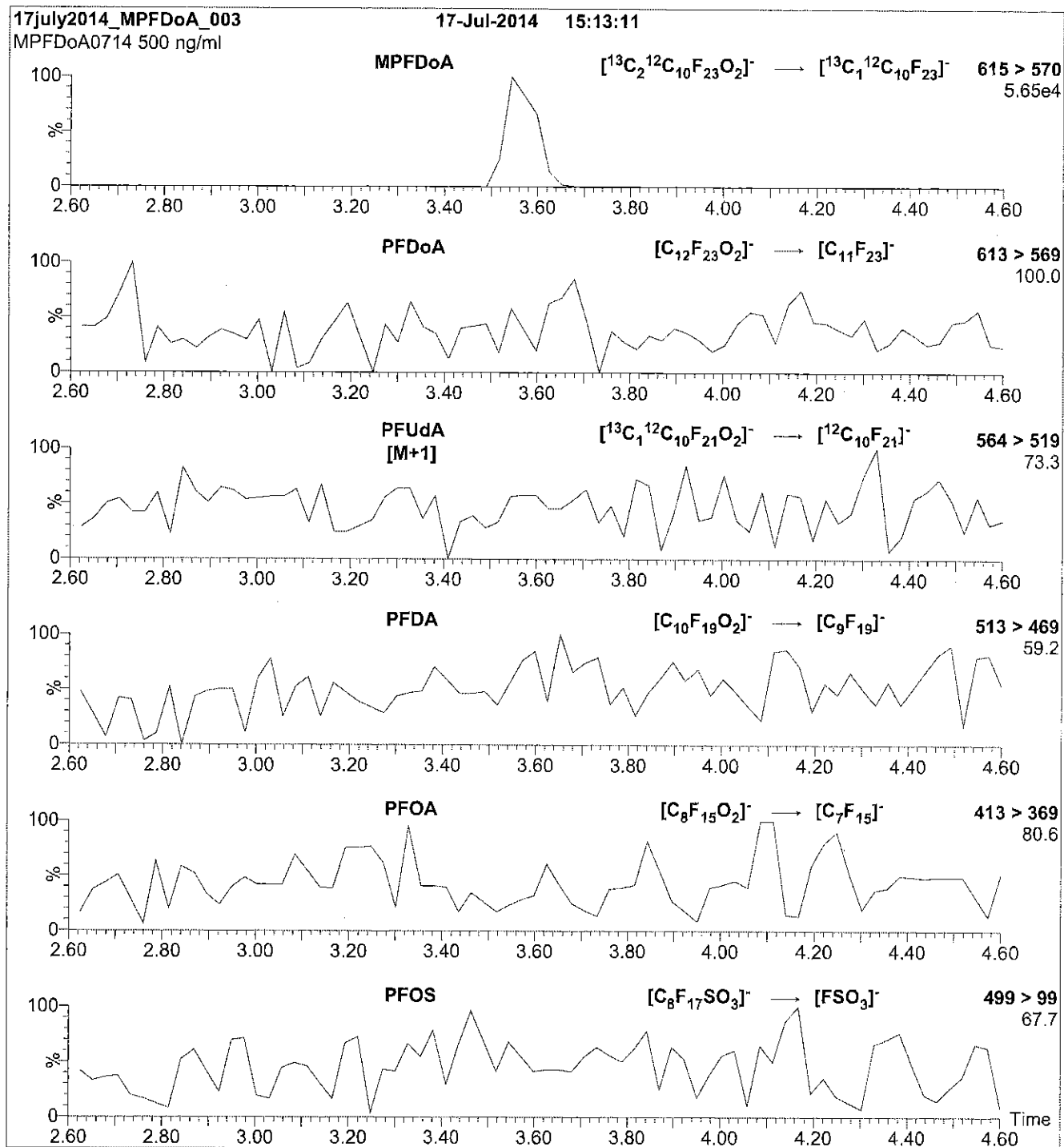
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00004

V: 14/10/15 SK



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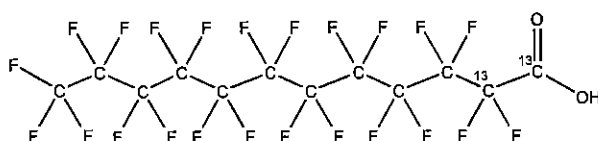
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

LOT NUMBER: MPFDoA0714

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 616.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy) 07/17/2014

EXPIRY DATE: (mm/dd/yyyy) 07/17/2019

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: 04/01/2015
(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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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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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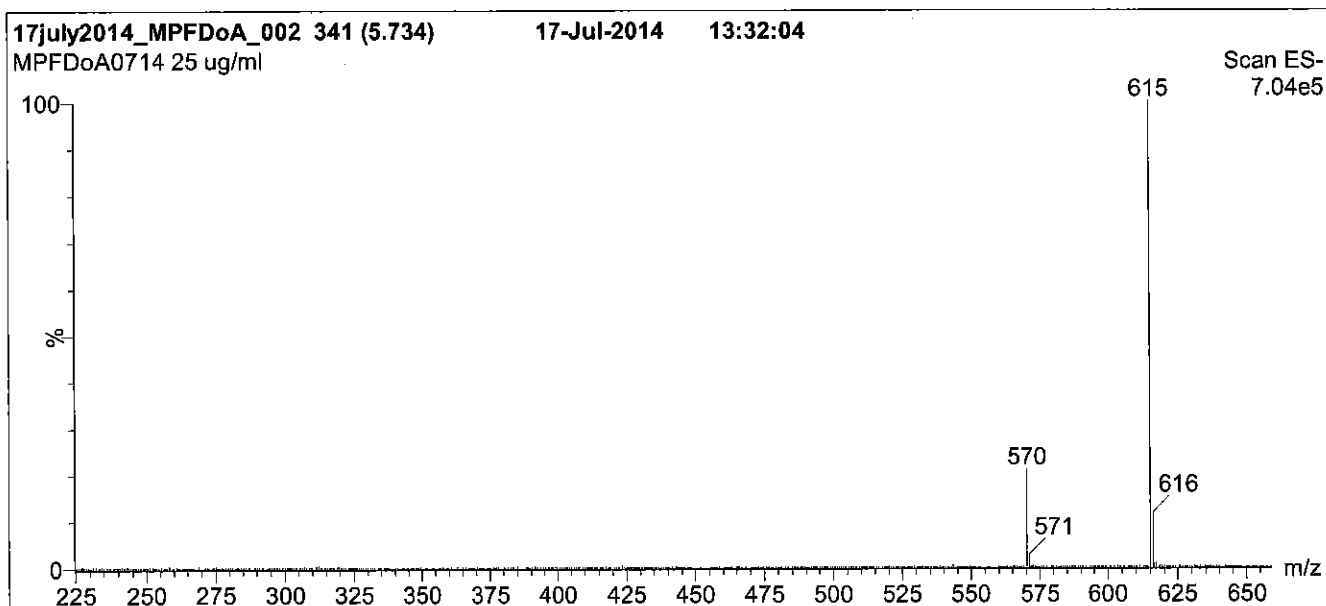
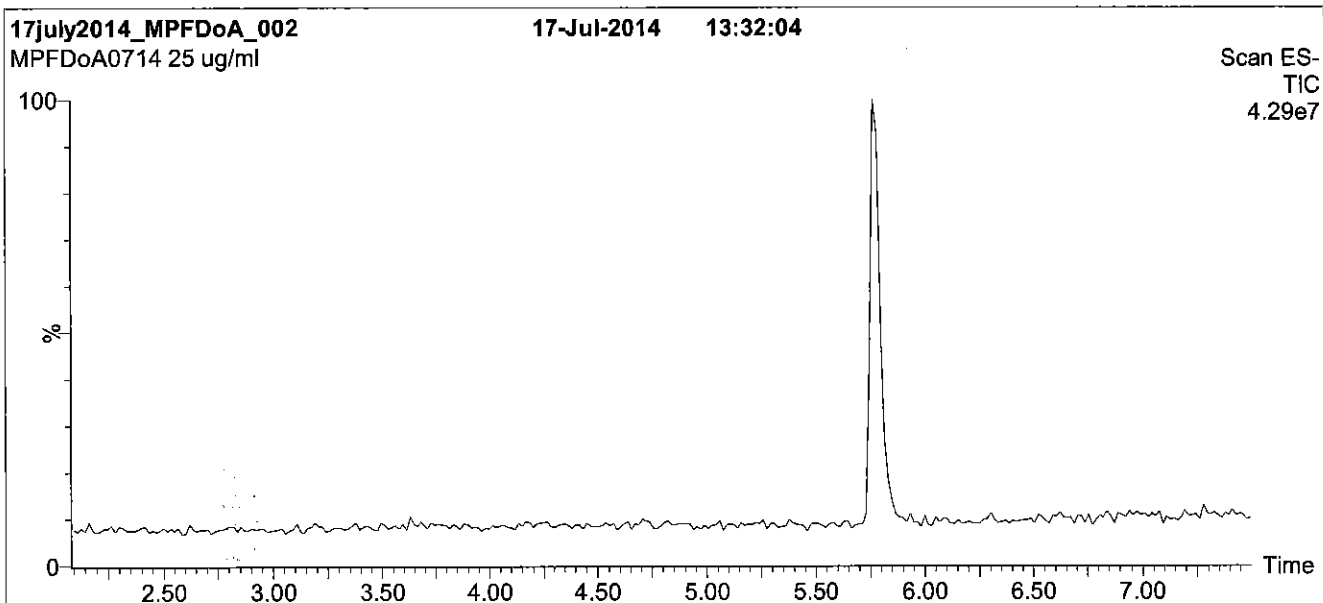
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

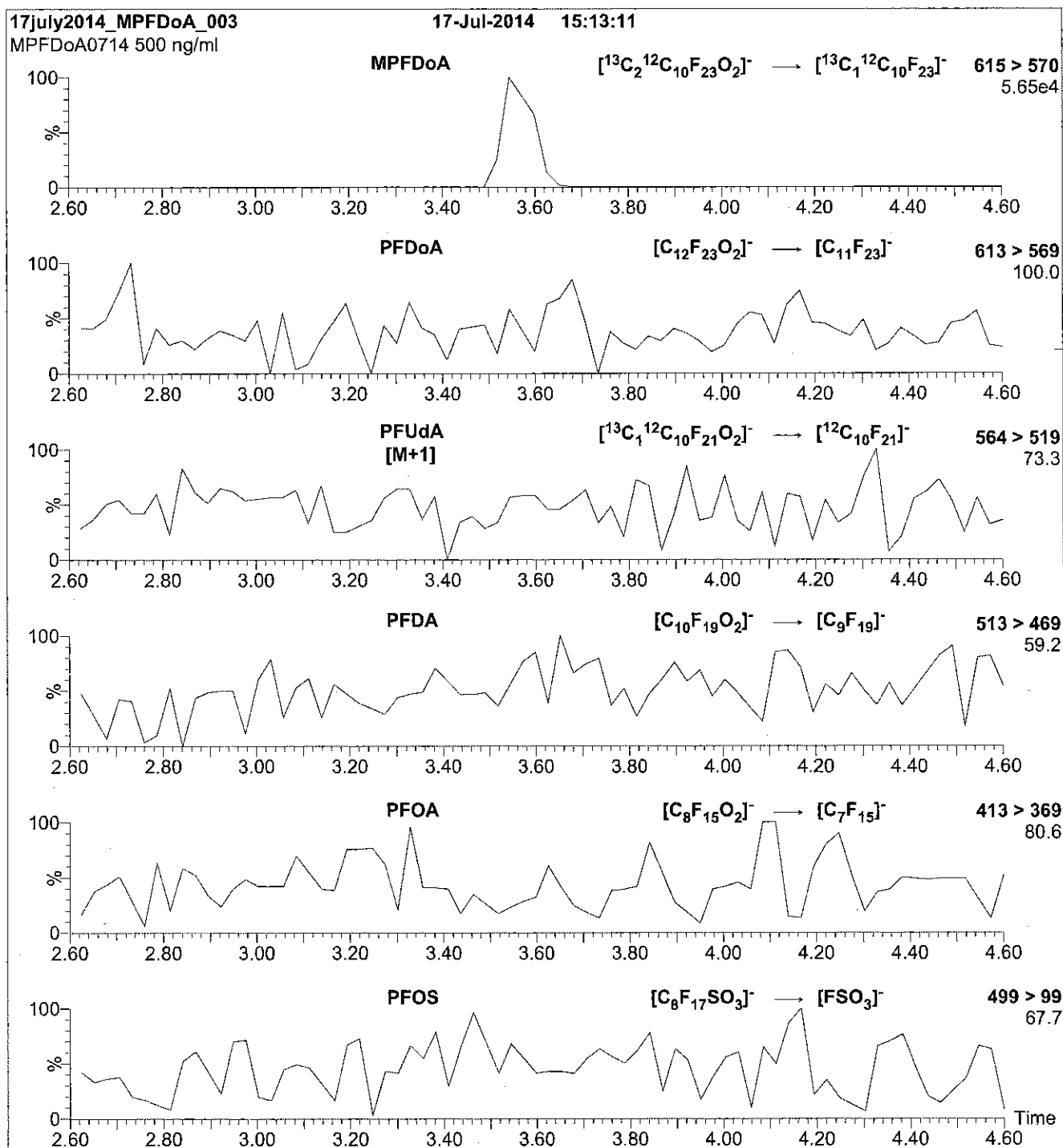
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFD0A)

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

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00006



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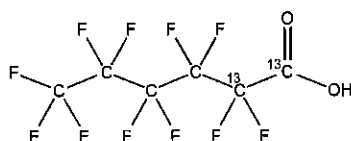
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA0414

STRUCTURE:

CAS #: Not available



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

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- 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: 04/15/2014
(mm/dd/yyyy)

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

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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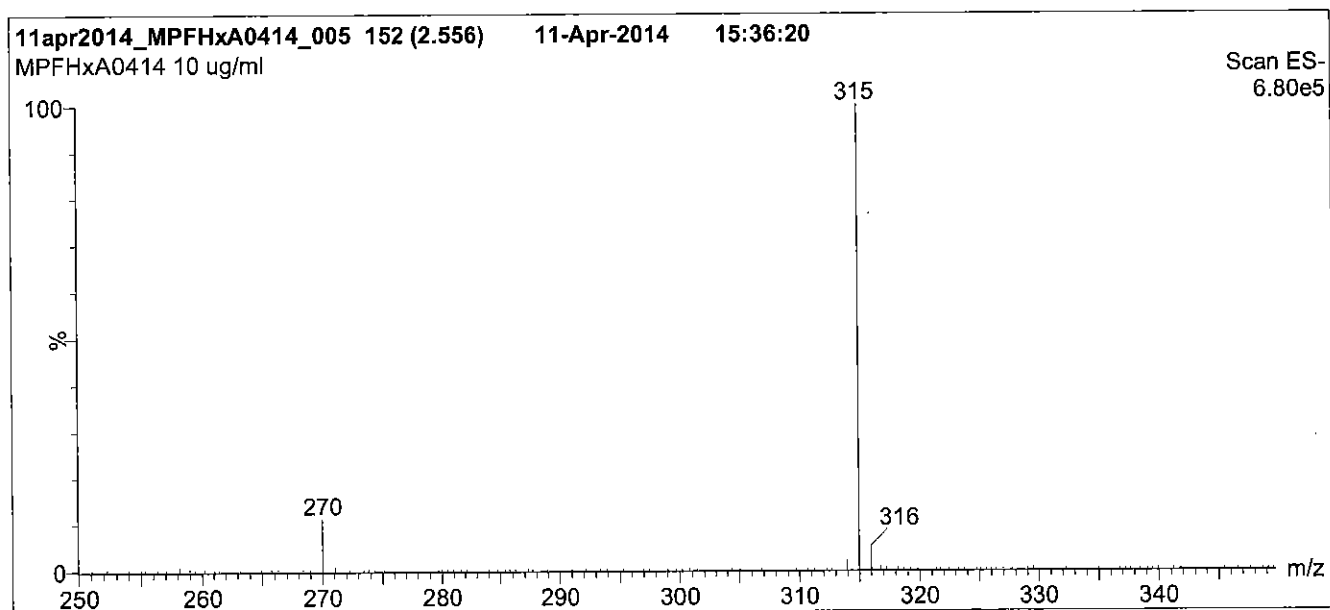
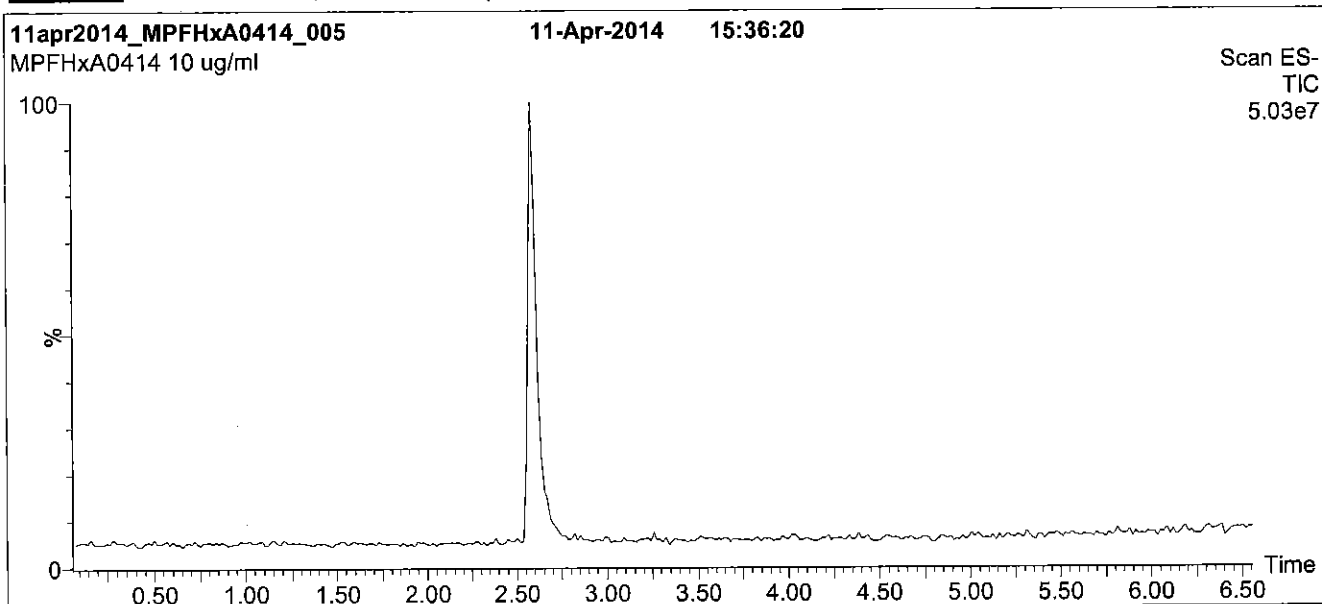
QUALITY MANAGEMENT:

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).



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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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

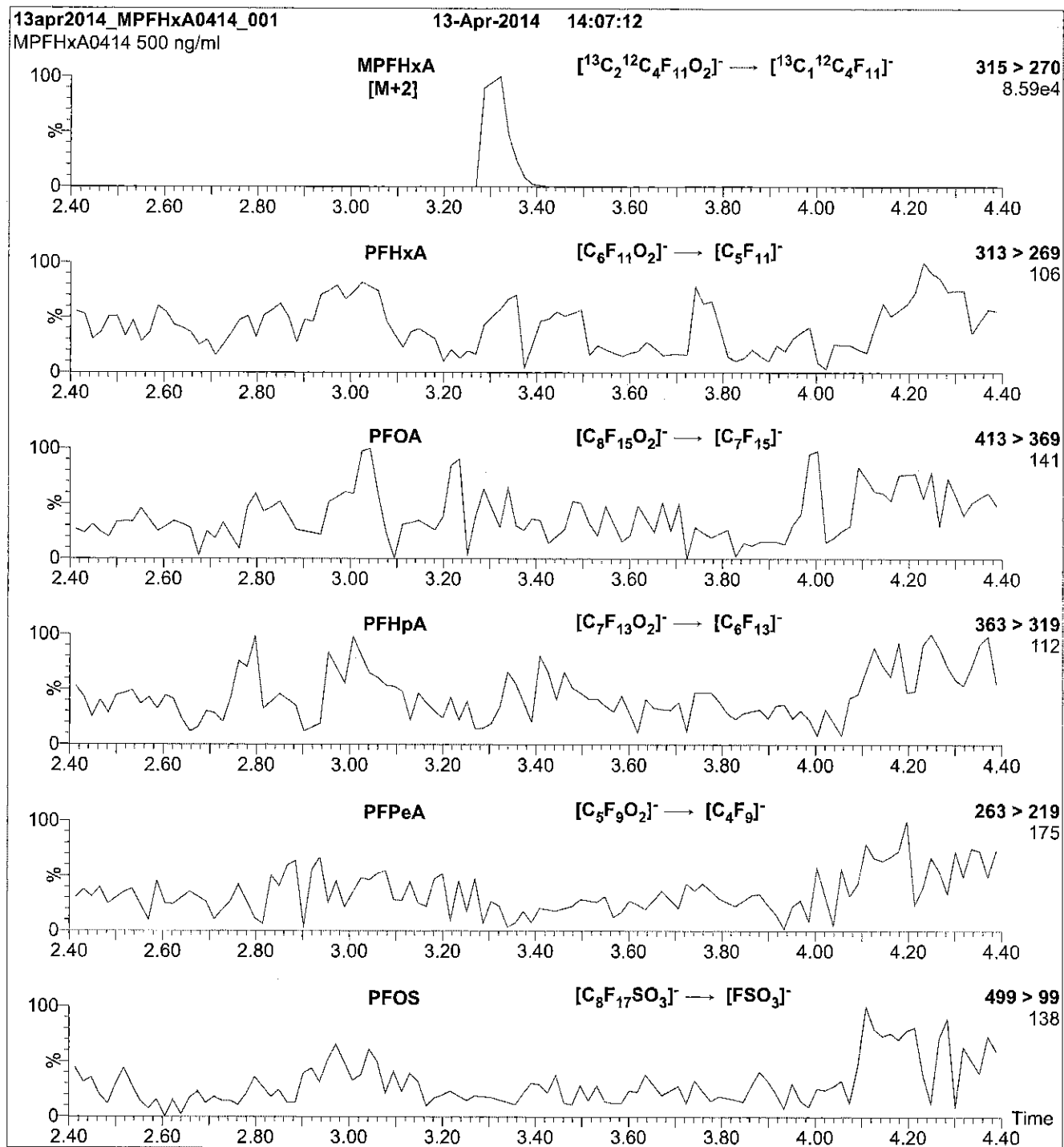
Flow: 300 μ l/min

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxA_00007



587893

ID: LCMPFHxA_00007

Exp: 04/09/20 P: CBN Opn: 02/25/16

13C2-Perfluorohexanoic ac

R: 2/25/16 CW



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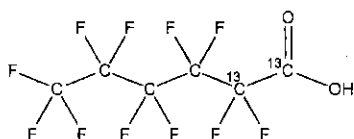
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA0415

STRUCTURE:

CAS #: Not available



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

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

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

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:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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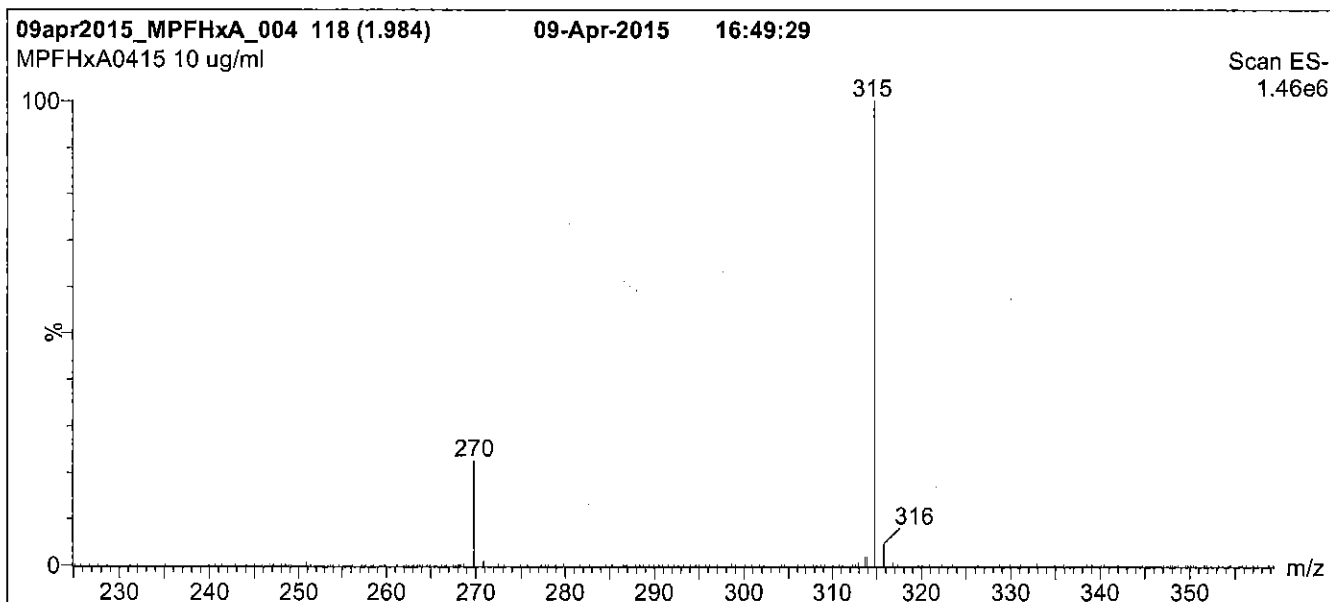
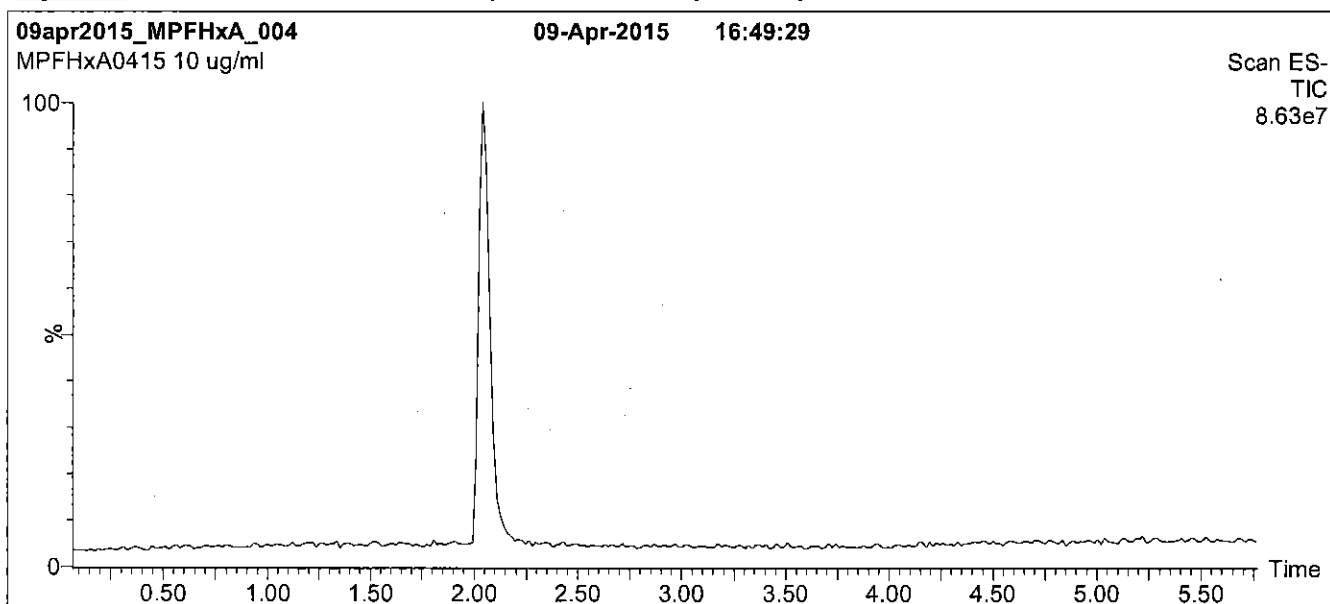
QUALITY MANAGEMENT:

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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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

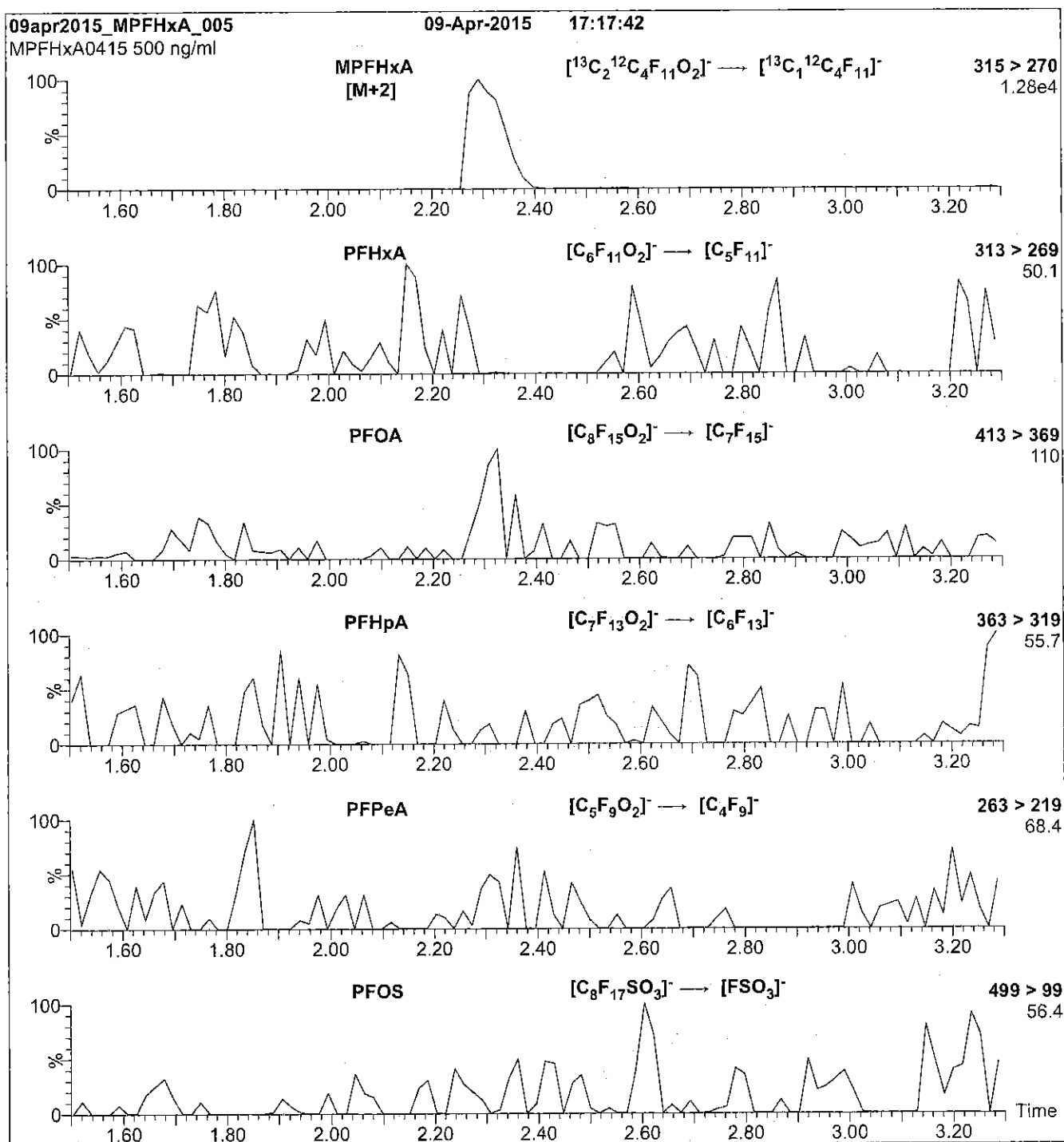
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

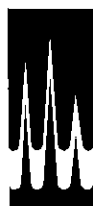
MS Parameters

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

Reagent

LCMPFHxS_00003

21115 82



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

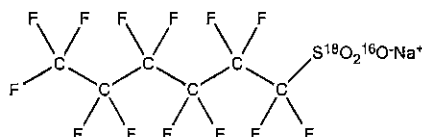
MPFHxS

LOT NUMBER:

MPFHxS0713

COMPOUND:Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**C₆F₁₃S¹⁸O₂¹⁶ONa**MOLECULAR WEIGHT:**

426.10

CONCENTRATION:50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (MPFHxS anion)**SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:>94% (¹⁸O₂)**LAST TESTED:** (mm/dd/yyyy)

07/25/2013

EXPIRY DATE: (mm/dd/yyyy)

07/25/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O⁻) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁸O₃⁻) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/15/2014

(mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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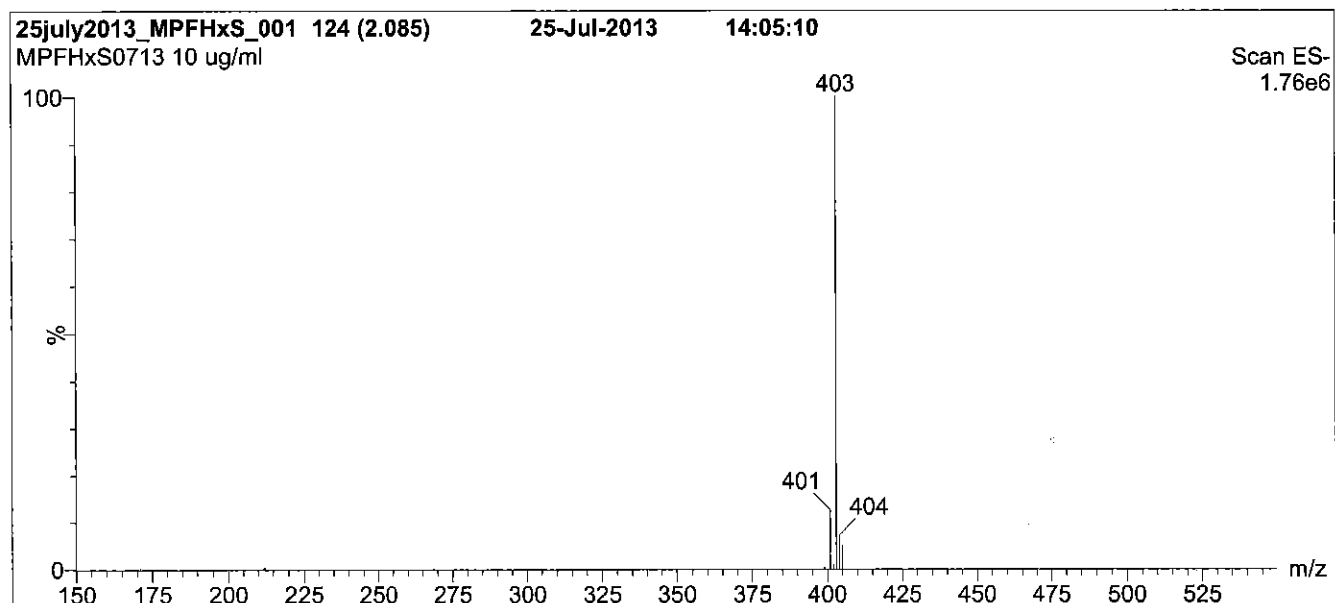
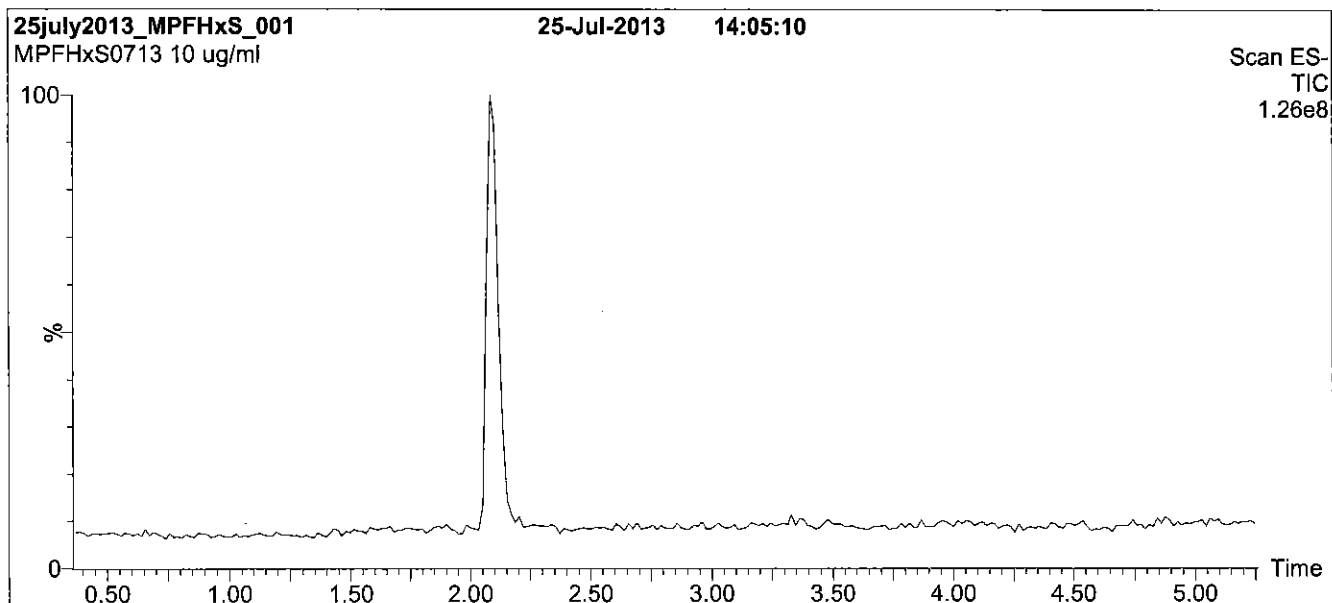
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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

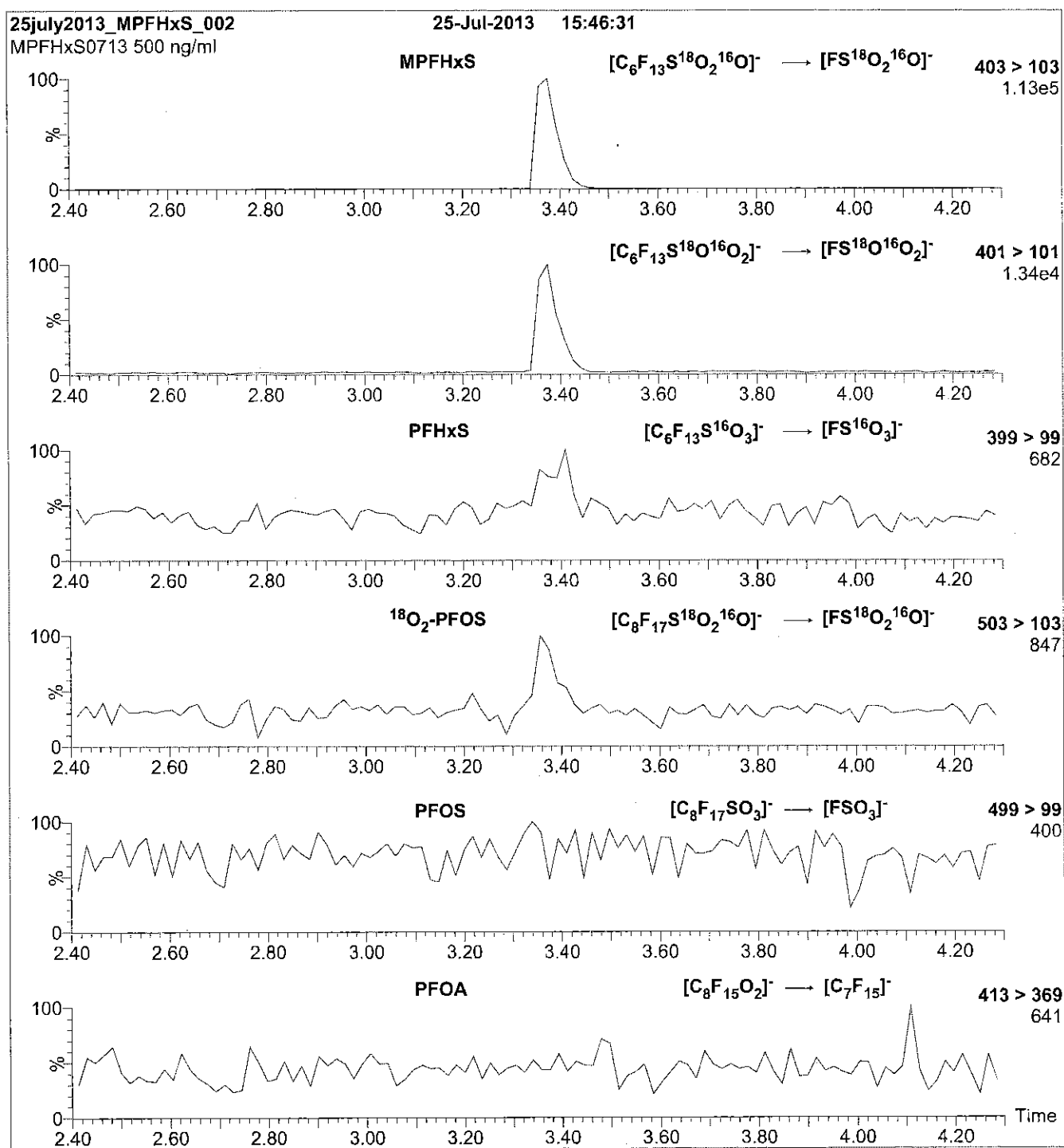
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCMPFHxS_00004



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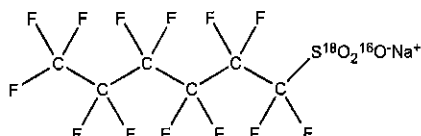
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS
COMPOUND: Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate

LOT NUMBER: MPFHxS0713

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₆F₁₃S¹⁸O₂¹⁶ONa
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (MPFHxS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/25/2013
EXPIRY DATE: (mm/dd/yyyy) 07/25/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 426.10
SOLVENT(S): Methanol
ISOTOPIC PURITY: >94% (¹⁸O₂)

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.
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Certified By:

B.G. Chittim

Date: 03/30/2015
(mm/dd/yyyy)

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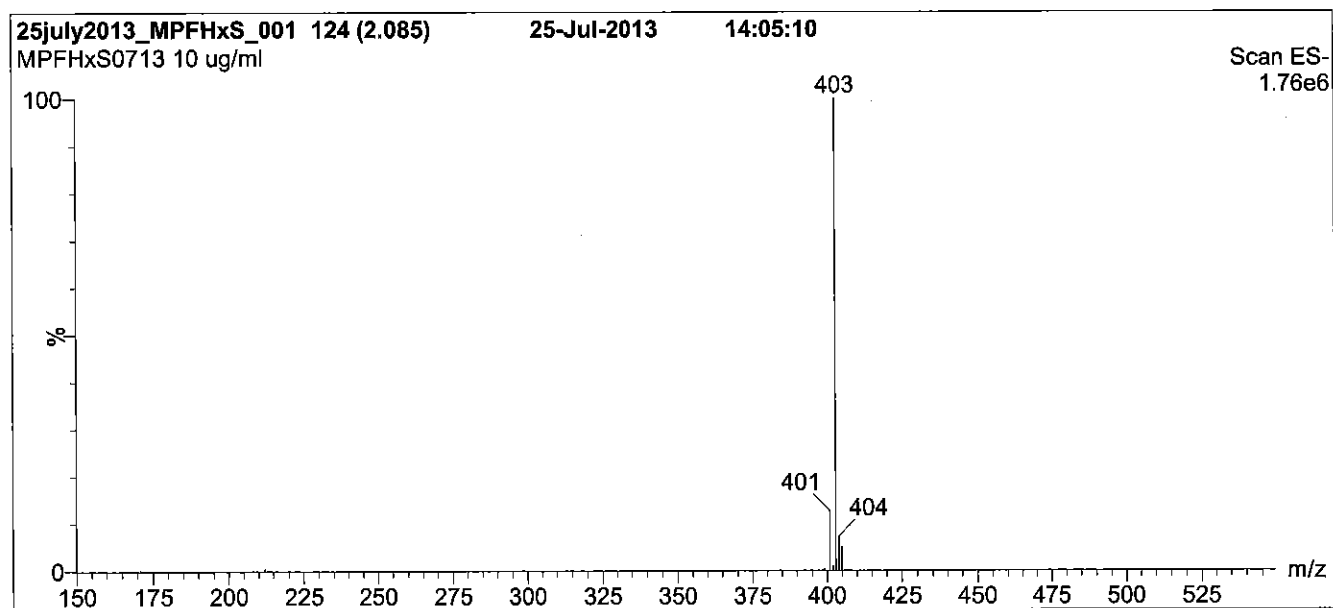
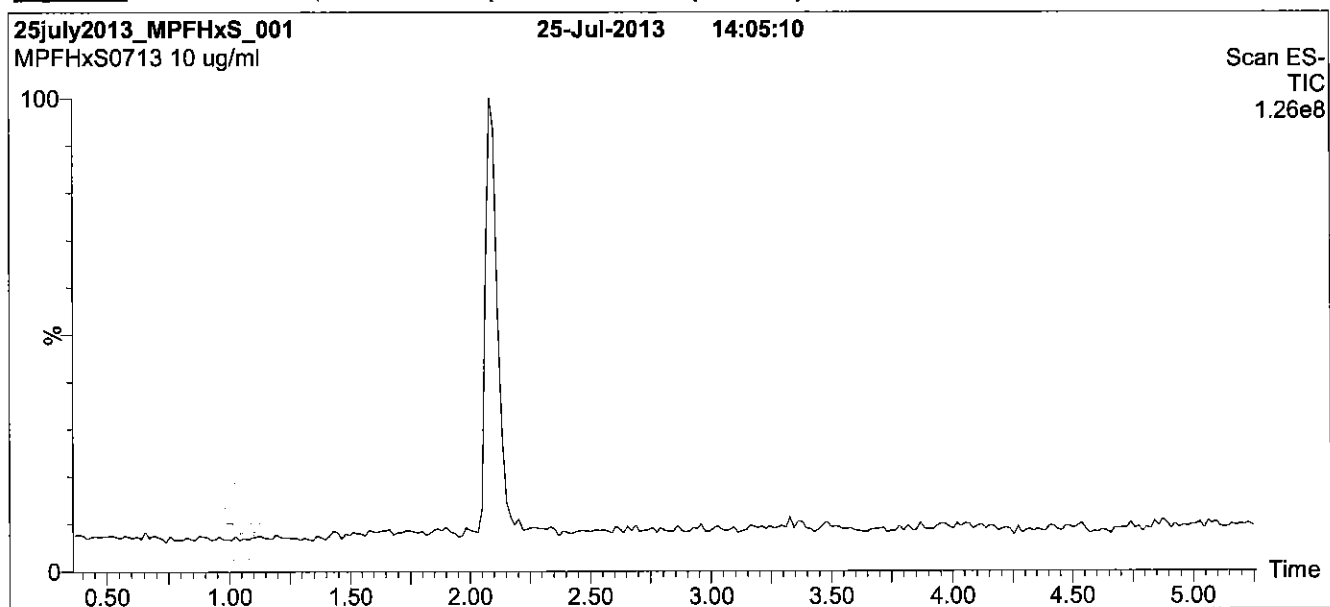
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Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

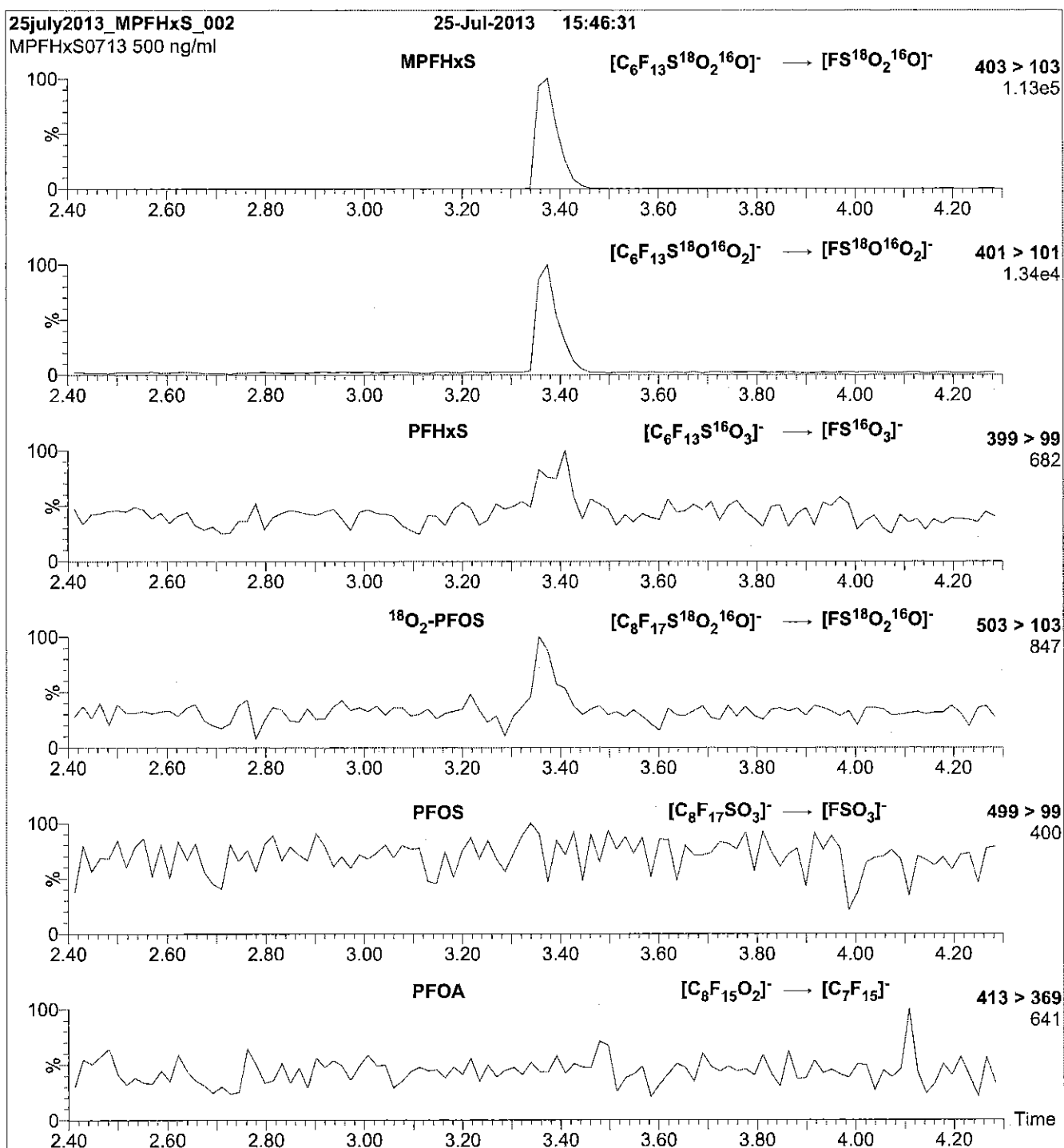
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00003



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

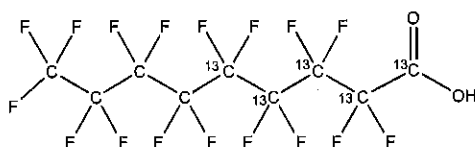
MPFNA

LOT NUMBER:

MPFNA0414

COMPOUND:Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_5^{12}\text{C}_4\text{HF}_{17}\text{O}_2$ **MOLECULAR WEIGHT:**

469.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

04/13/2014

EXPIRY DATE: (mm/dd/yyyy)

04/13/2019

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: 04/13/2014

(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.

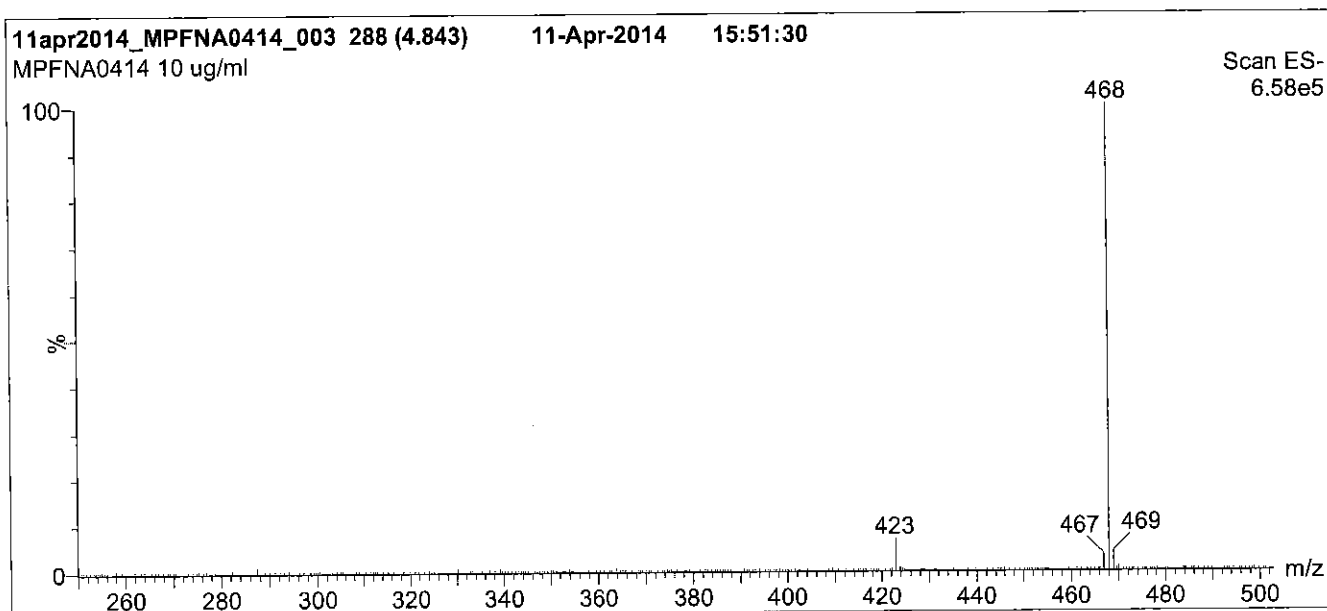
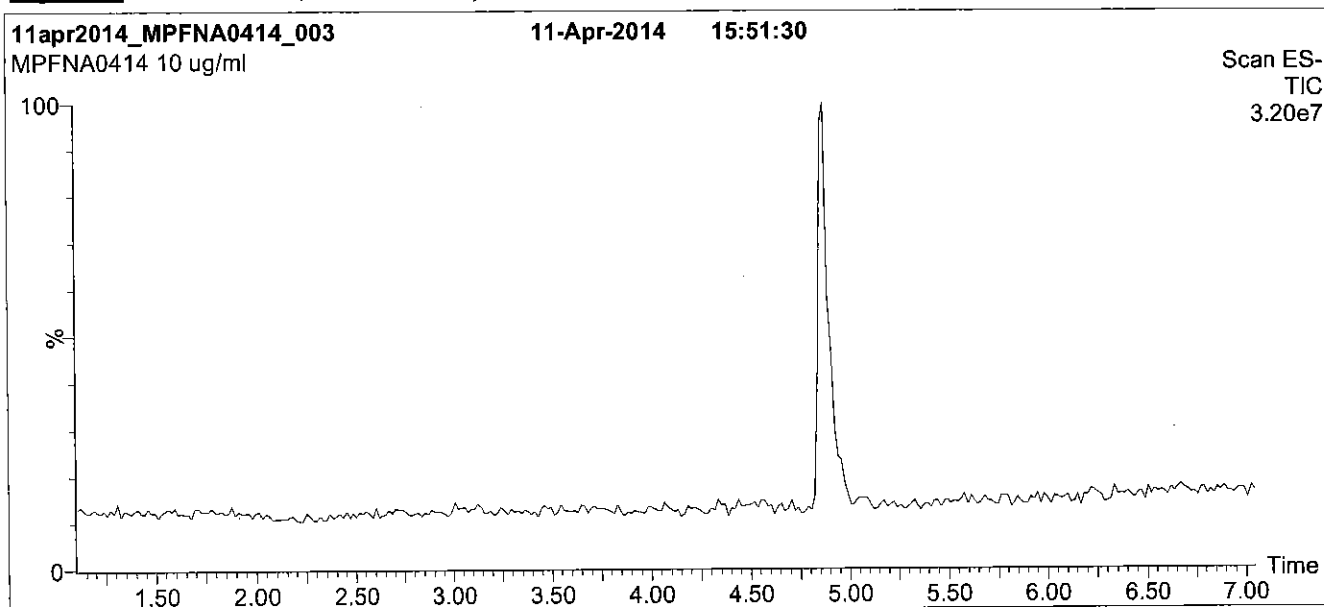
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

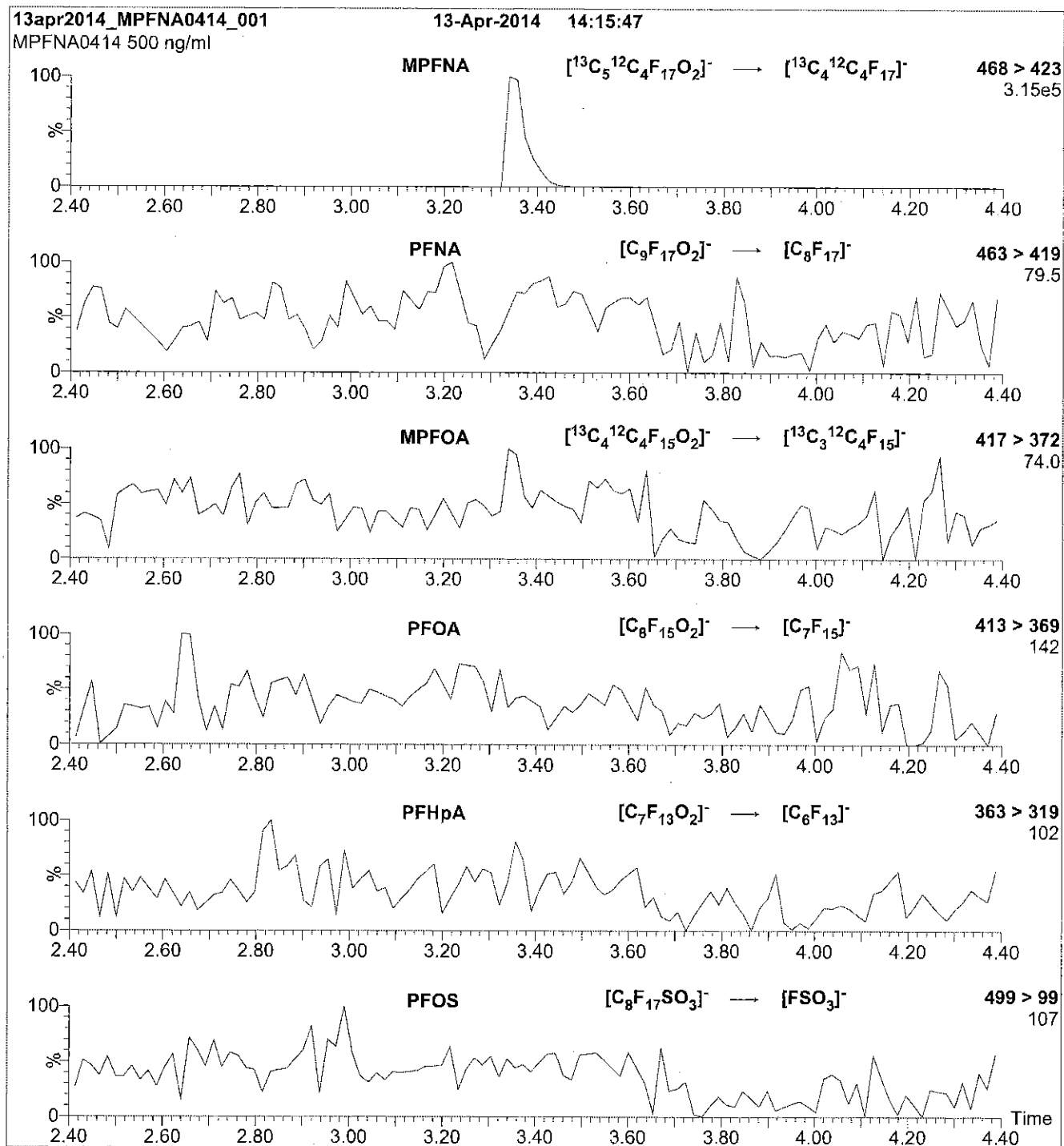
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ 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) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFNA_00004



587894

ID: LCMFNA_00004

Exp:04/13/19 Prip:CBW Opn:02/25/15

13C5-Perfluorononanoic aci

R: 2/25/16 CBW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

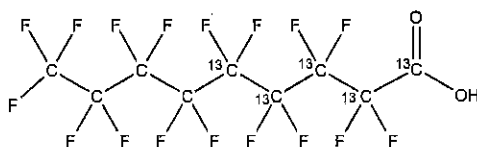
MPFNA

LOT NUMBER:

MPFNA0414

COMPOUND:Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_5^{12}\text{C}_4\text{HF}_{17}\text{O}_2$ **CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

469.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

04/13/2014

(1,2,3,4,5-¹³C₅)**EXPIRY DATE:** (mm/dd/yyyy)

04/13/2019

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.

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Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

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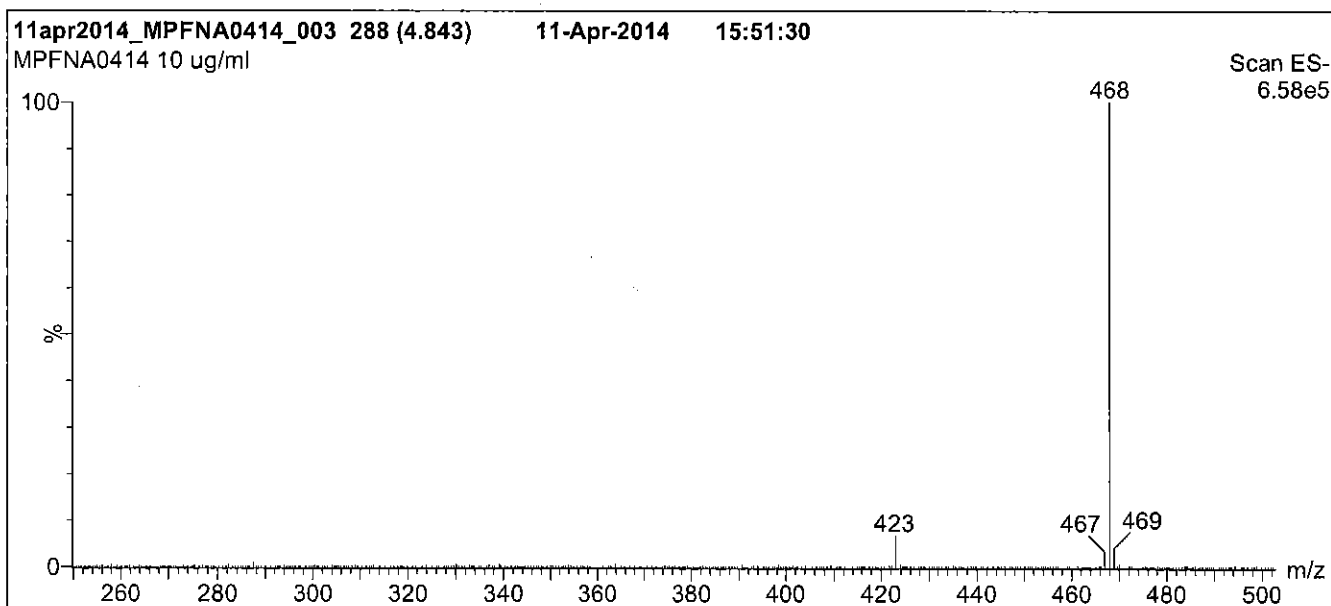
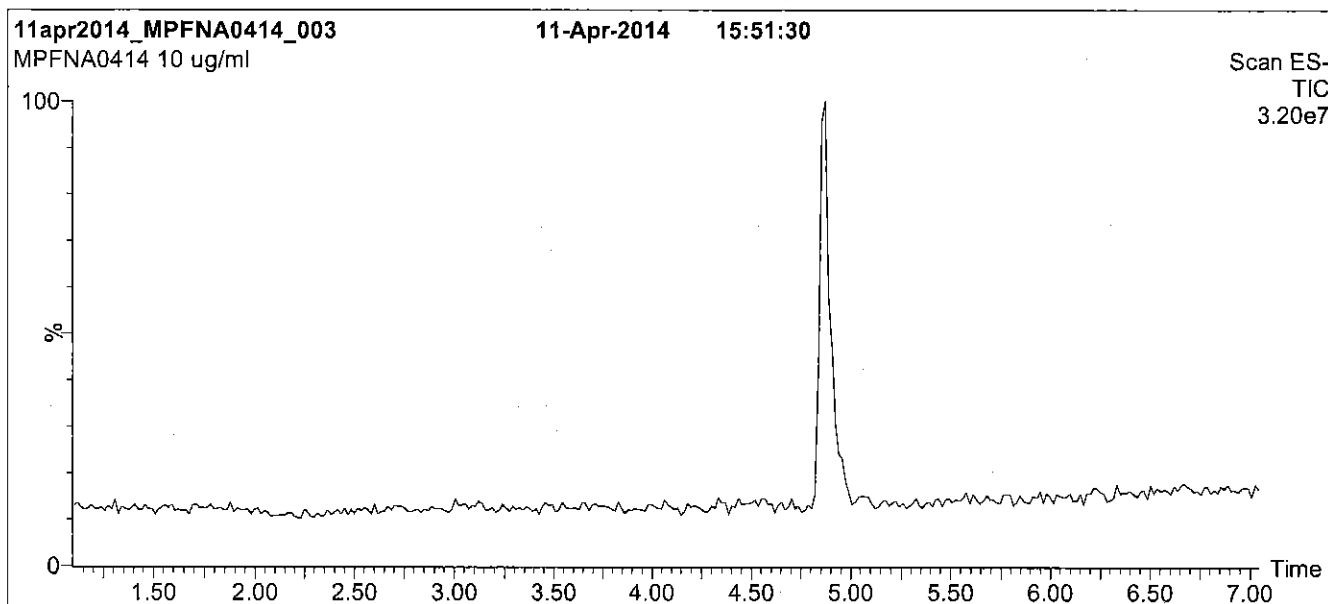
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

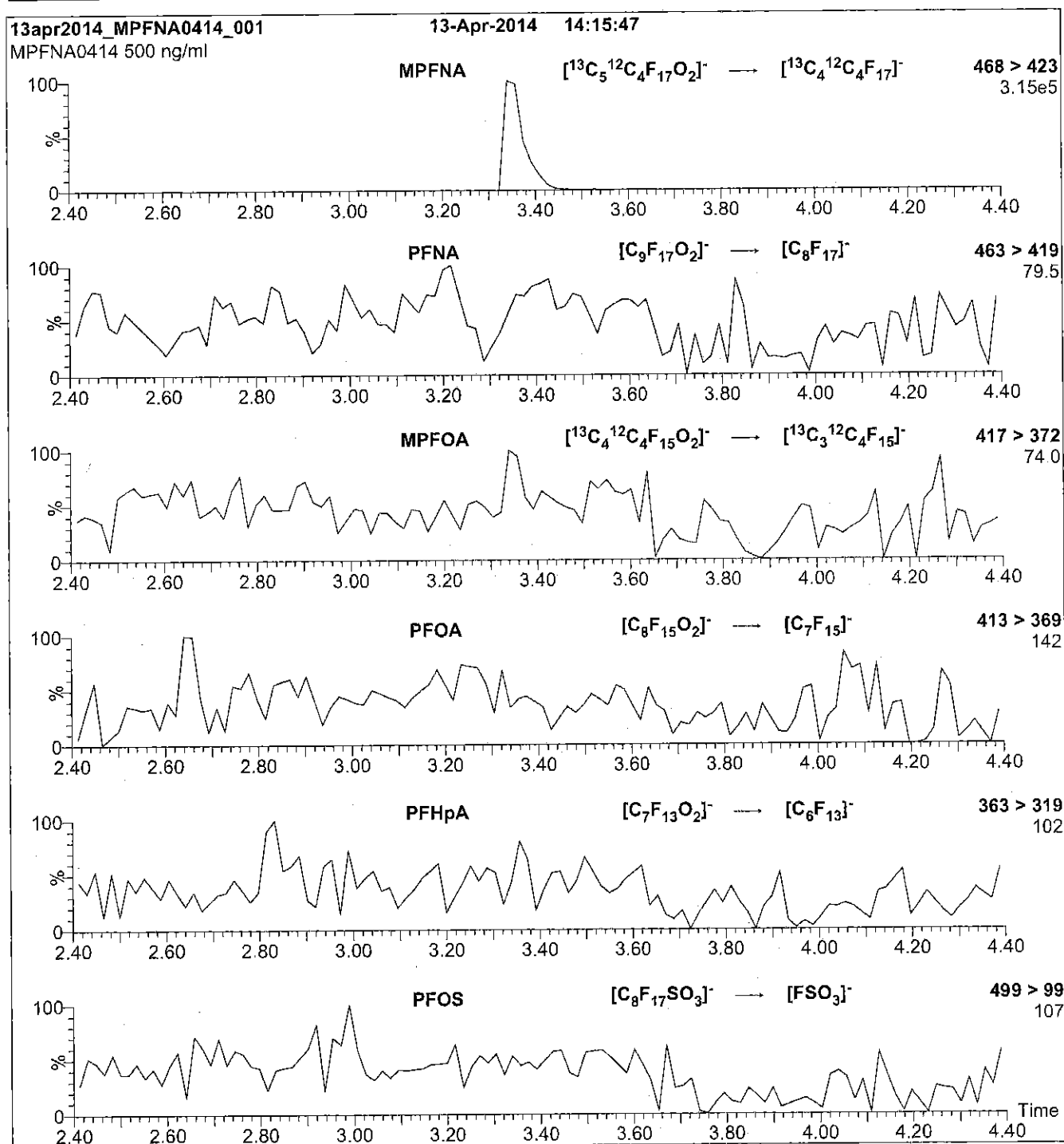
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ 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) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00007

r: 9/5/15 87



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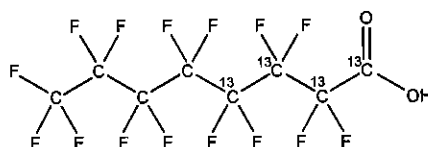
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

LOT NUMBER: MPFOA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/10/2015
EXPIRY DATE: (mm/dd/yyyy) 04/10/2020
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 native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/10/2015
(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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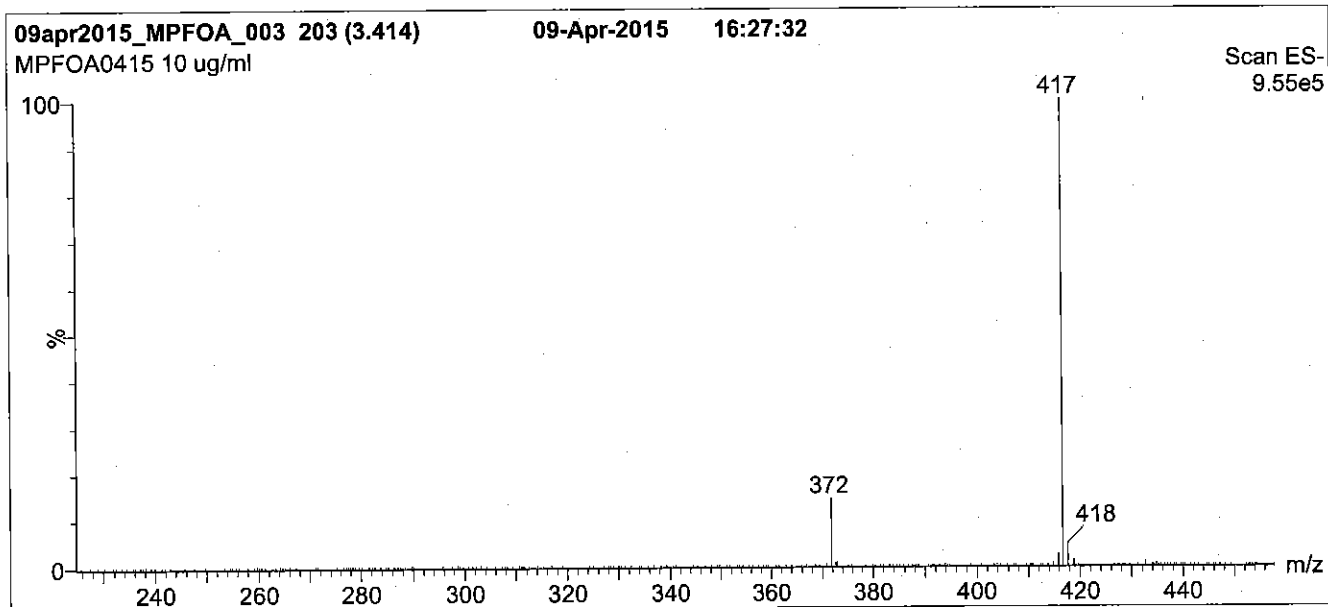
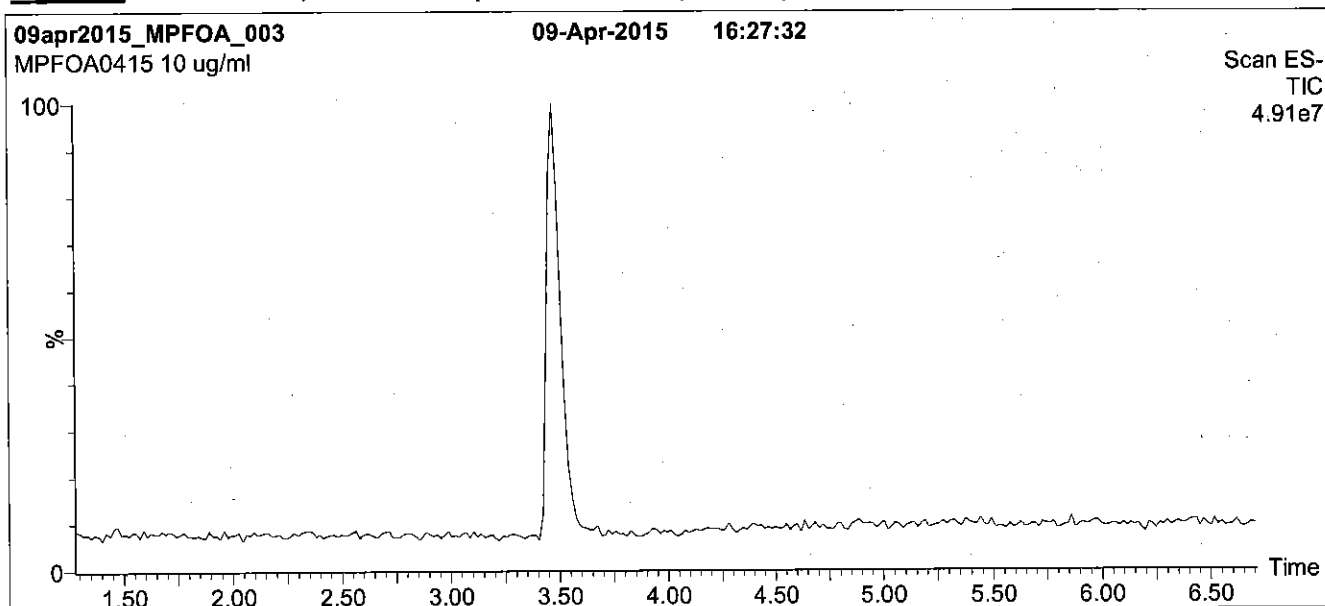
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

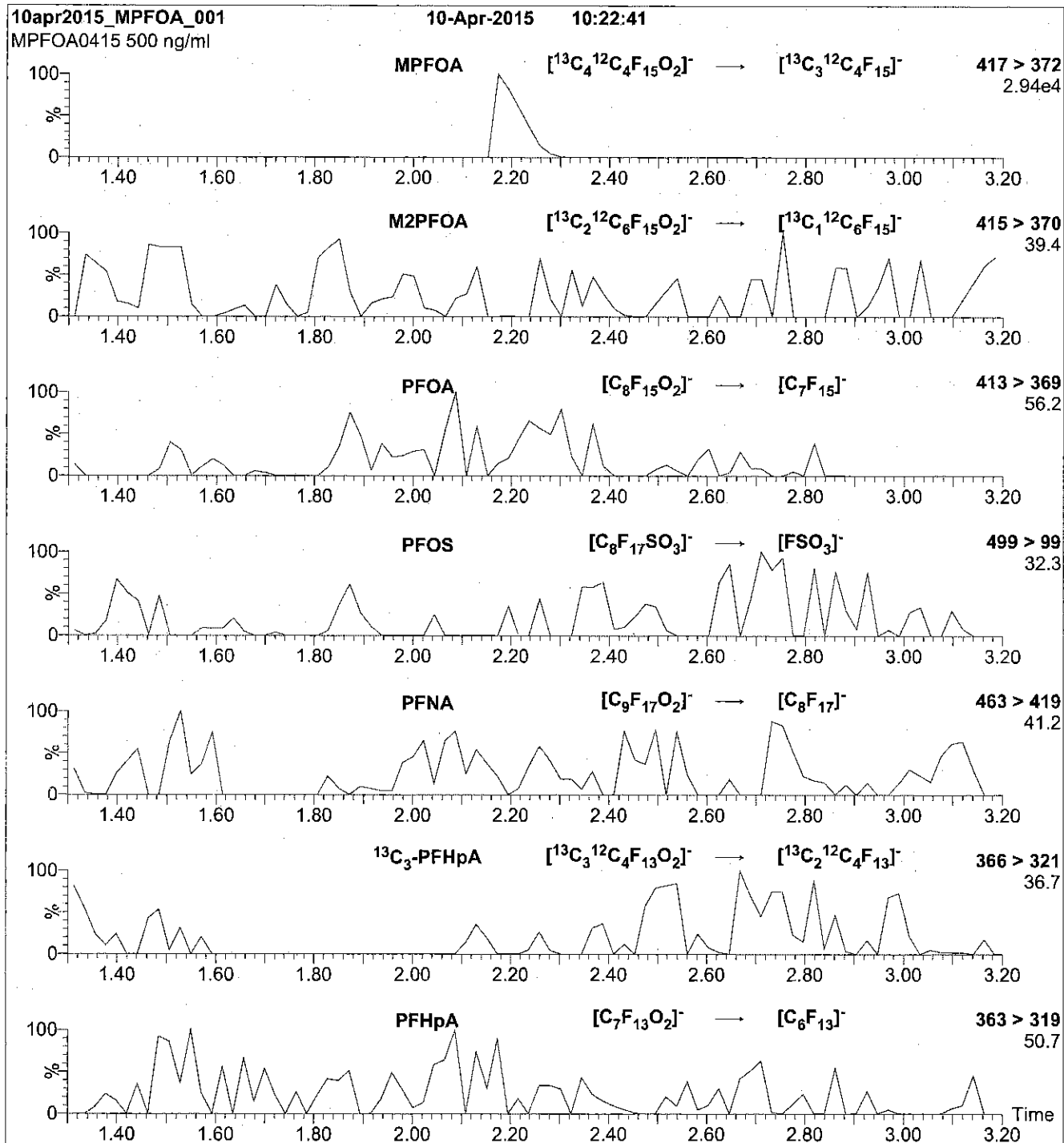
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = $3.24\text{e-}3$
Collision Energy (eV) = 11

Reagent

LCMPFOA_00008



572885

ID: LCMPFOA_00008

Exp: 04/10/20 Prip: CBW

¹³C4-Perfluorooctanoic ac

R: 1/25/16

S:



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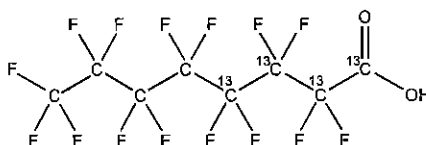
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

LOT NUMBER: MPFOA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄HF₁₅O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/10/2015
EXPIRY DATE: (mm/dd/yyyy) 04/10/2020
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 native perfluoro-n-octanoic acid (PFOA).

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Certified By:

B.G. Chittim

Date: 04/10/2015

(mm/dd/yyyy)

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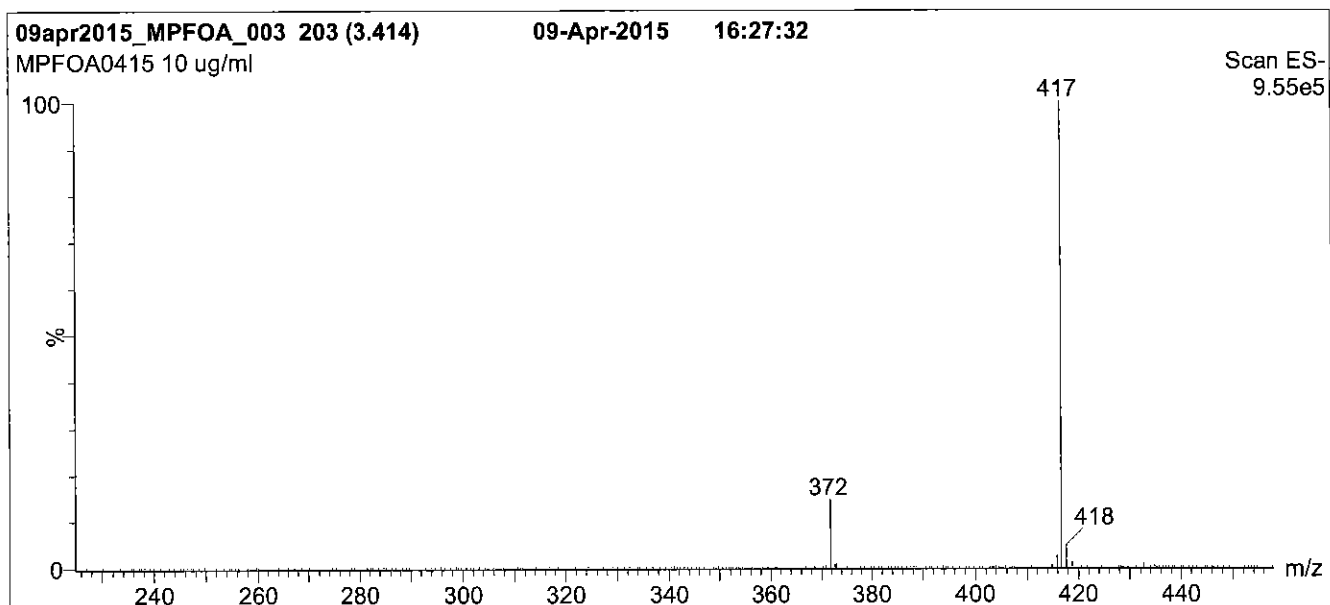
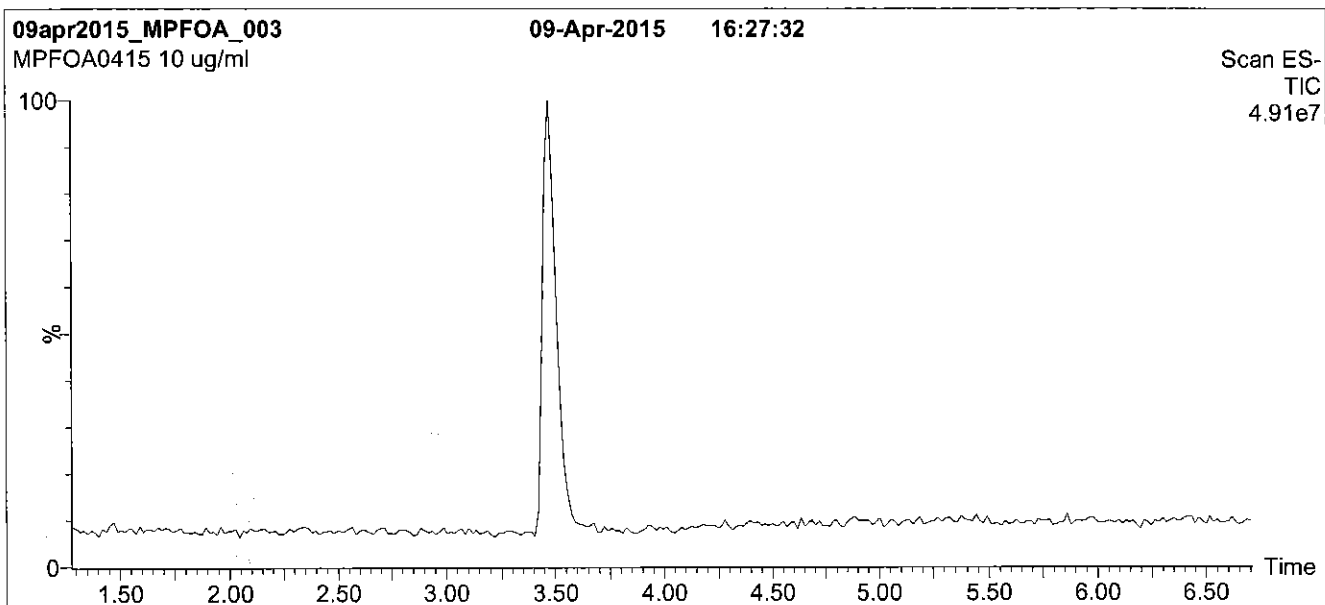
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Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

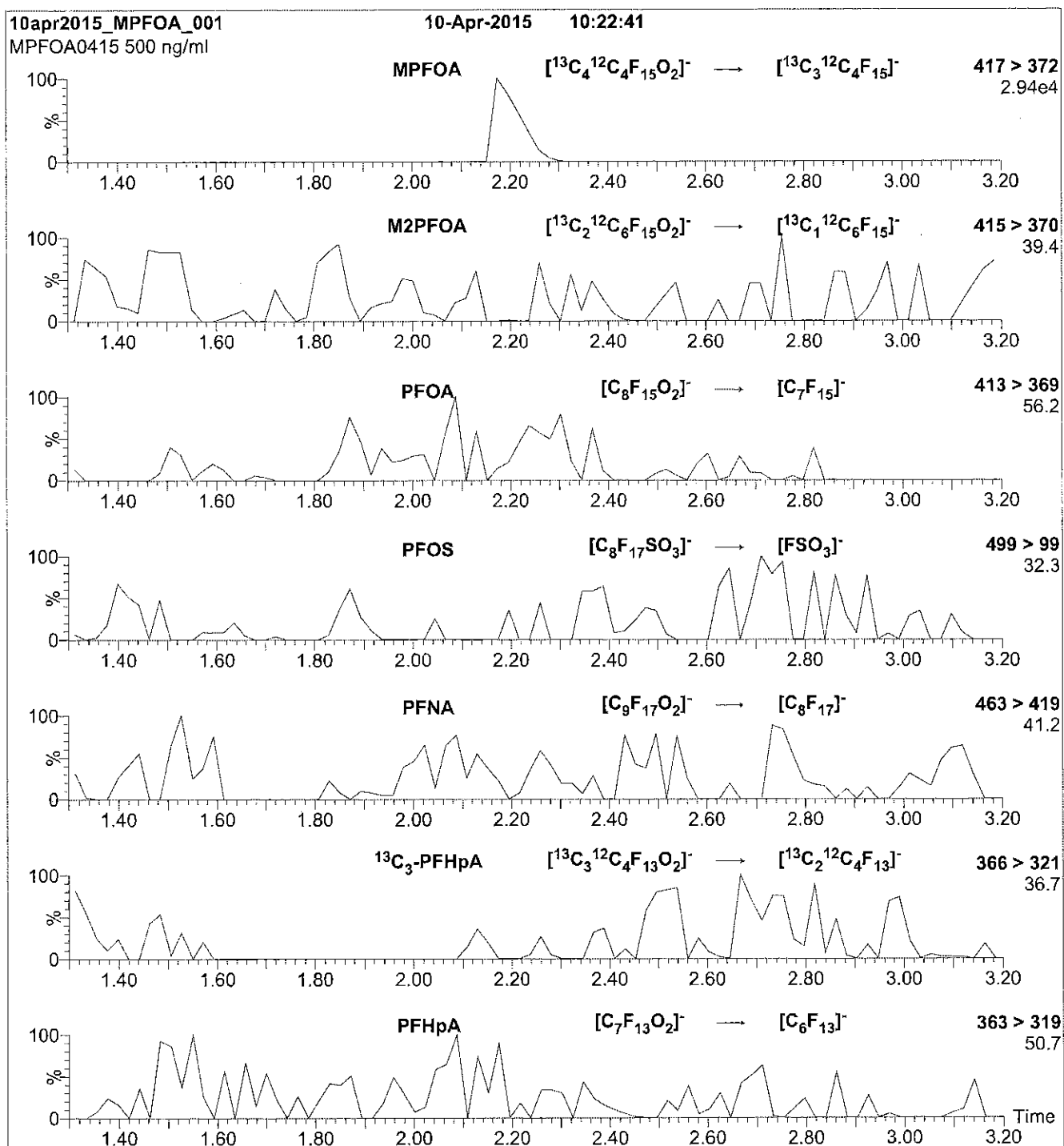
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

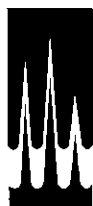
Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCMPFOS_00007

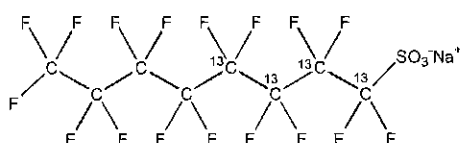


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1014
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **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% ¹³C
LAST TESTED: (mm/dd/yyyy) 10/09/2014 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 10/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim

Date: 10/17/2014
 (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.

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UNCERTAINTY:

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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.

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.

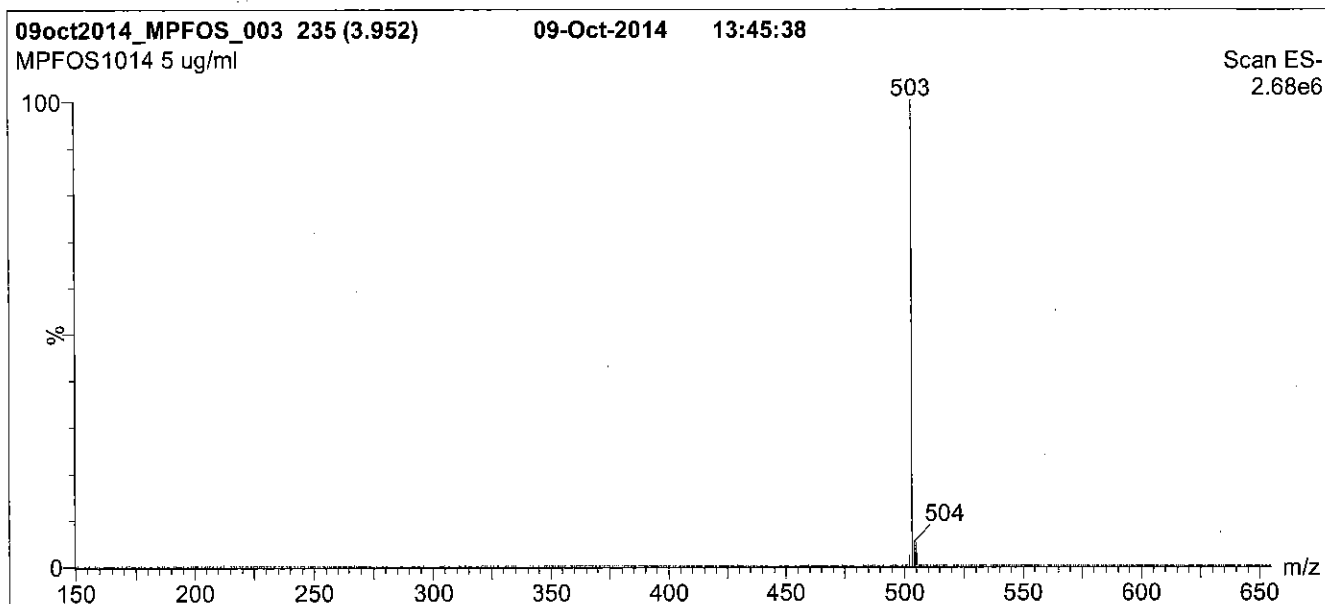
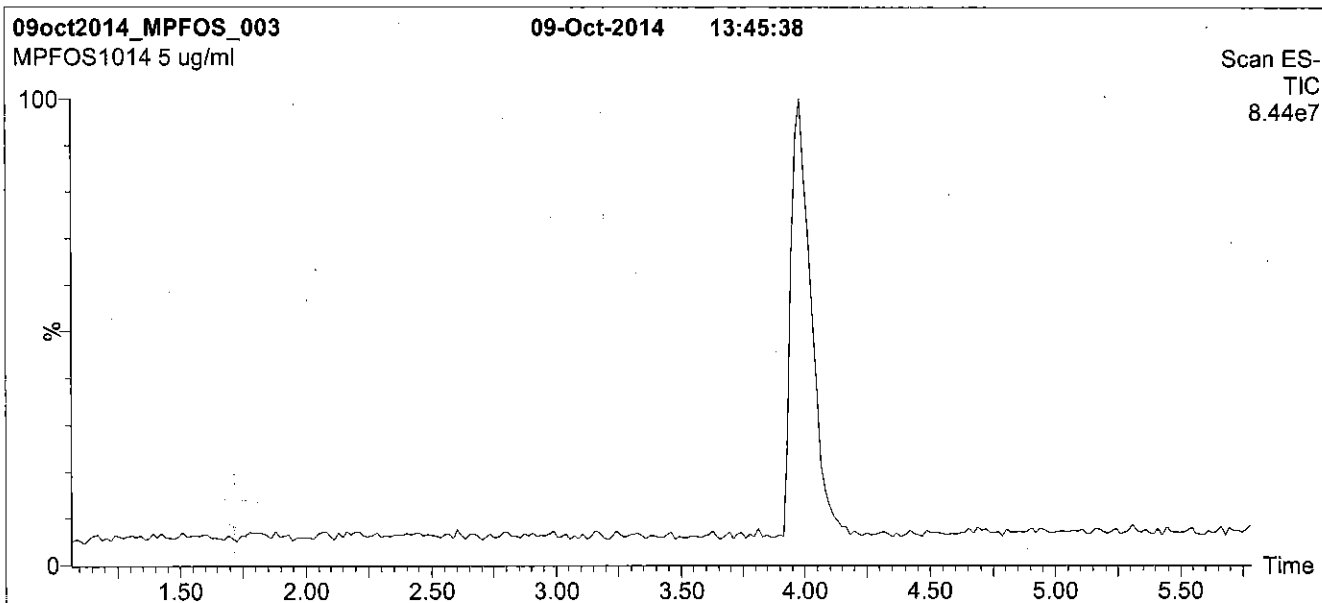
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com****

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

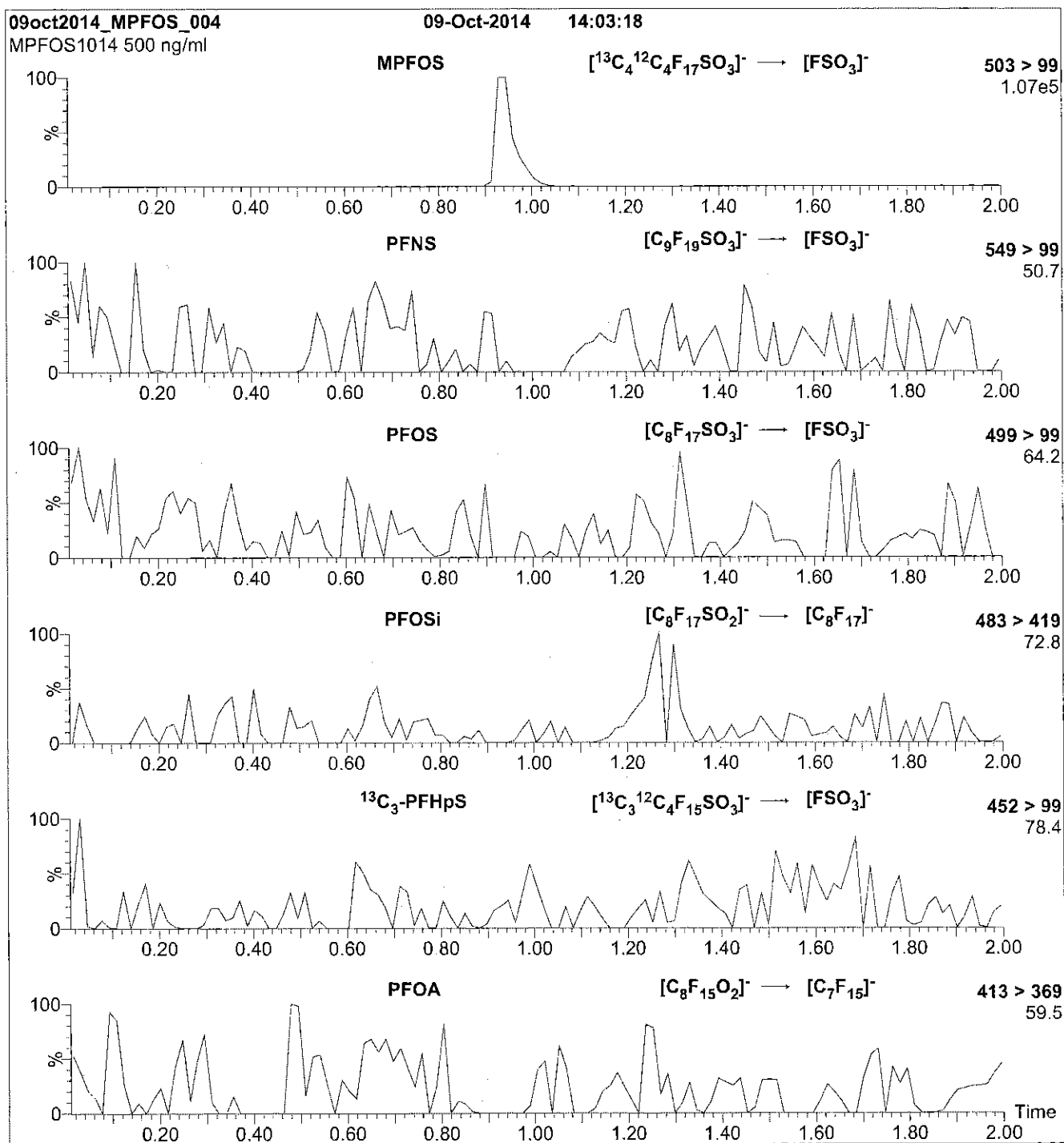
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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 μl (500 ng/ml MPFOS)

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

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 40

Reagent

LCMPFOS_00009

V: 9/15/15



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

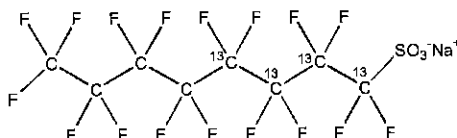
MPFOS

LOT NUMBER:

MPFOS0515

COMPOUND:Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₄¹²C₄F₁₇SO₃Na**MOLECULAR WEIGHT:**

526.08

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
47.8 ± 2.4 µg/ml (MPFOS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C
(1,2,3,4-¹³C₄)

LAST TESTED: (mm/dd/yyyy)

05/15/2015

EXPIRY DATE: (mm/dd/yyyy)

05/15/2020

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 ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/28/2015

(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.

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

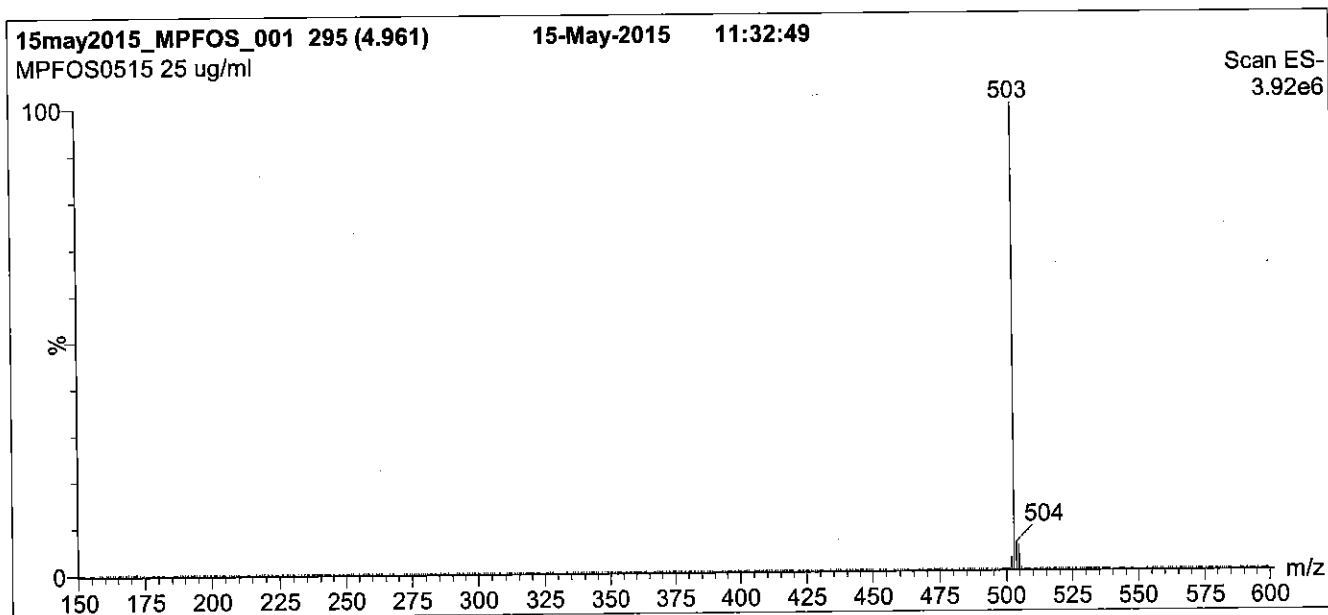
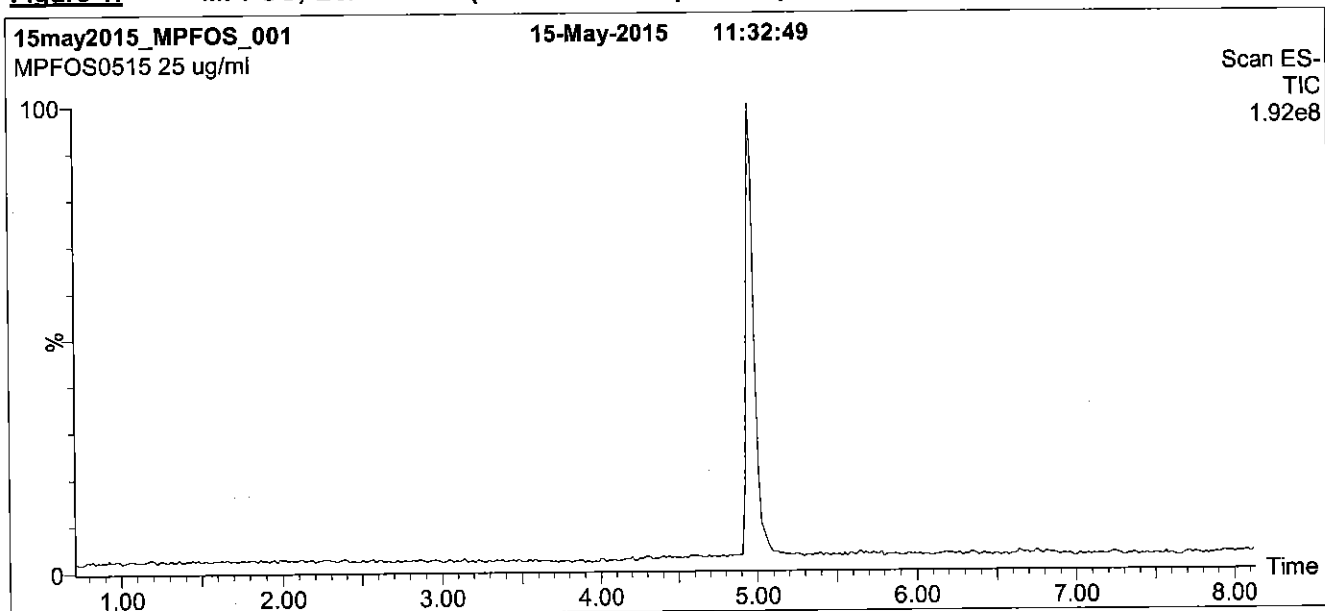
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

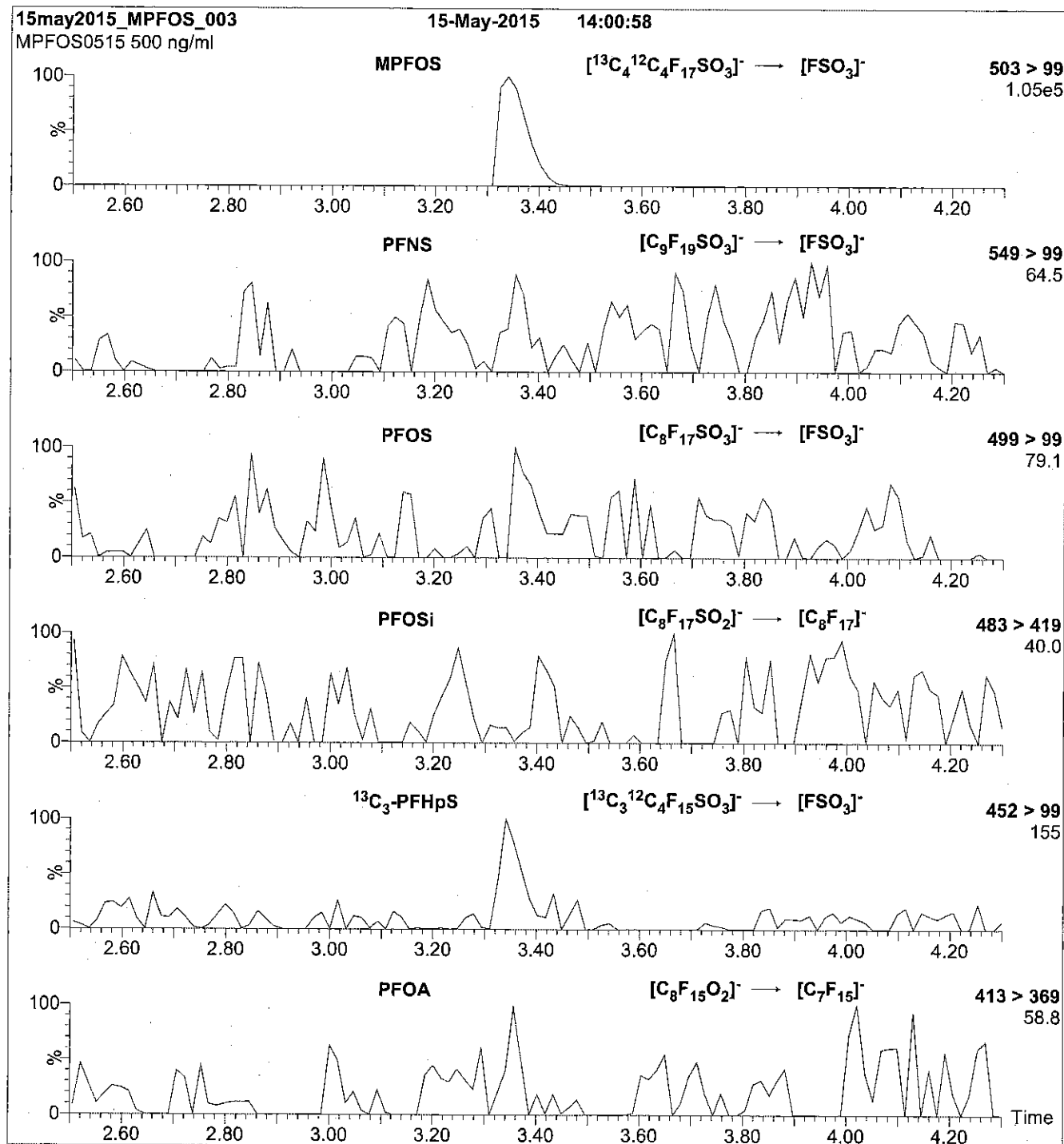
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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 μl (500 ng/ml MPFOS)

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

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

MS Parameters

Collision Gas (mbar) = $3.35\text{e-}3$
Collision Energy (eV) = 40

Reagent

LCMPFOS_00010



572886
ID: LCMFPOS_00010
Exp: 05/15/20 Prd: CBW
13C4-Perfluorooctanesulfo

R: 1/25/16

S:

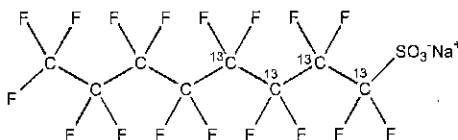


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0515
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na	MOLECULAR WEIGHT:	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
LAST TESTED: (mm/dd/yyyy)	05/15/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/15/2020		
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 ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/28/2015
(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:

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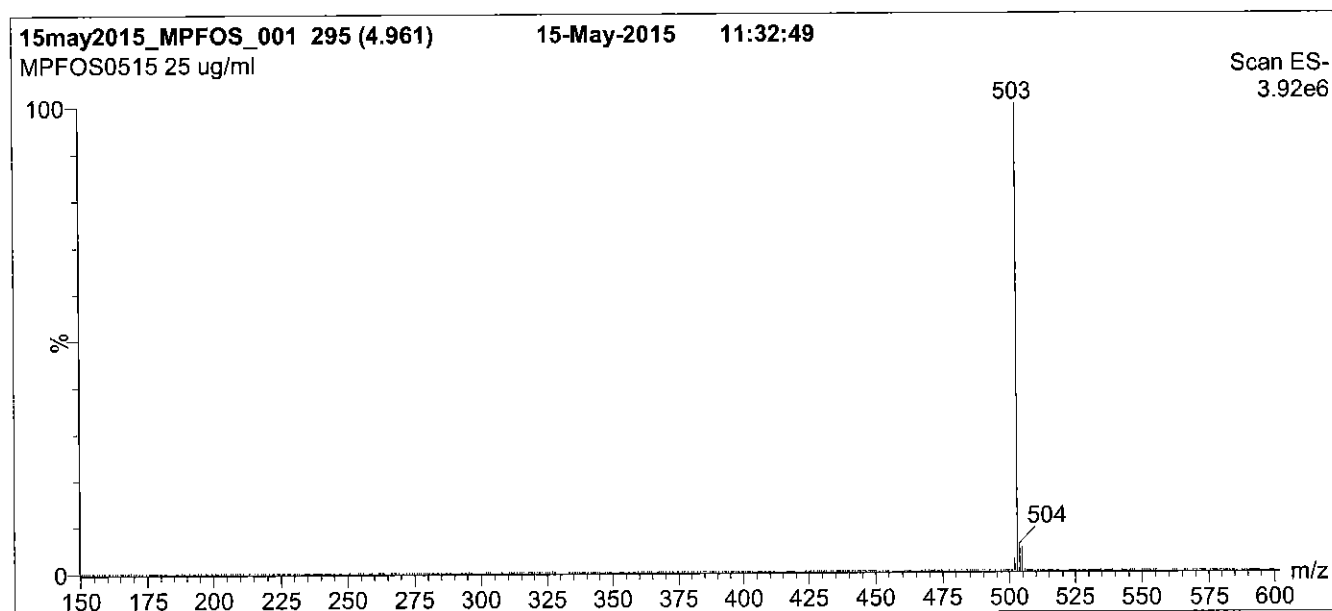
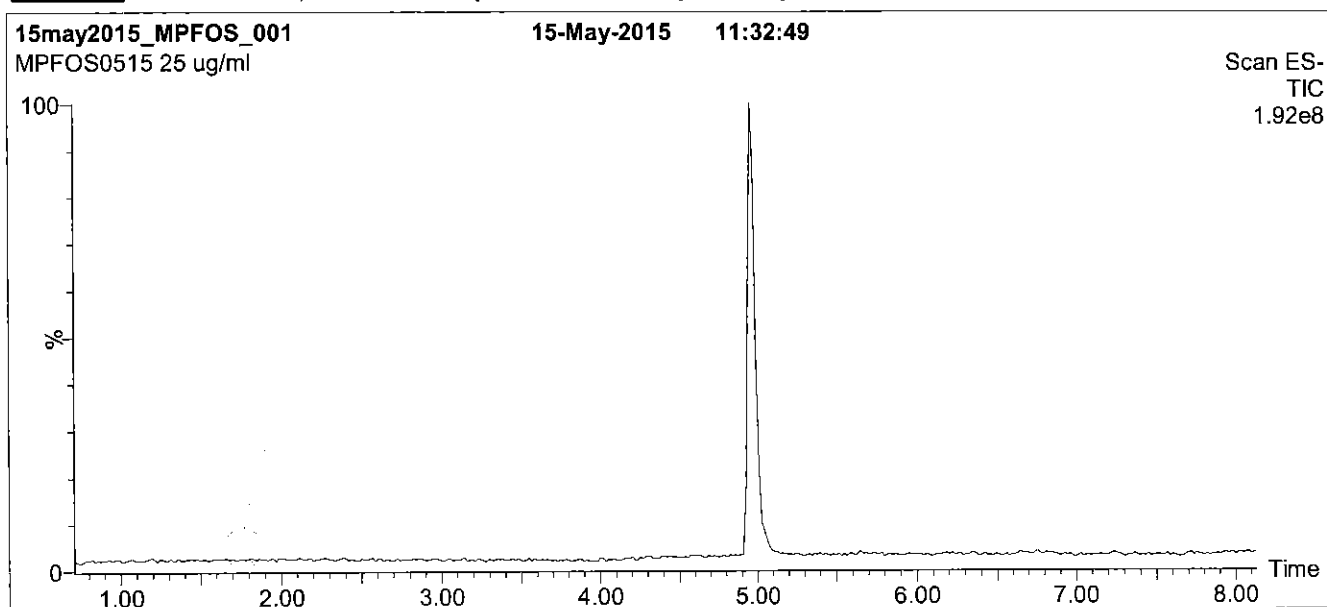
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

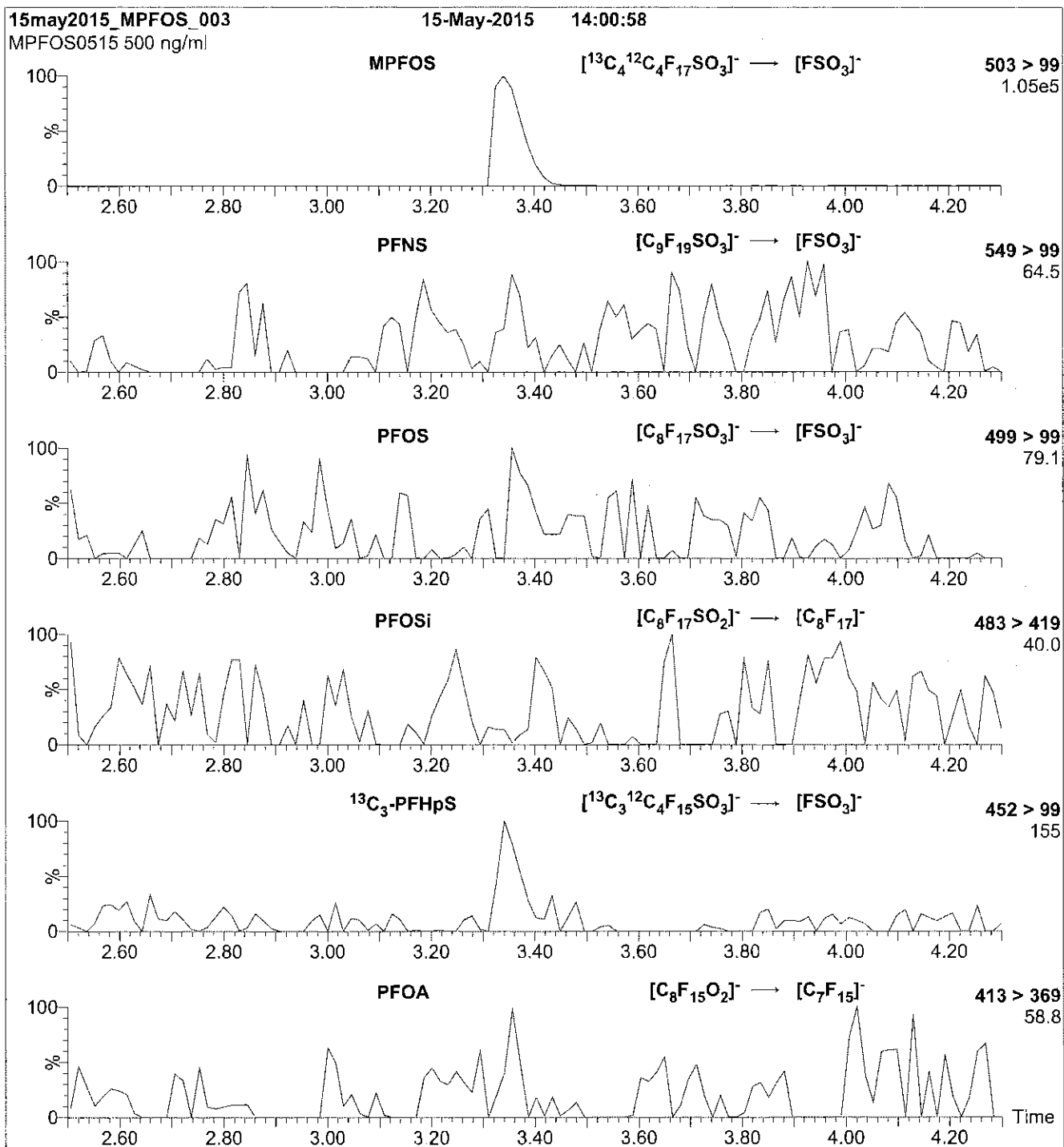
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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 μl (500 ng/ml MPFOS)

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

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

MS Parameters

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

Reagent

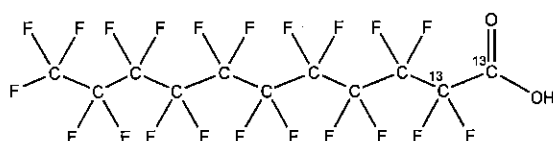
LCMPFUdA_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUDa **LOT NUMBER:** MPFUDa1014
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₉HF₂₁O₂ **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 10/31/2014 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 10/31/2019
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.
- Presence of 1-¹³C₁-PFUDa (~1%; see Figure 2), 2-¹³C₁-PFUDa (~1%), and PFUDa (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 11/03/2014

(mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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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.

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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

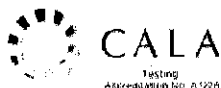
Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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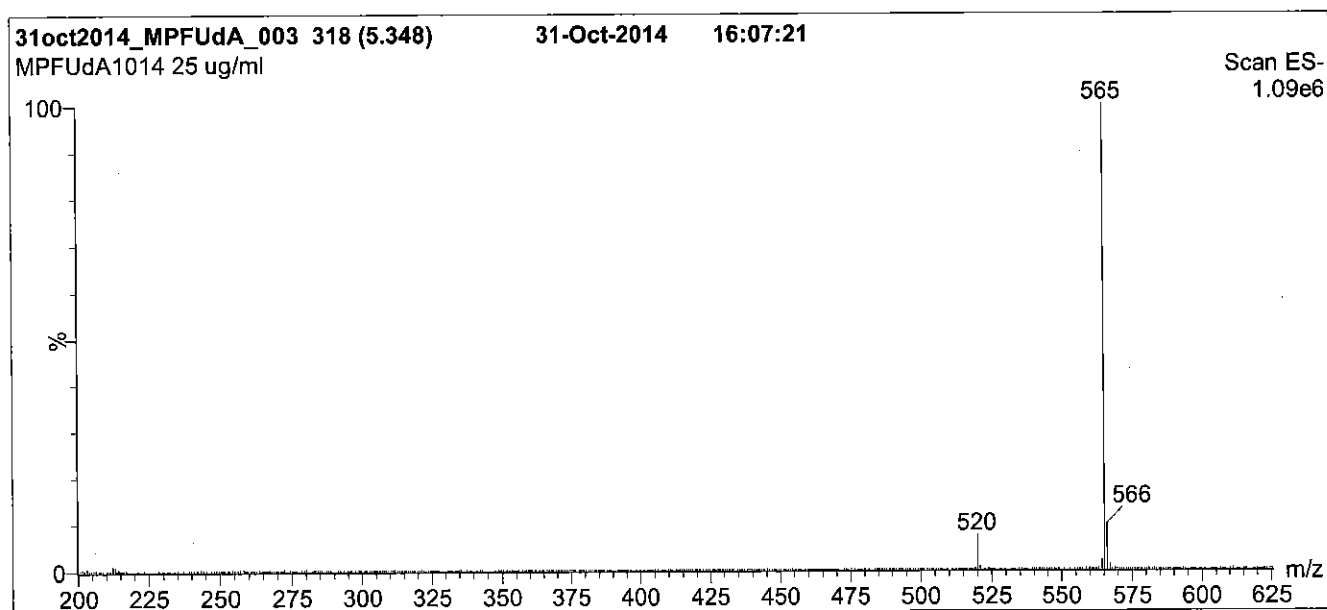
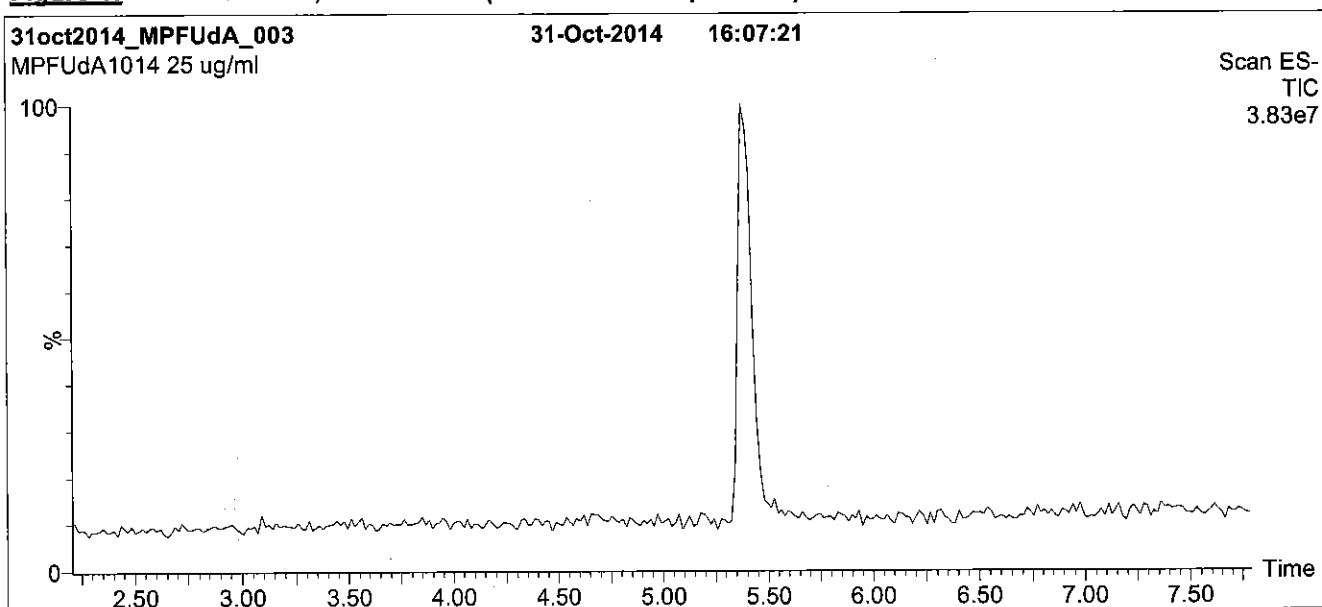
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

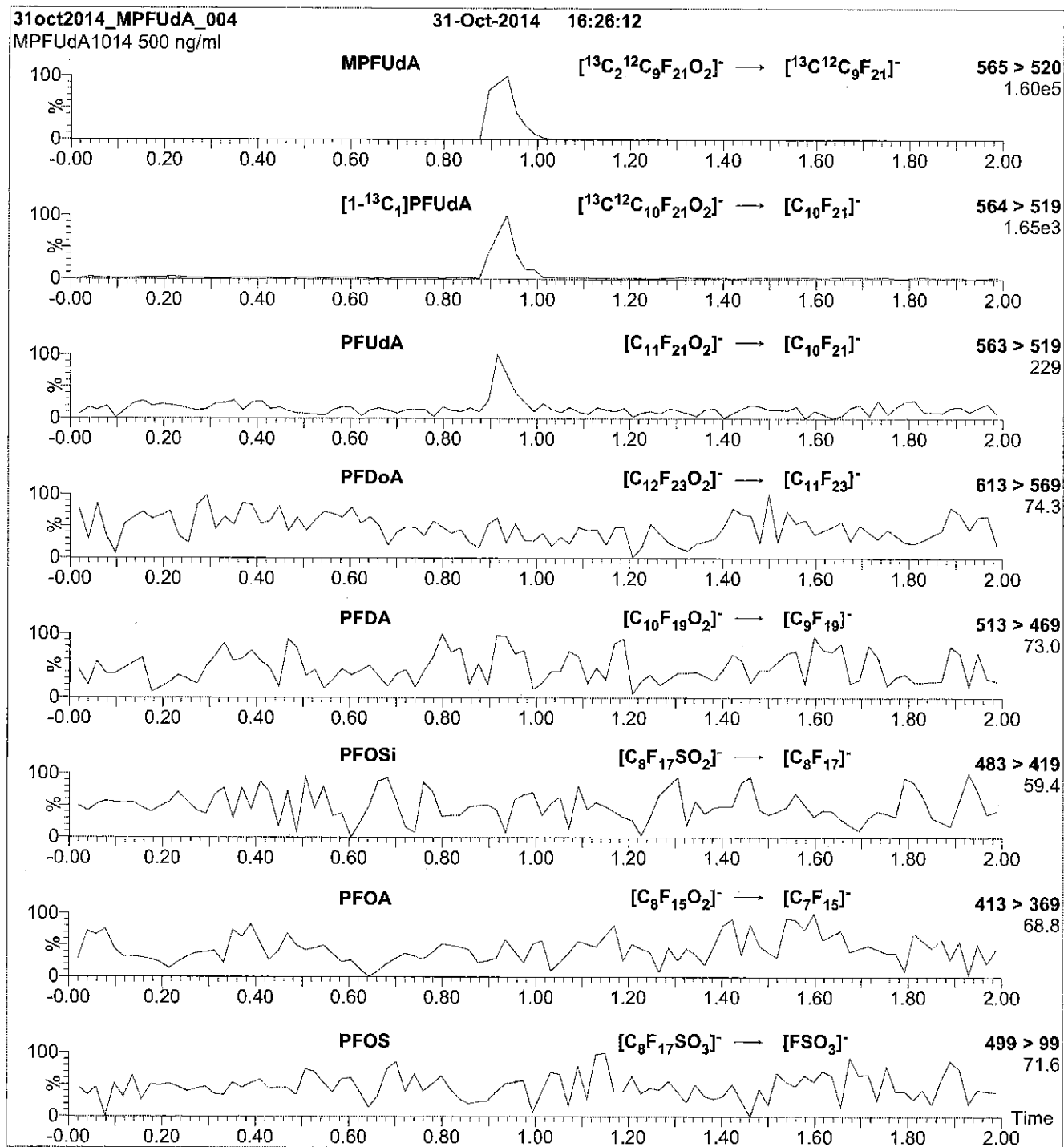
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCMPFUdA_00005



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

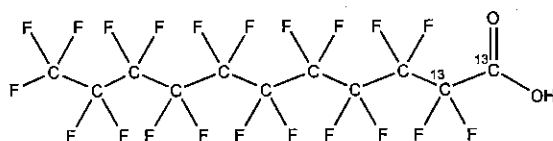
MPFUdA

LOT NUMBER:

MPFUdA1014

COMPOUND:Perfluoro-n-[1,2-¹³C₂]undecanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_2\text{ }^{12}\text{C}_9\text{HF}_{21}\text{O}_2$ **MOLECULAR WEIGHT:**

566.08

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY: $\geq 99\%$ ¹³C**LAST TESTED:** (mm/dd/yyyy)

10/31/2014

(1,2-¹³C₂)**EXPIRY DATE:** (mm/dd/yyyy)

10/31/2019

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.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(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.

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.

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

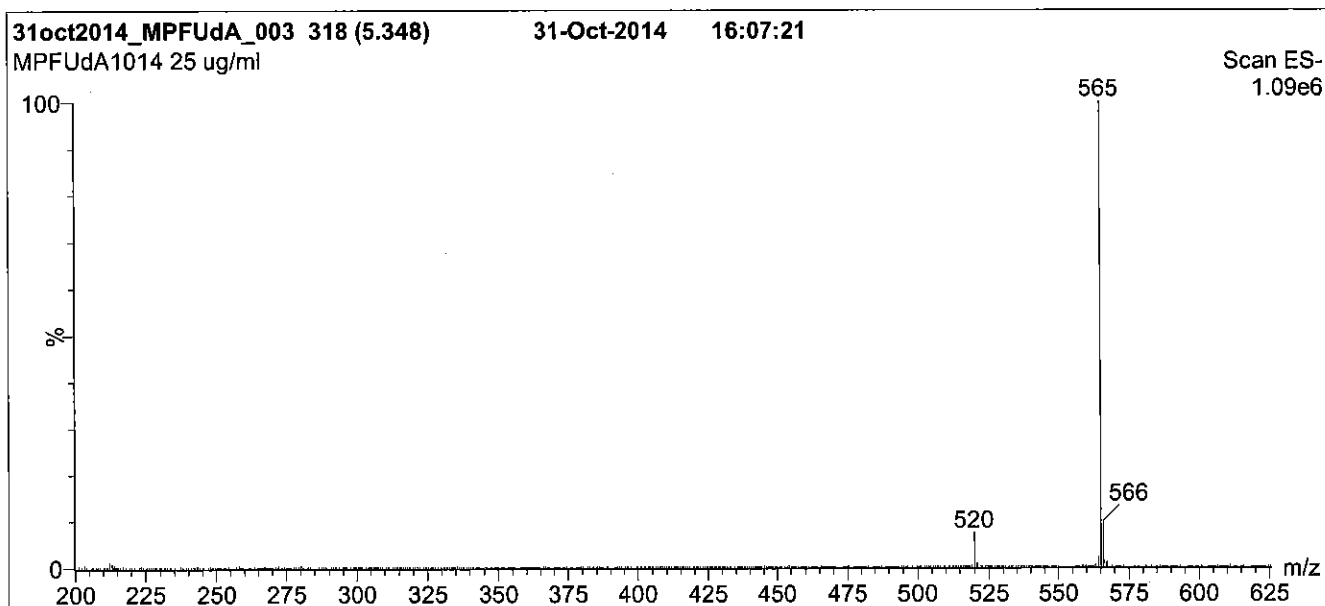
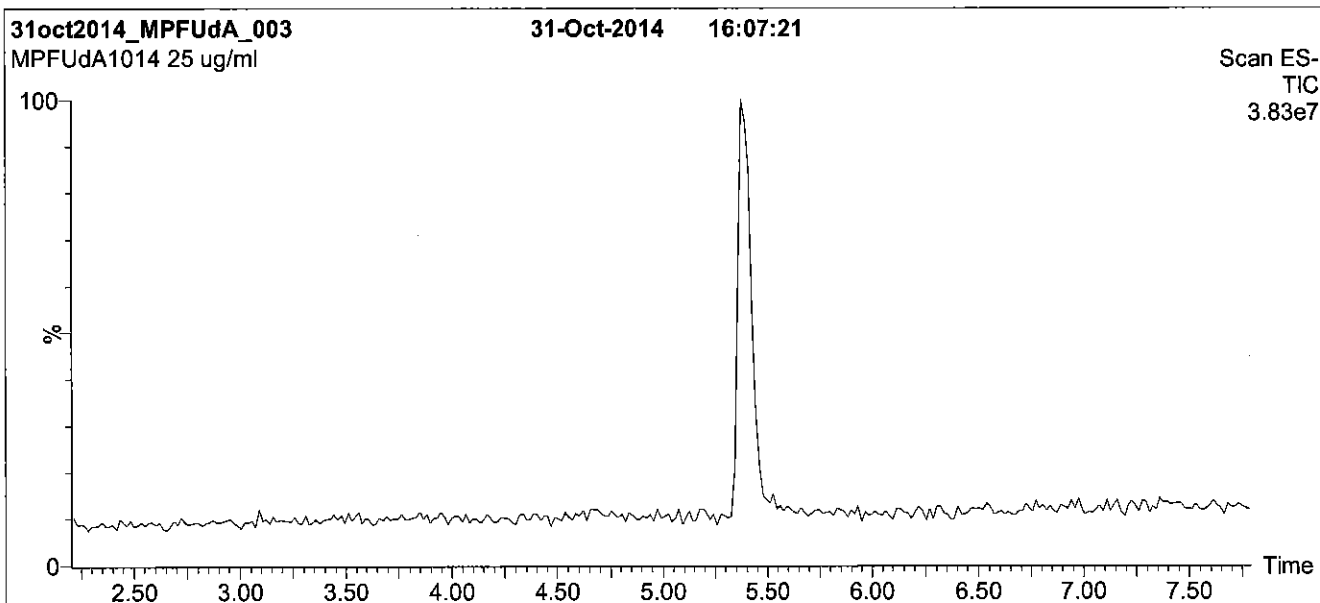
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

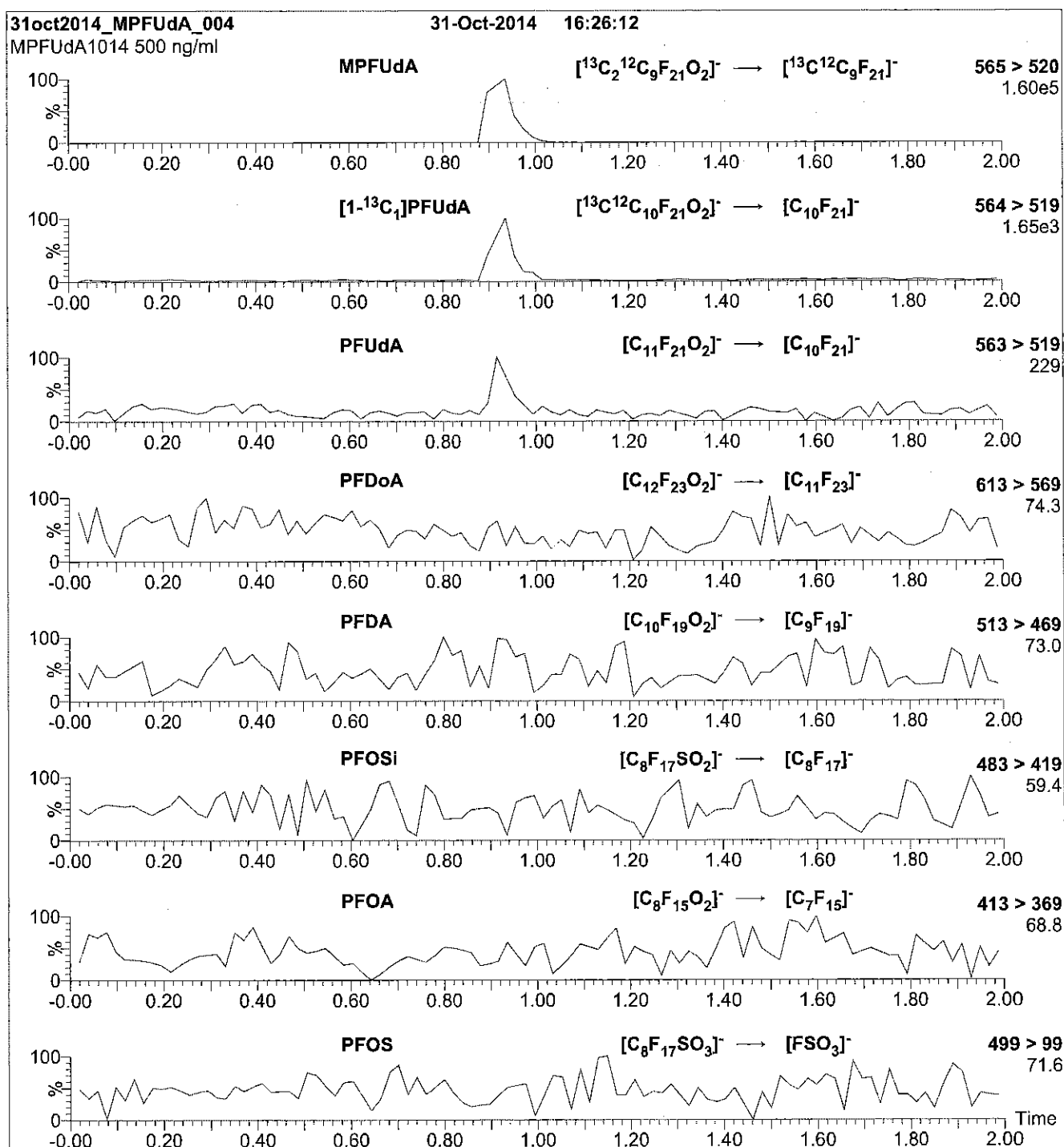
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCPFBA_00003



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CERTIFICATE OF ANALYSIS DOCUMENTATION

Rec 7/15/14

PRODUCT CODE:

PFBA

LOT NUMBER:

PFBA0313

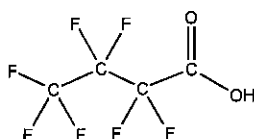
COMPOUND:

Perfluoro-n-butanoic acid

STRUCTURE:

CAS #:

375-22-4



MOLECULAR FORMULA:

$C_4H_7F_7O_2$

MOLECULAR WEIGHT:

214.04

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/05/2013

EXPIRY DATE: (mm/dd/yyyy)

03/05/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/06/2013

(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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

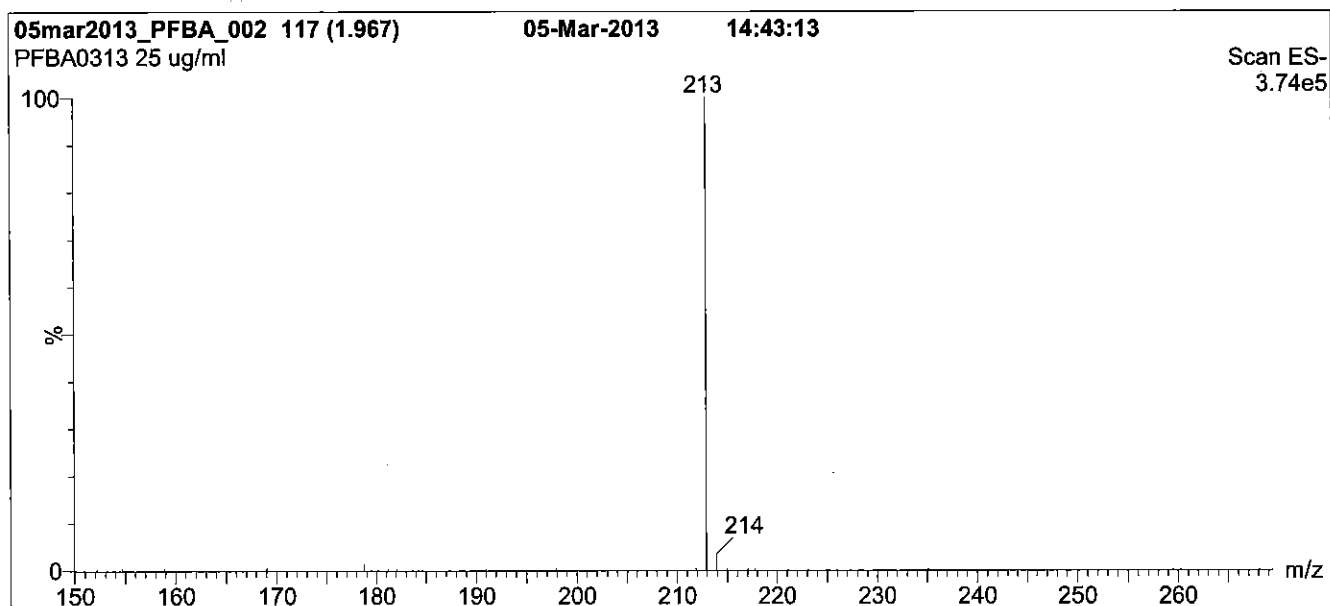
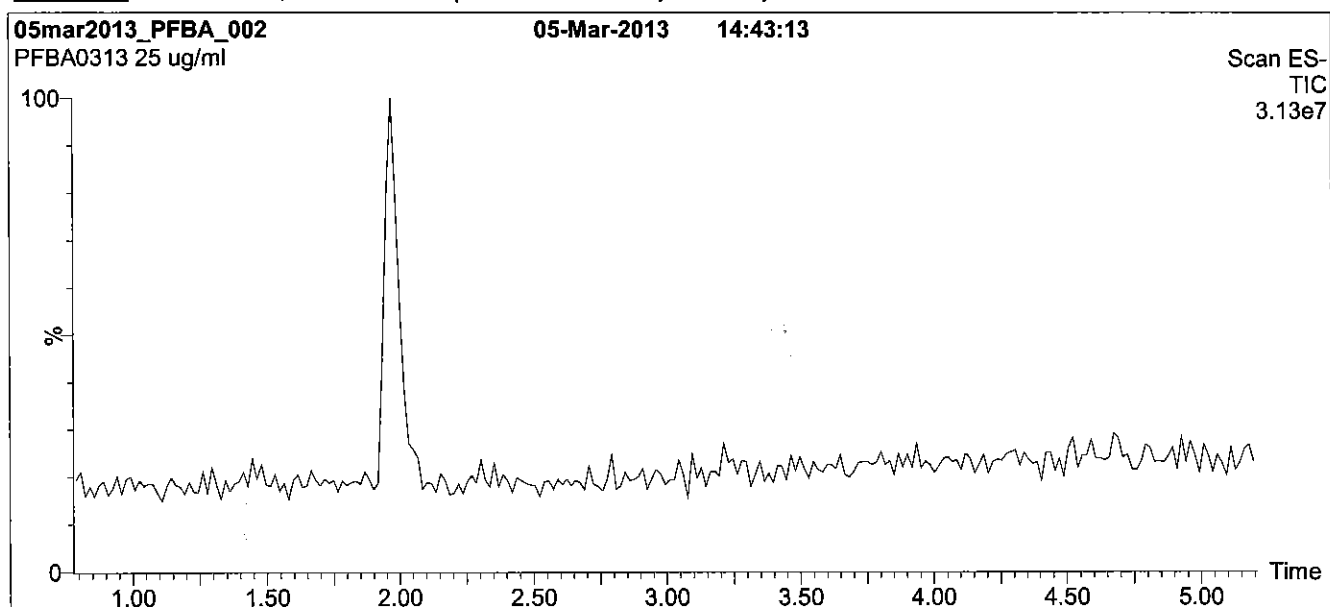
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REFERENCE MATERIAL PRODUCER

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 25% (80:20 MeOH:ACN) / 75% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

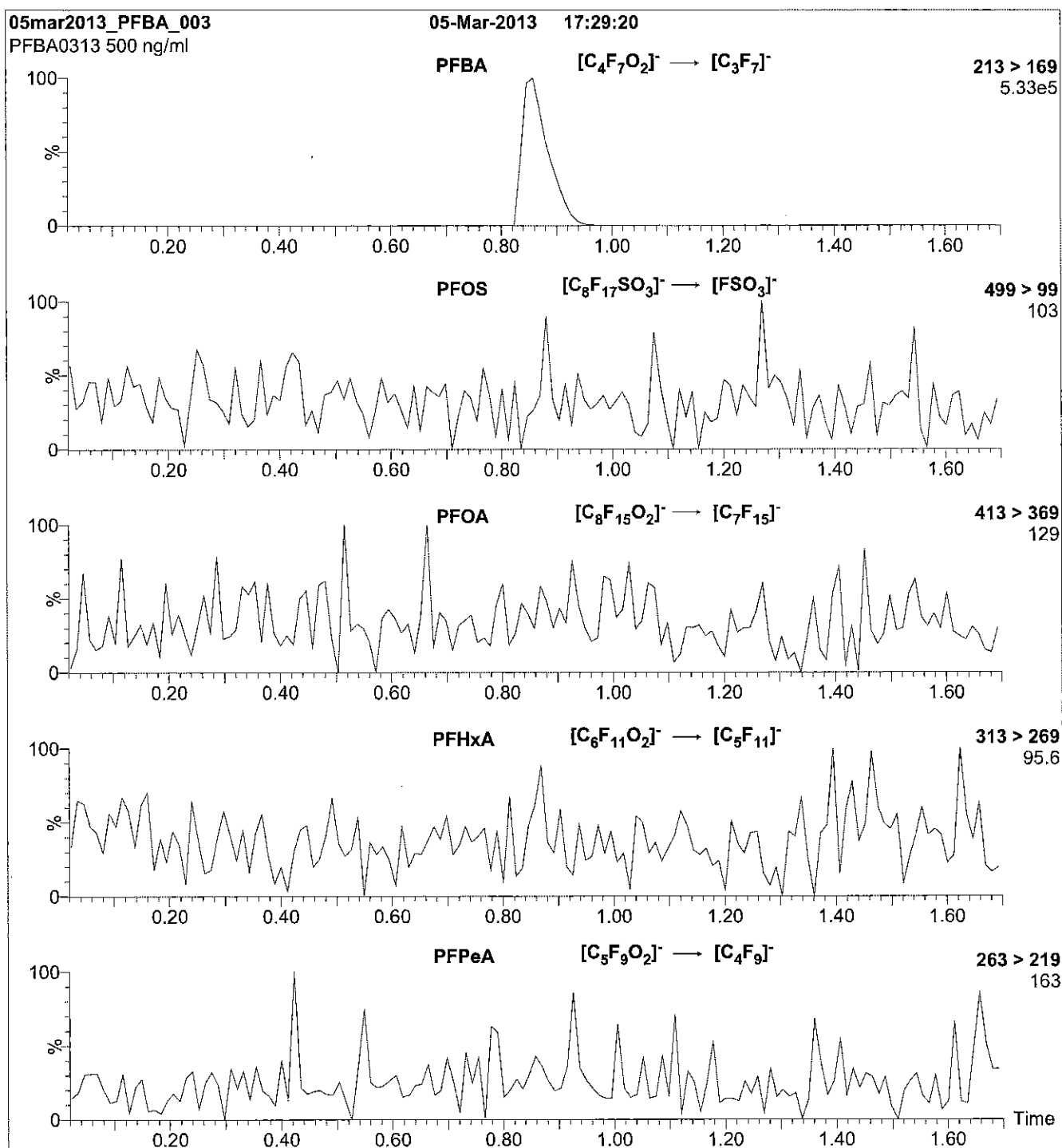
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

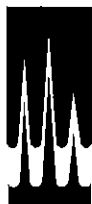
Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00003



WELLINGTON LABORATORIES

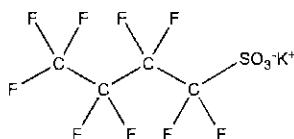
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanesulfonate

LOT NUMBER: LPFBS1014

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (K salt)
 $44.2 \pm 2.2 \mu\text{g/ml}$ (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/09/2014
EXPIRY DATE: (mm/dd/yyyy) 10/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 338.19
SOLVENT(S): Methanol

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/17/2014
(mm/dd/yyyy)

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

INTENDED USE:

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TRACEABILITY:

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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:

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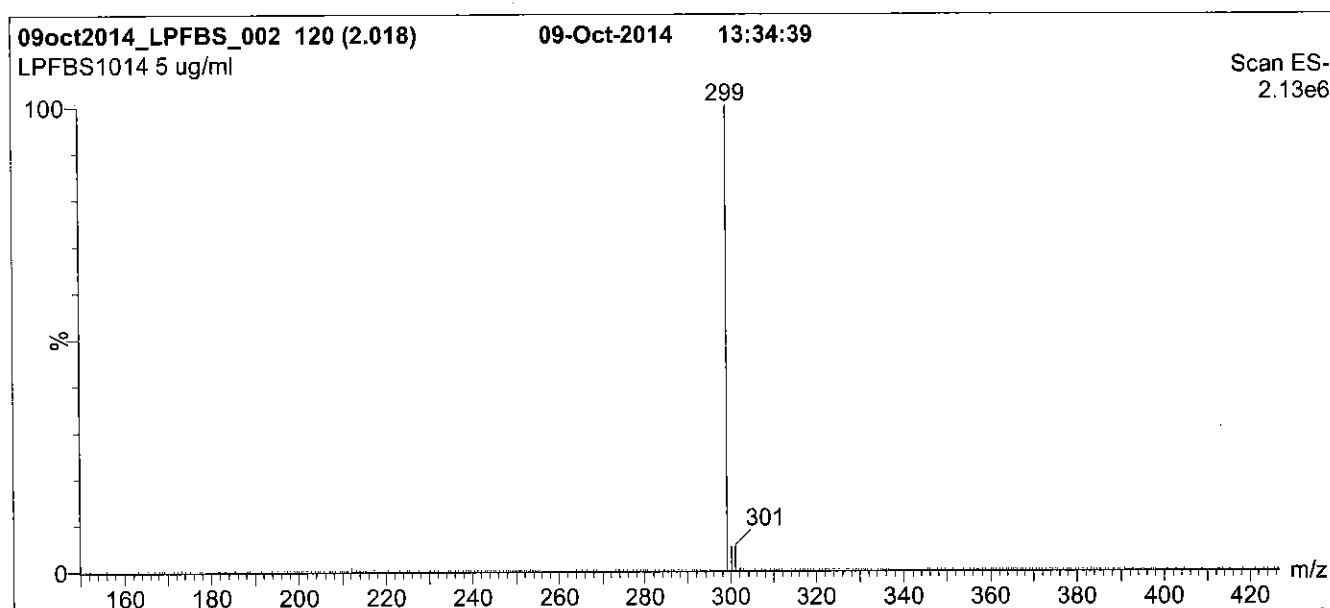
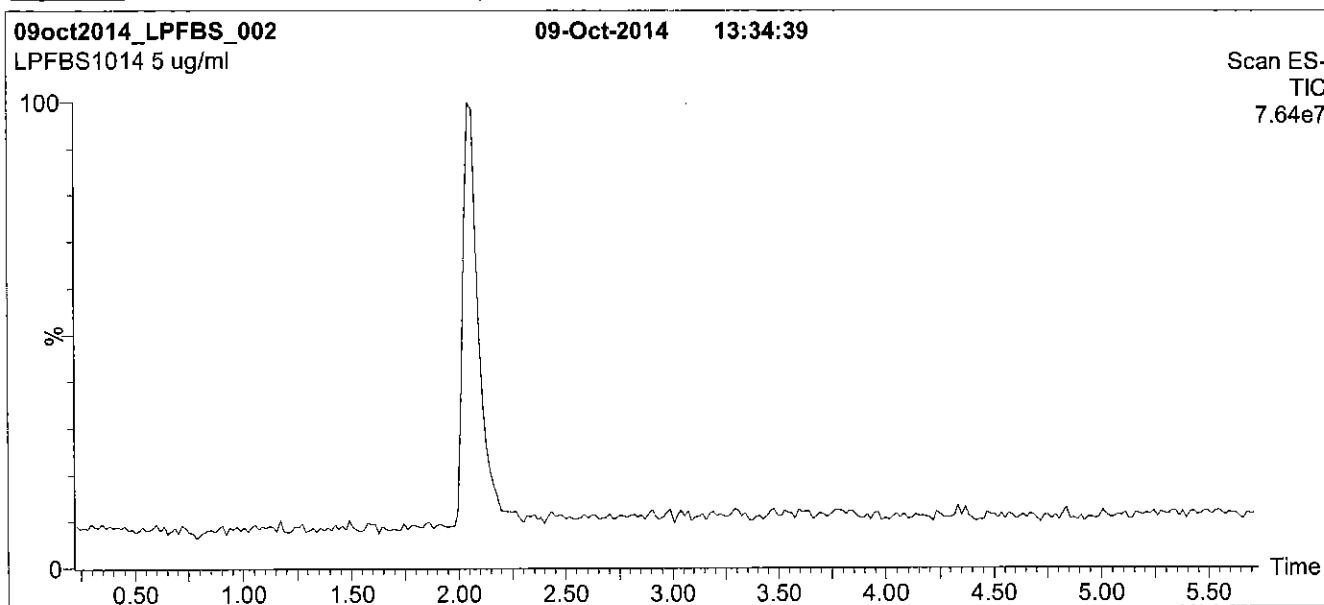
QUALITY MANAGEMENT:

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Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

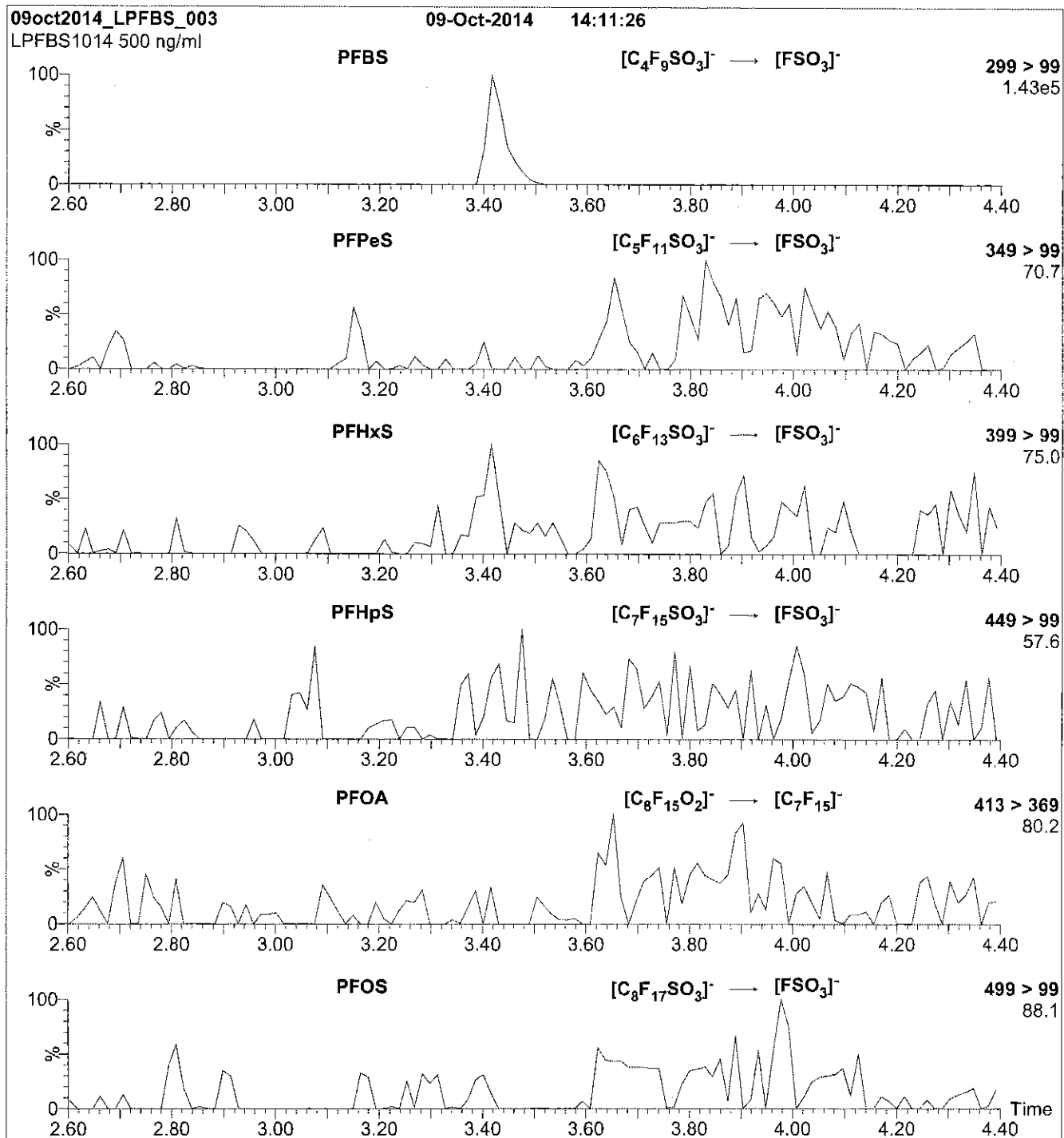
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFBS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

rec 7/16/14

PRODUCT CODE:

PFDA

LOT NUMBER:

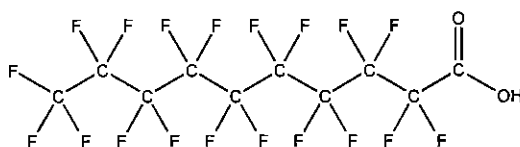
PFDA0613

COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:**CAS #:**

335-76-2

**MOLECULAR FORMULA:** $C_{10}H_{18}O_2$ **MOLECULAR WEIGHT:**

514.08

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/19/2013

EXPIRY DATE: (mm/dd/yyyy)

06/19/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% PFNA and ~ 0.1% PFOA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 07/03/2013

(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:

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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.

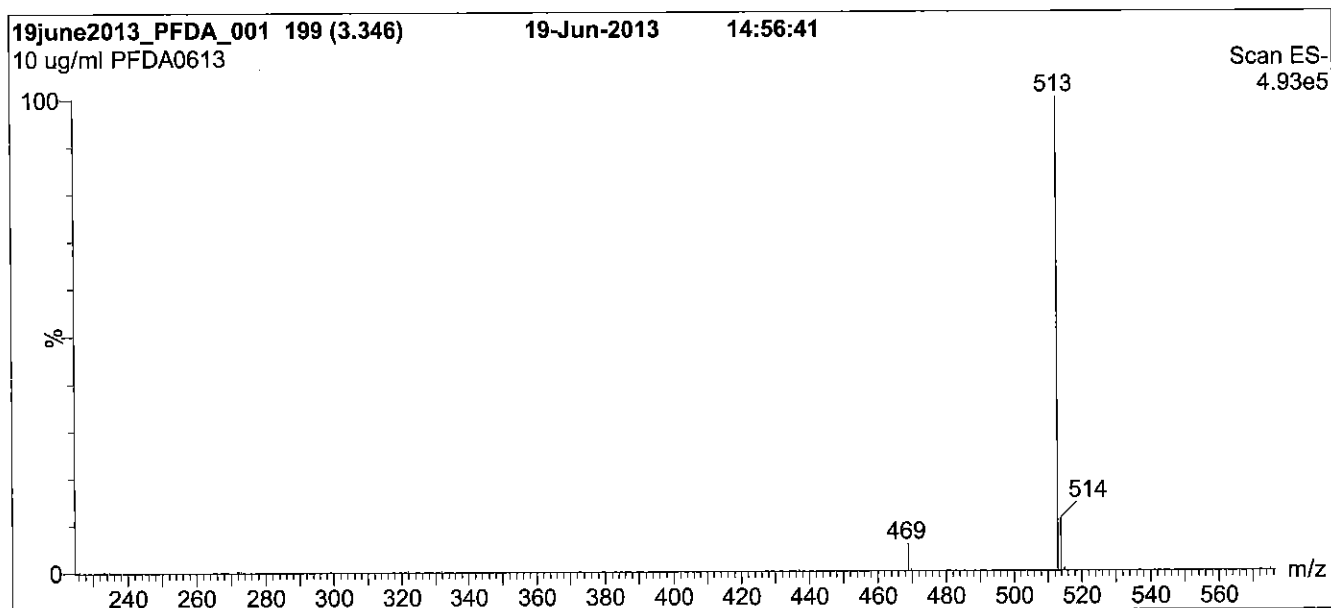
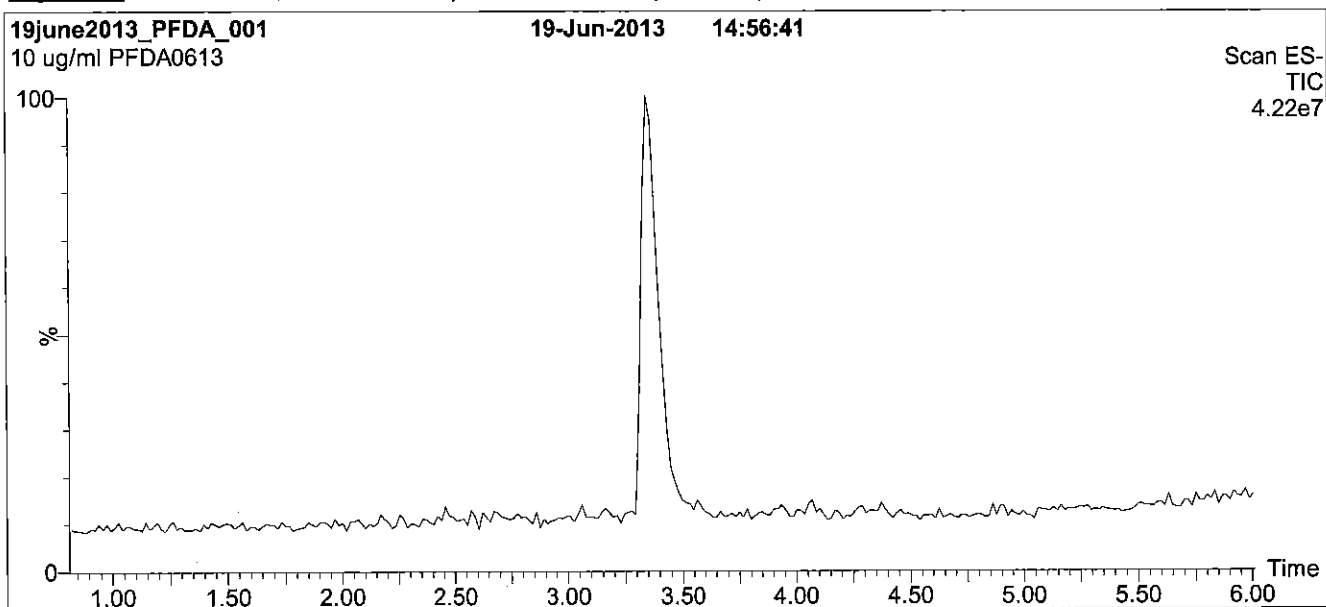
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com****

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

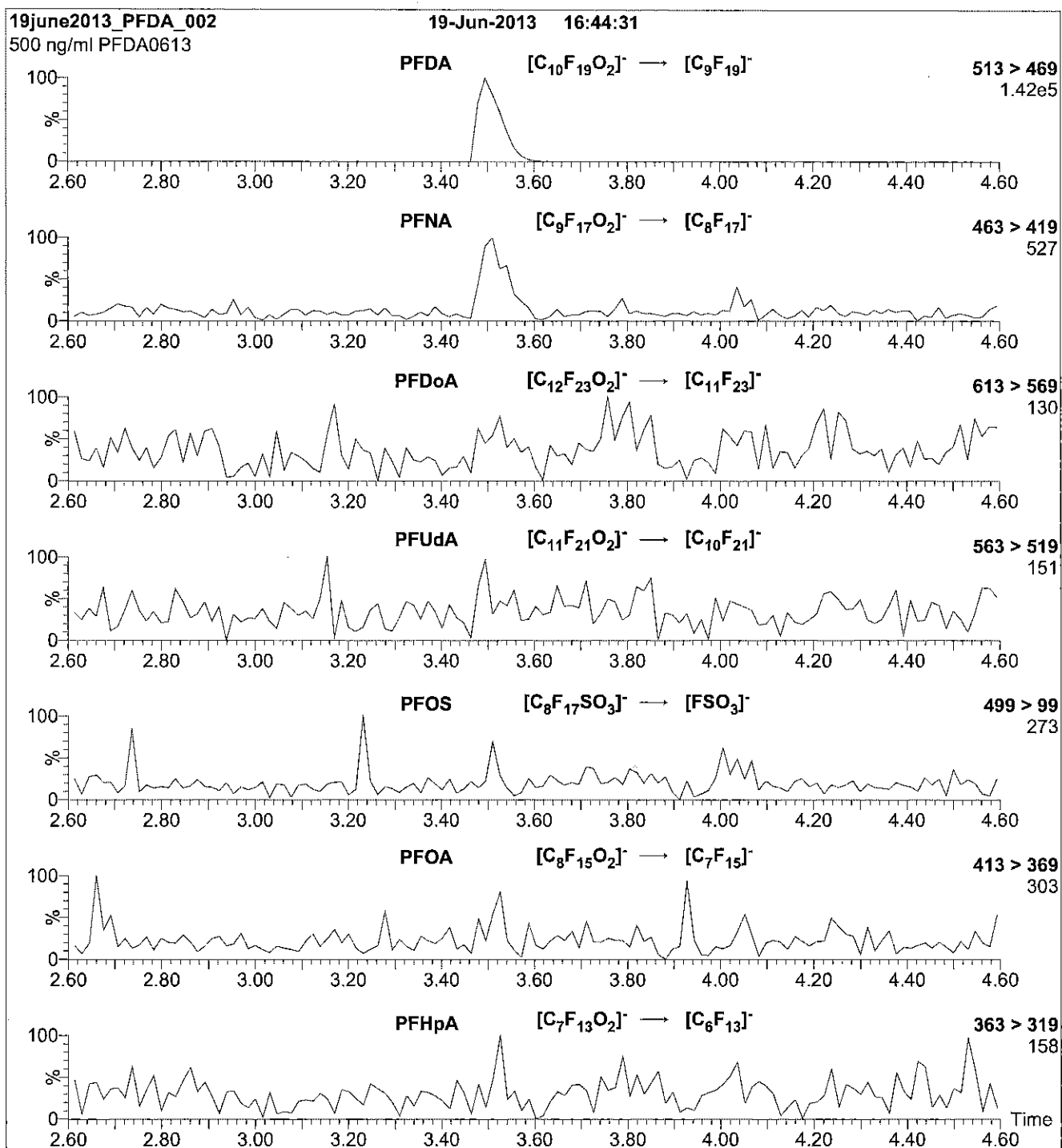
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Rec 7/11/15

PRODUCT CODE:

PFD0A

LOT NUMBER:

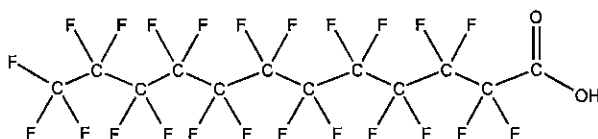
PFD0A0113

COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:**CAS #:**

307-55-1

**MOLECULAR FORMULA:** $C_{12}H_{23}O_2$ **MOLECULAR WEIGHT:**

614.10

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/03/2013

EXPIRY DATE: (mm/dd/yyyy)

01/03/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

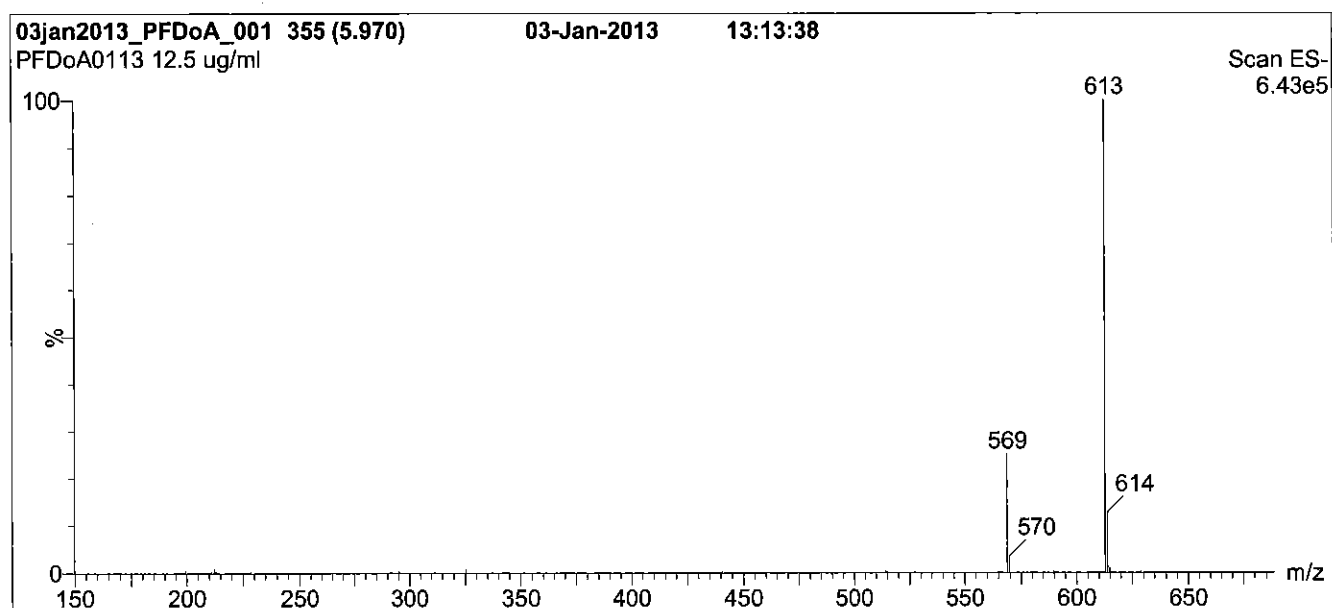
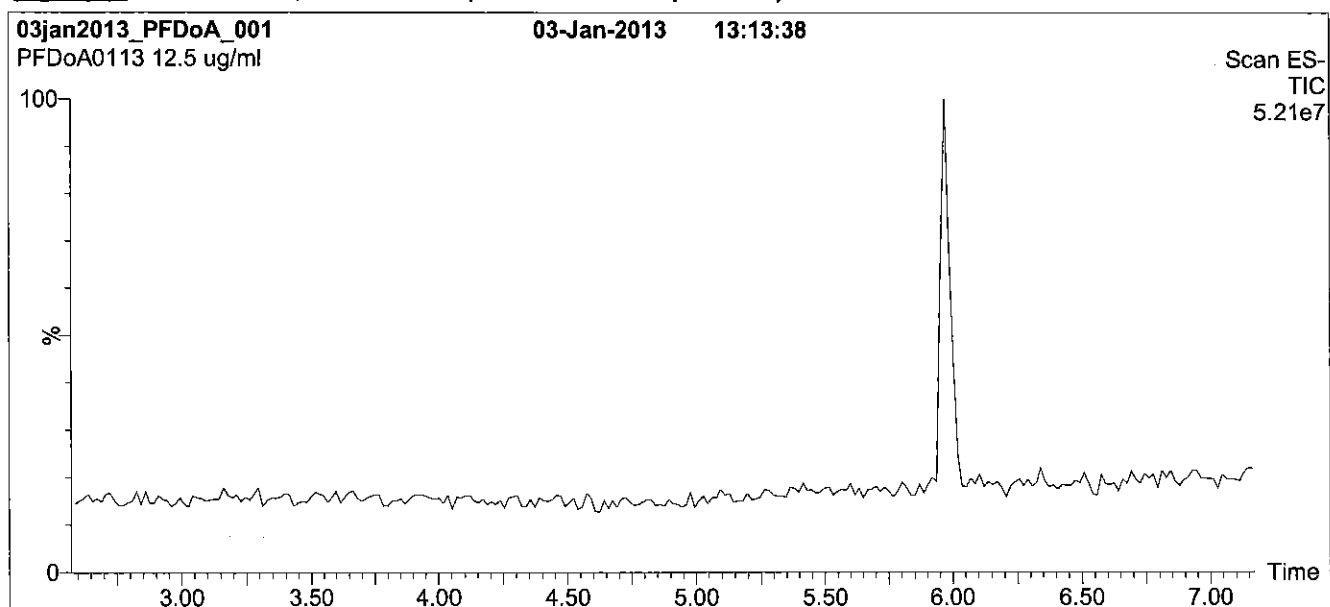
B.G. Chittim

Date: 02/01/2013

(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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Reagent

LCPFDoS_00003



WELLINGTON LABORATORIES

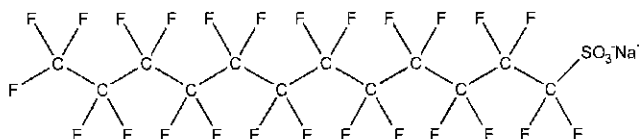
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS1011

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_{12}F_{25}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $48.4 \pm 2.4 \mu\text{g/ml}$ (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/06/2011
EXPIRY DATE: (mm/dd/yyyy) 10/06/2016
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol

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 ~ 0.3% of sodium perfluoro-1-tetradecanesulfonate and ~ 0.8% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/15/2013
(mm/dd/yyyy)

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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.

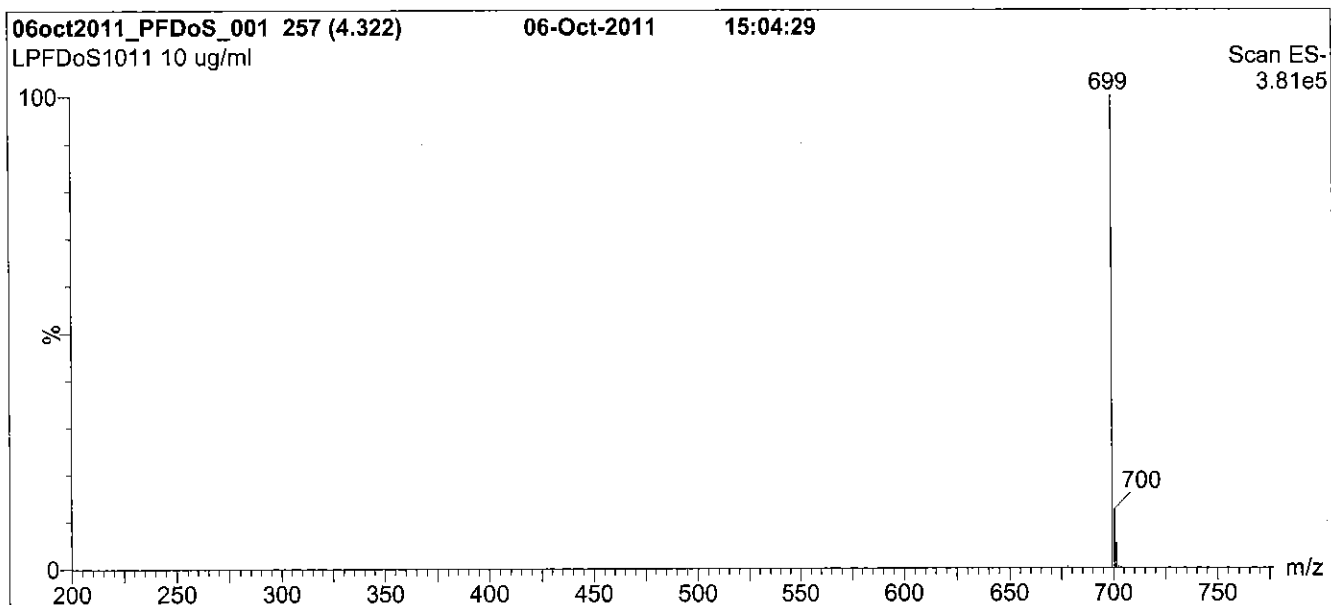
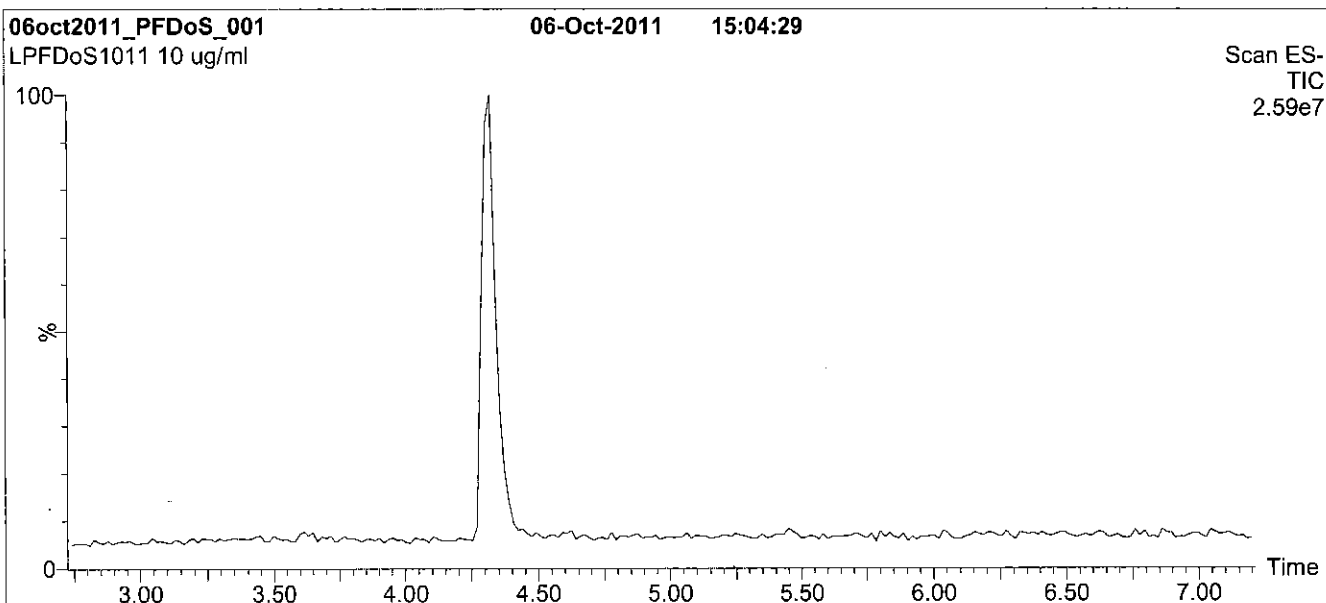
QUALITY MANAGEMENT:

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Figure 1: L-PFDoS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc 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

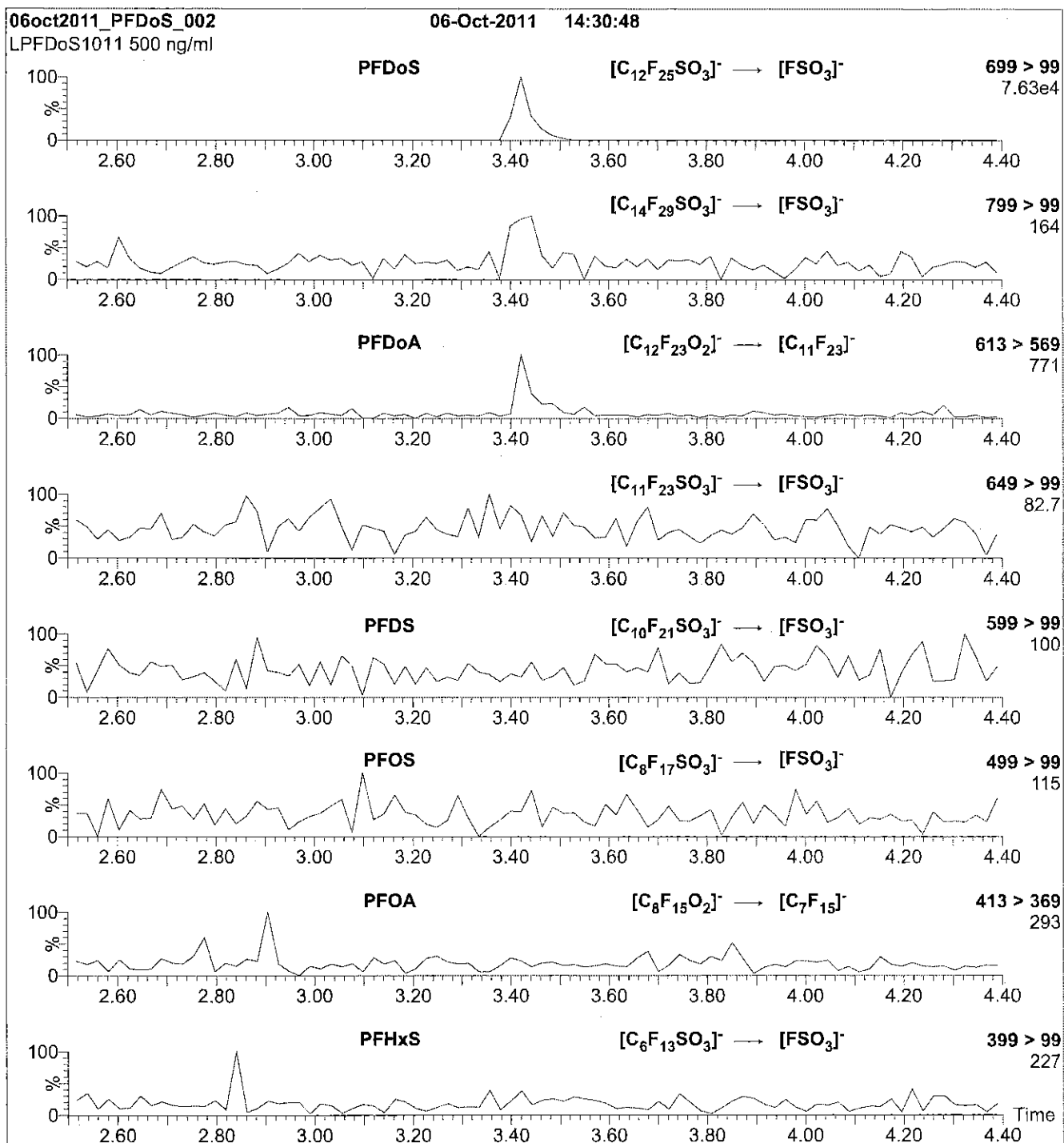
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (200 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 80.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFDoS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFDoS)

Mobile phase: Isocratic 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 50

Reagent

LCPFDS_00003

P: 2/11/15 8/



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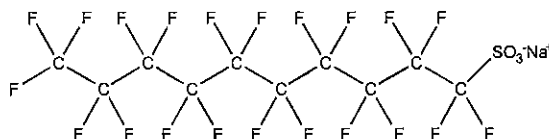
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
COMPOUND: Sodium perfluoro-1-decanesulfonate

LOT NUMBER: LPFDS0913

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_{10}F_{21}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $48.2 \pm 2.4 \mu\text{g/ml}$ (PFDS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/13/2013
EXPIRY DATE: (mm/dd/yyyy) 09/13/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 622.13
SOLVENT(S): Methanol

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 09/23/2013
(mm/dd/yyyy)

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

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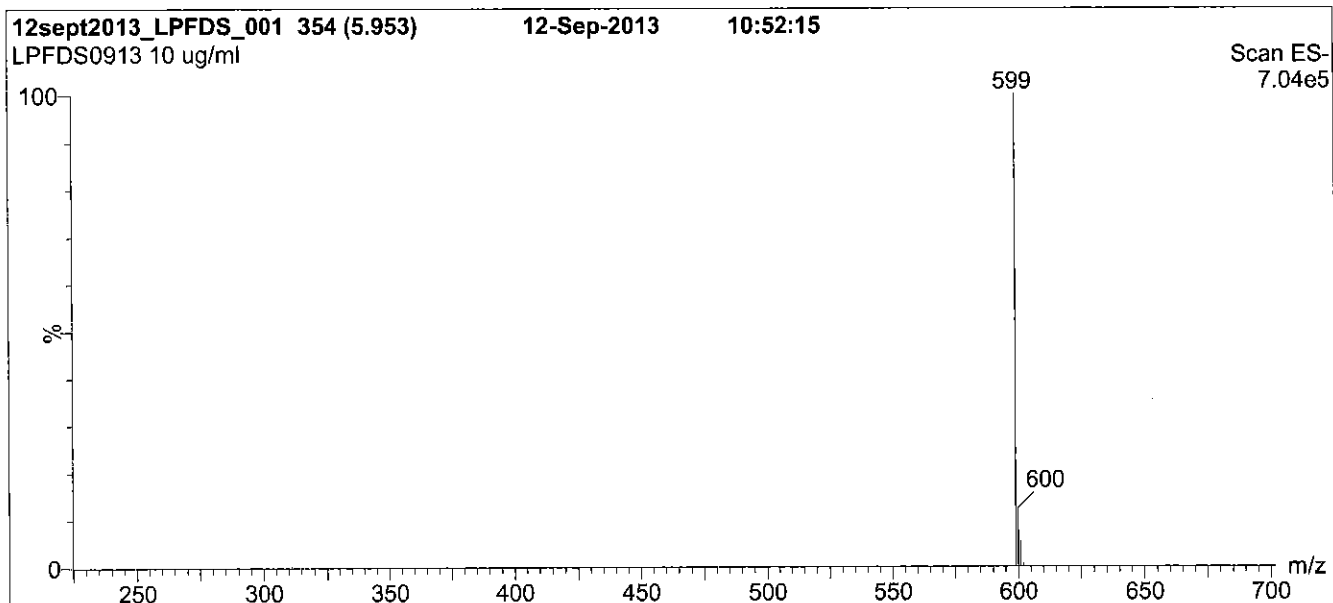
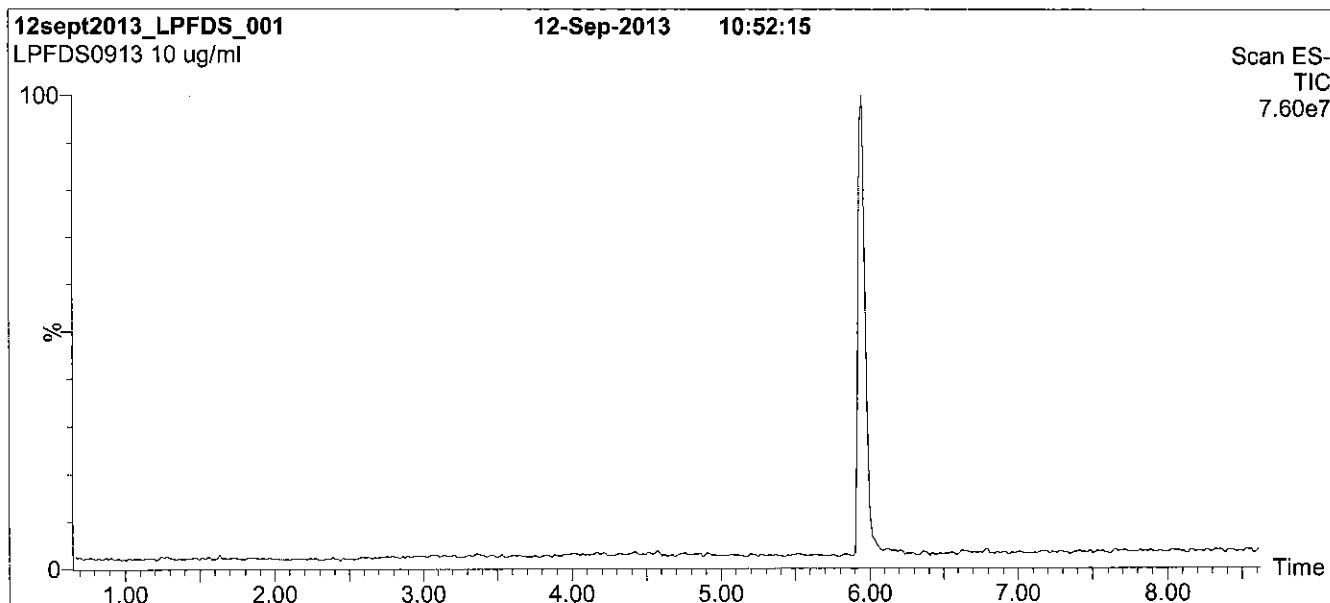
QUALITY MANAGEMENT:

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Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 11 min

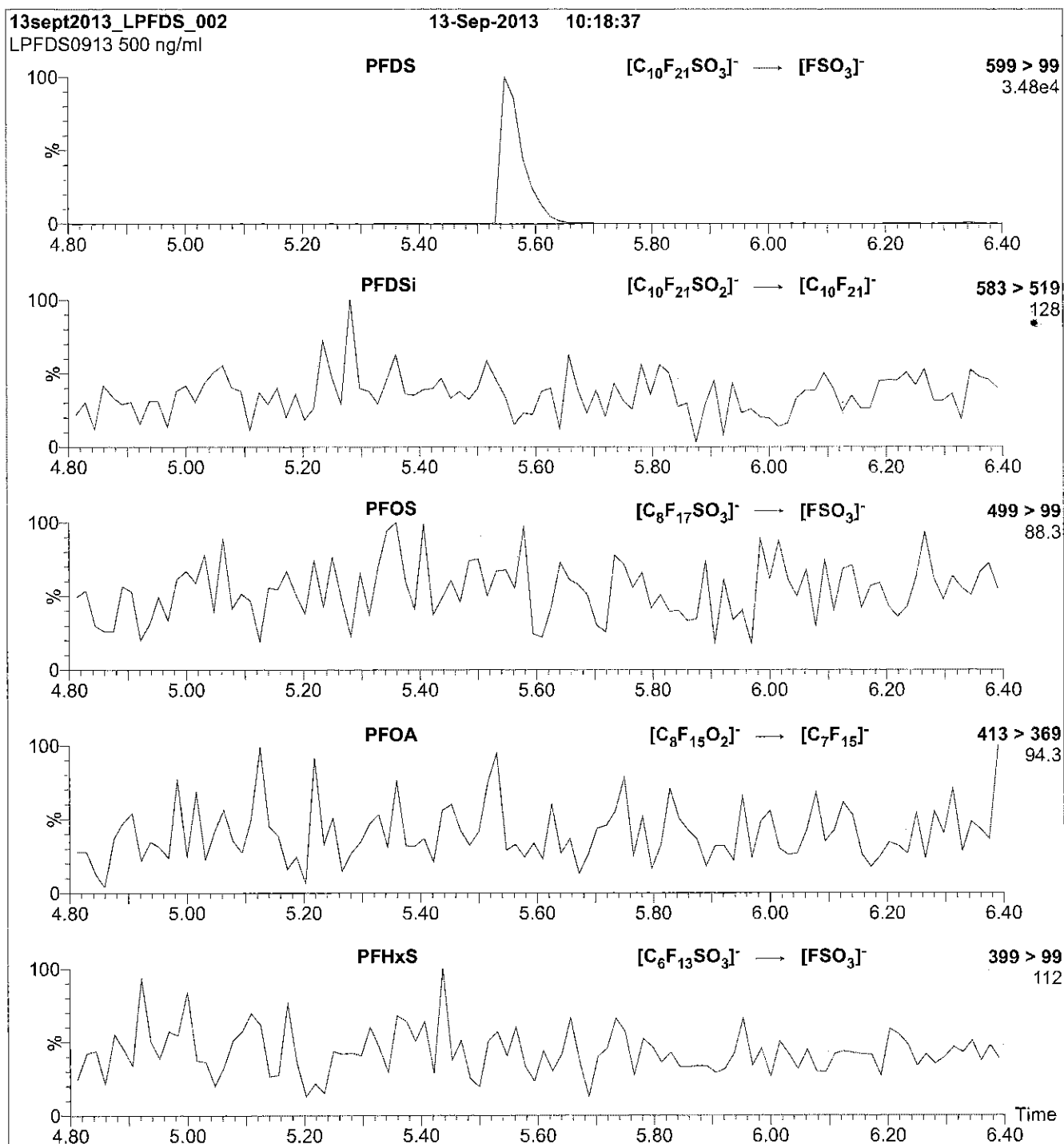
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFDS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.78e-3
Collision Energy (eV) = 50

Reagent

LCPFHpA_00004



WELLINGTON LABORATORIES

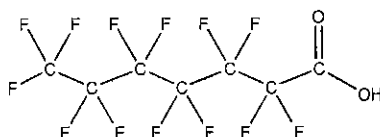
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0514

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7H_7F_{13}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
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: 05/22/2014
(mm/dd/yyyy)

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INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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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.

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.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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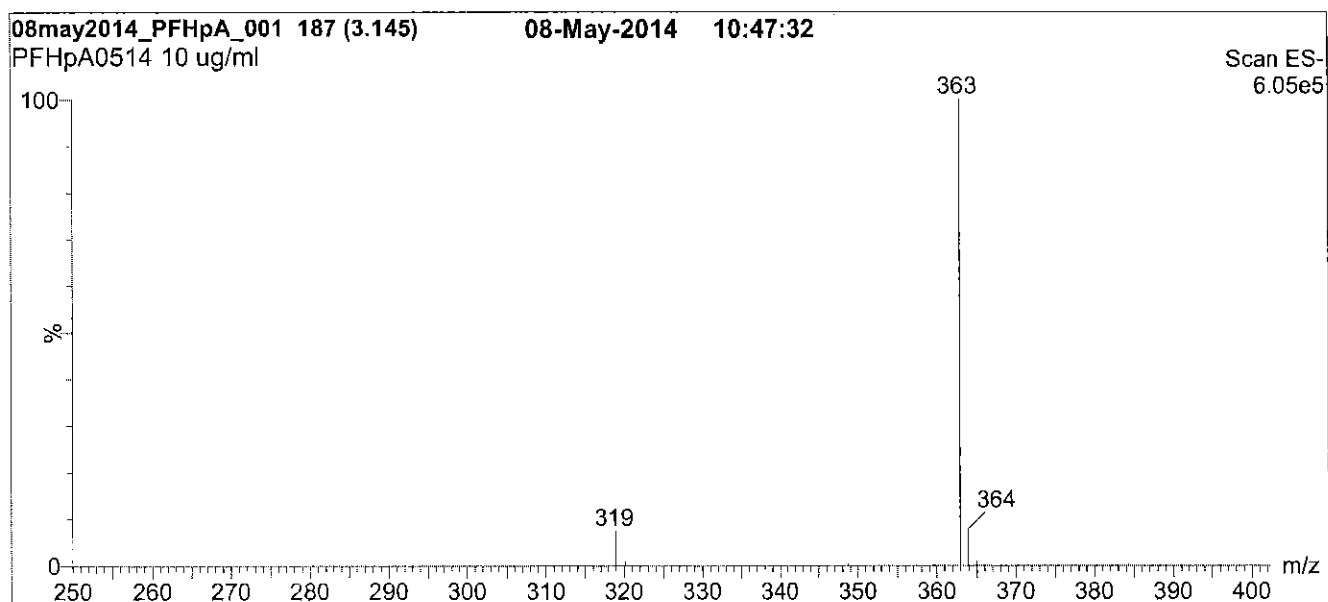
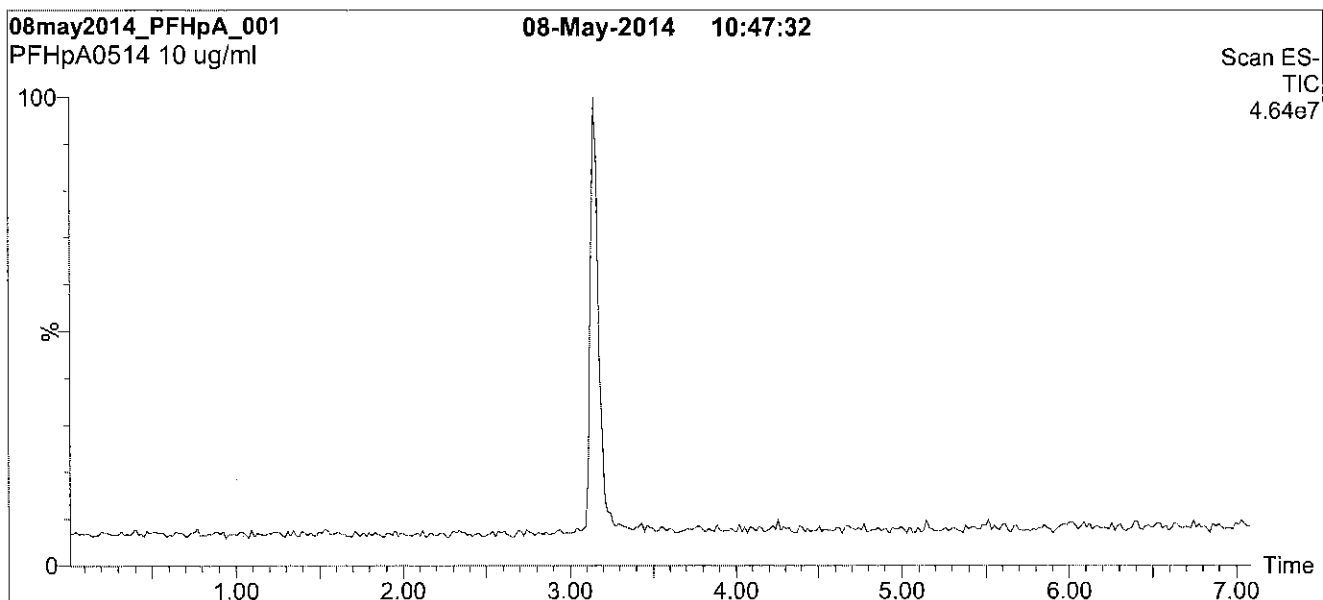
QUALITY MANAGEMENT:

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).



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Figure 1: PFHpA; 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 C₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

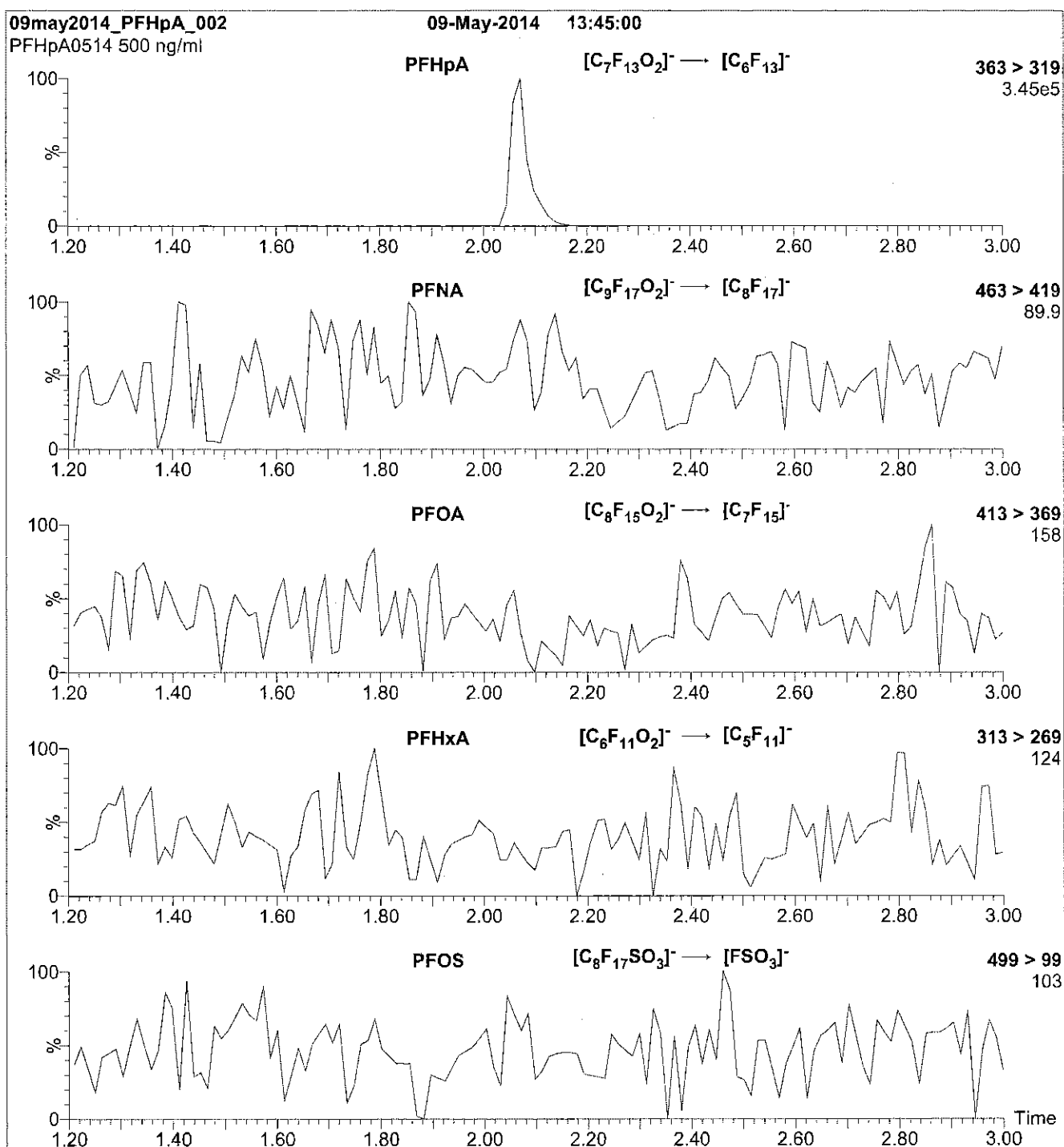
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 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: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

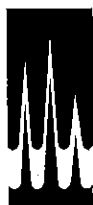
MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCPFHpS_00005

P. 4/15/15 SW



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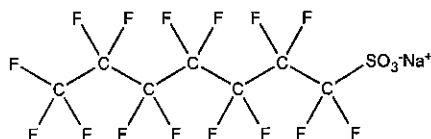
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHpS0114

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_7F_{15}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $47.6 \pm 2.4 \mu\text{g/ml}$ (PFHpS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/28/2014
EXPIRY DATE: (mm/dd/yyyy) 01/28/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 472.10
SOLVENT(S): Methanol

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 ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/27/2015

(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.

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.

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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.

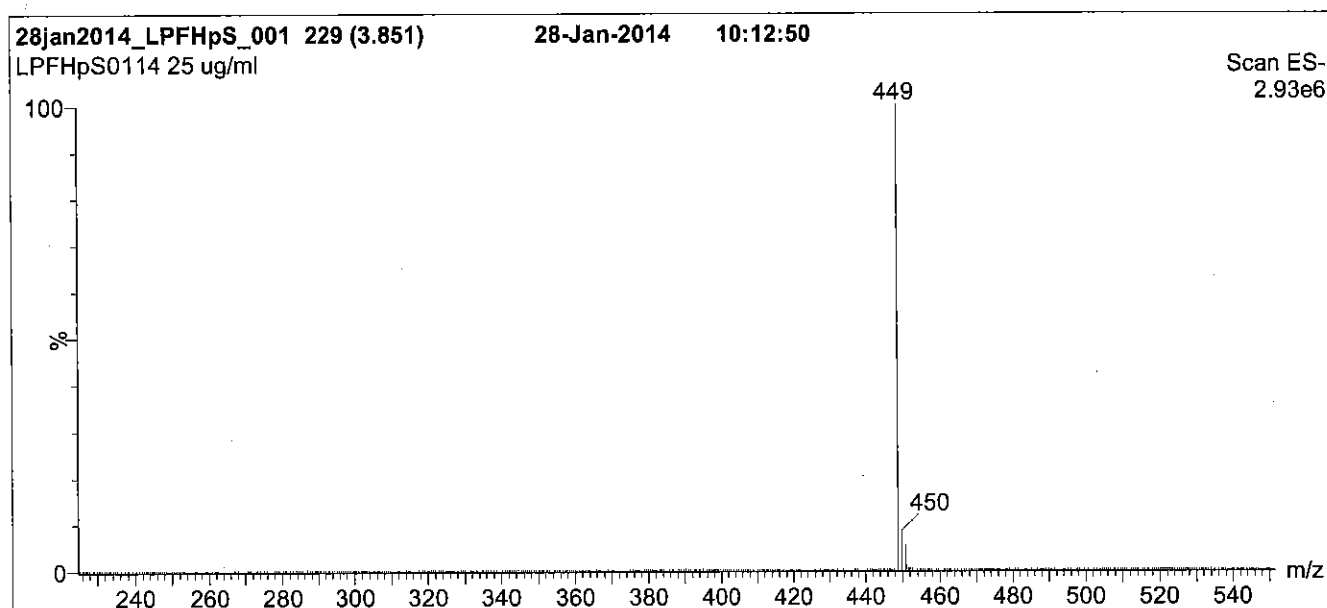
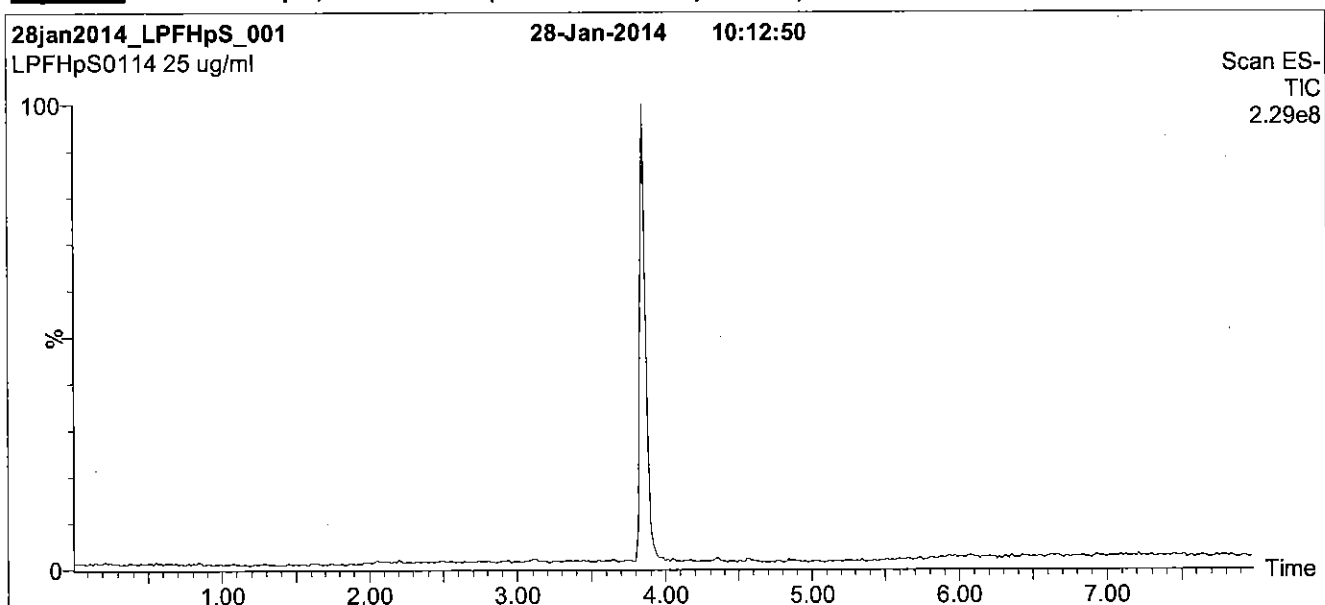
QUALITY MANAGEMENT:

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 or contact us directly at info@well-labs.com

Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

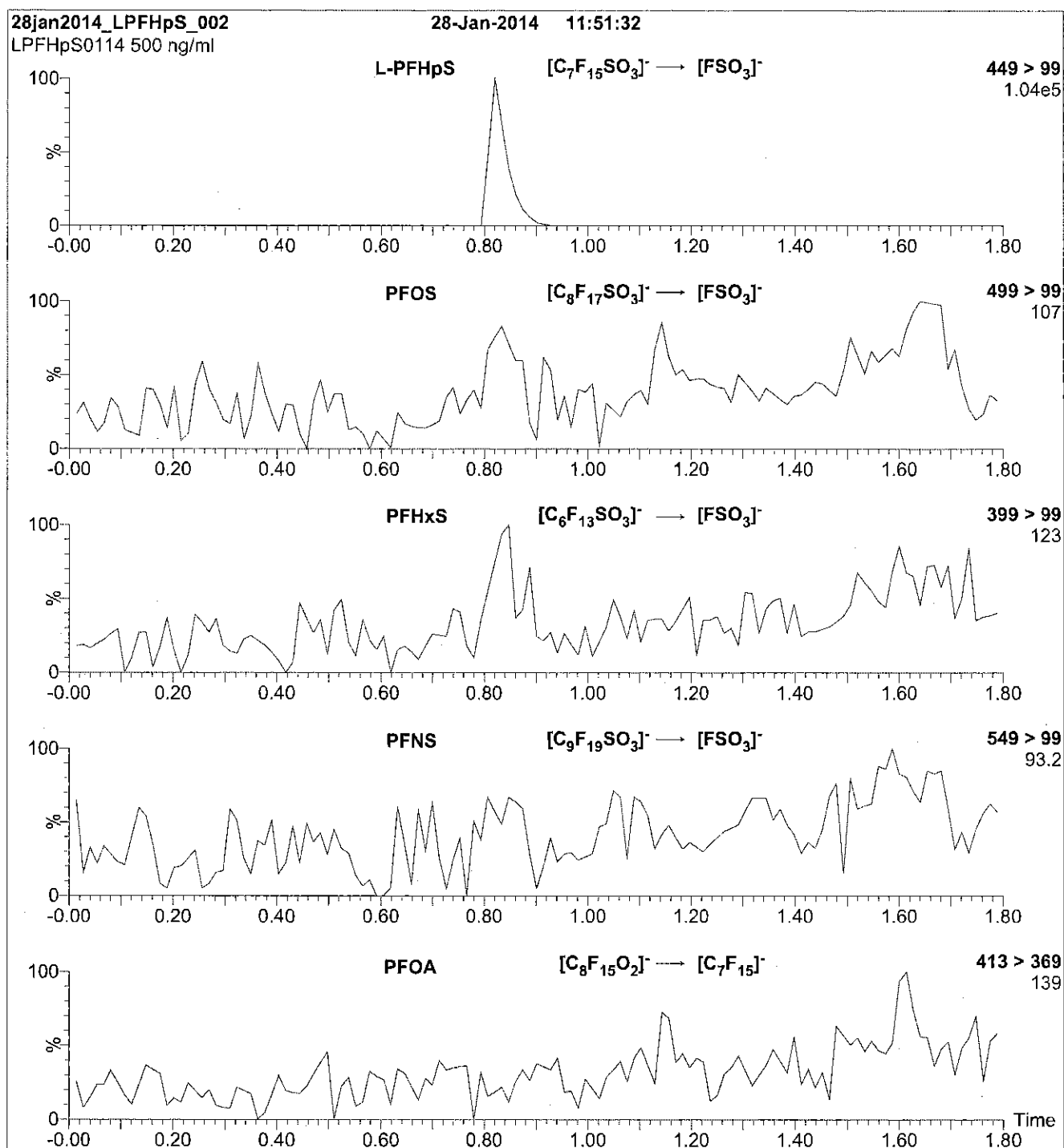
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFHpS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00003



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxA

LOT NUMBER:

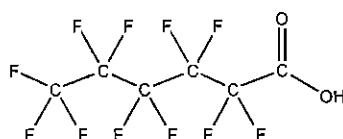
PFHxA0514

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:**CAS #:**

307-24-4

**MOLECULAR FORMULA:** $C_6HF_{11}O_2$ **MOLECULAR WEIGHT:**

314.05

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

05/09/2014

EXPIRY DATE: (mm/dd/yyyy)

05/09/2019

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: 05/22/2014

(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:

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LIMITED WARRANTY:

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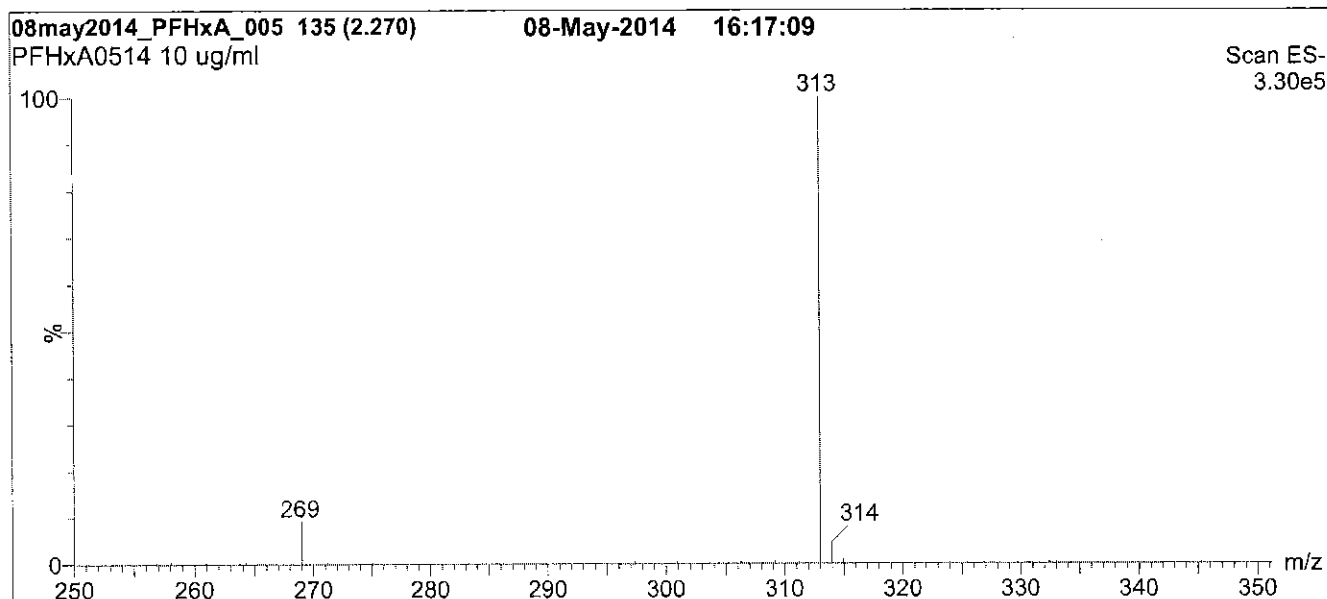
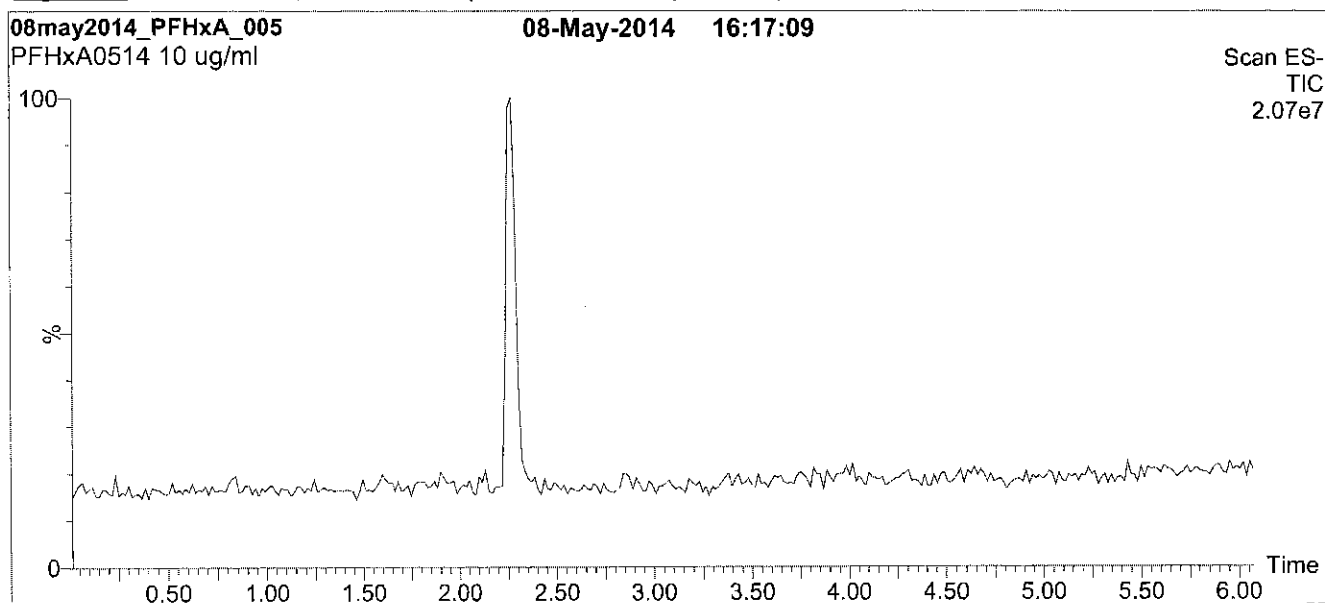
QUALITY MANAGEMENT:

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Figure 1: PFHxA; 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 C₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

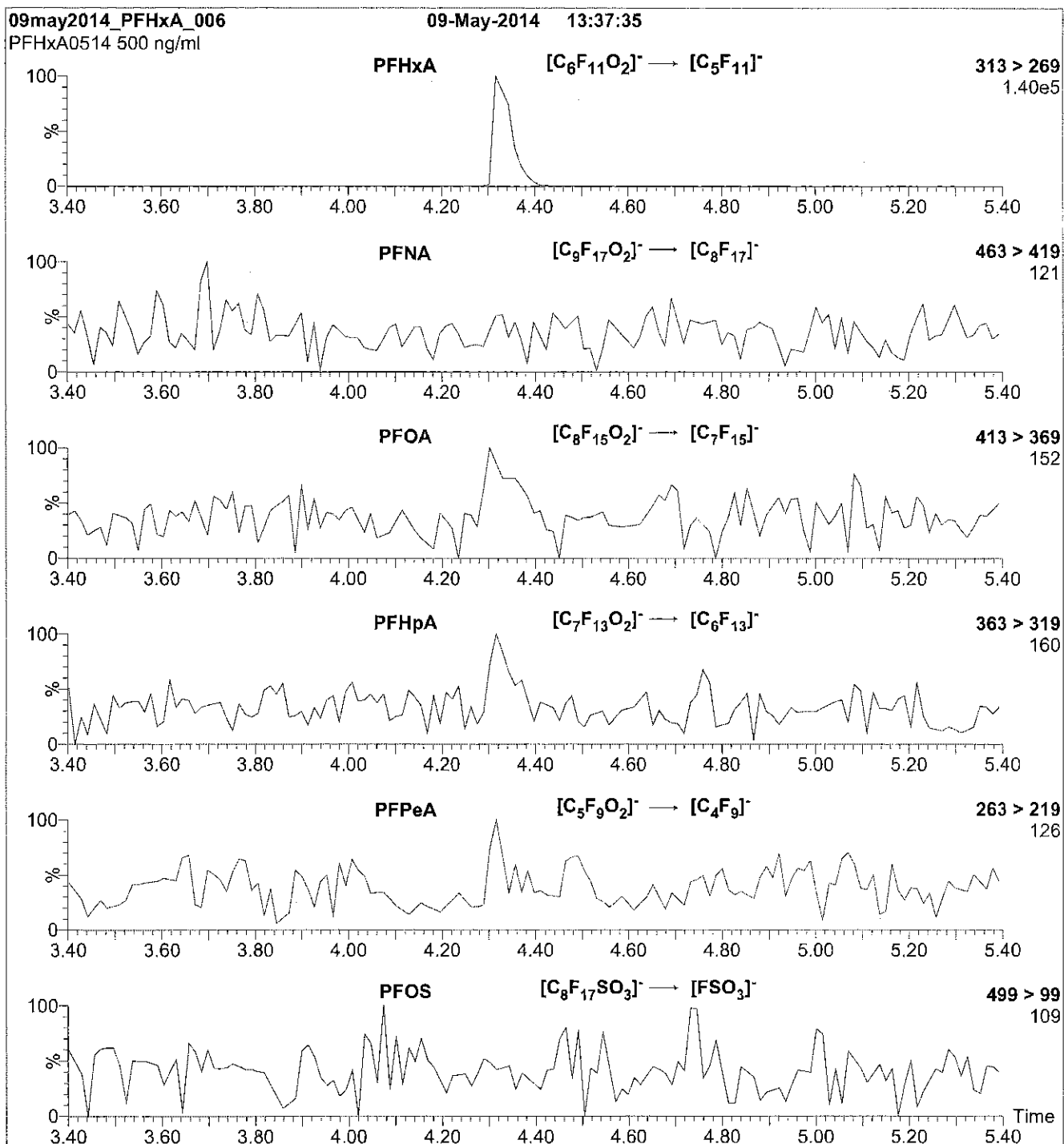
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 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: PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 10

Reagent

LCPFHXS_00003



WELLINGTON LABORATORIES

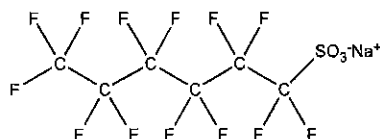
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHxS
COMPOUND: Sodium perfluoro-1-hexanesulfonate

LOT NUMBER: LPFHxS0514

STRUCTURE:

CAS #: 82382-12-5



MOLECULAR FORMULA: $C_6F_{13}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $47.3 \pm 2.4 \mu\text{g/ml}$ (PFHxS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/09/2014
EXPIRY DATE: (mm/dd/yyyy) 05/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 422.10
SOLVENT(S): Methanol

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/16/2014

(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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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:

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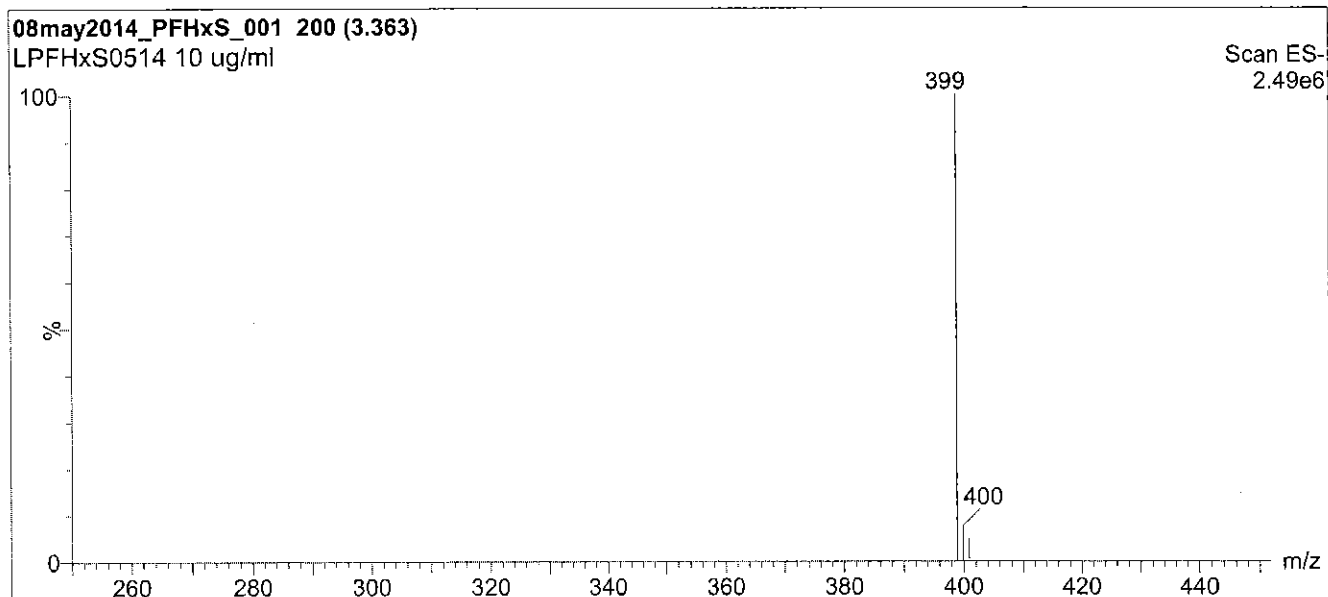
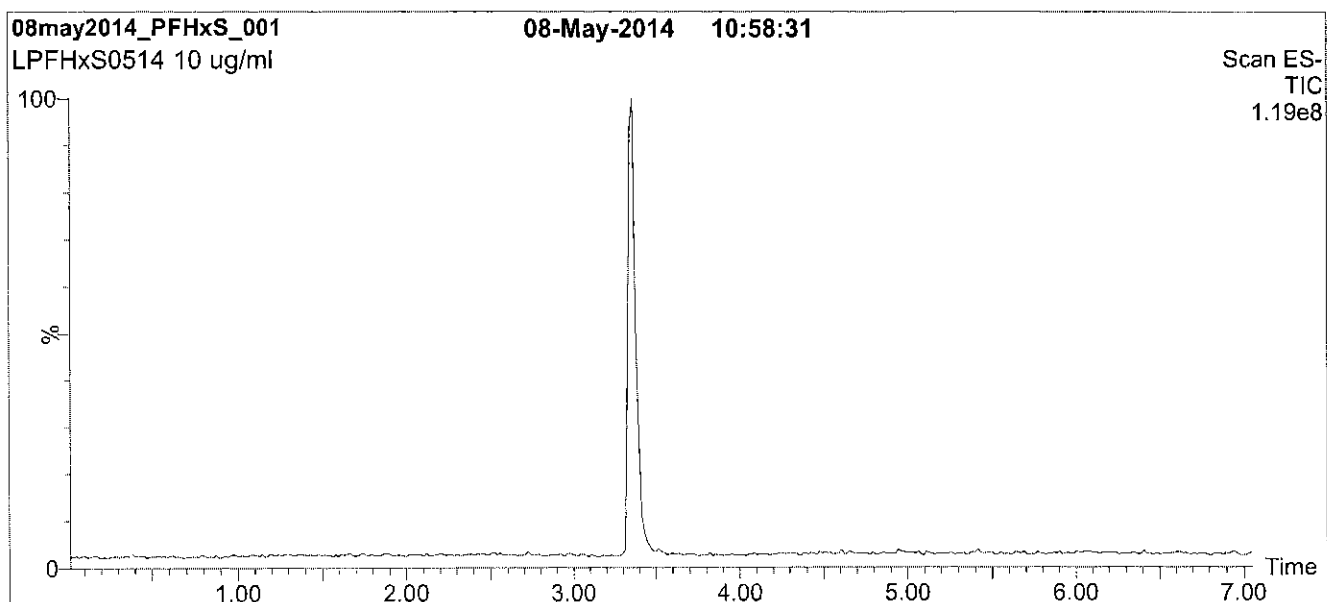
QUALITY MANAGEMENT:

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Figure 1: L-PFHxS; 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 C₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

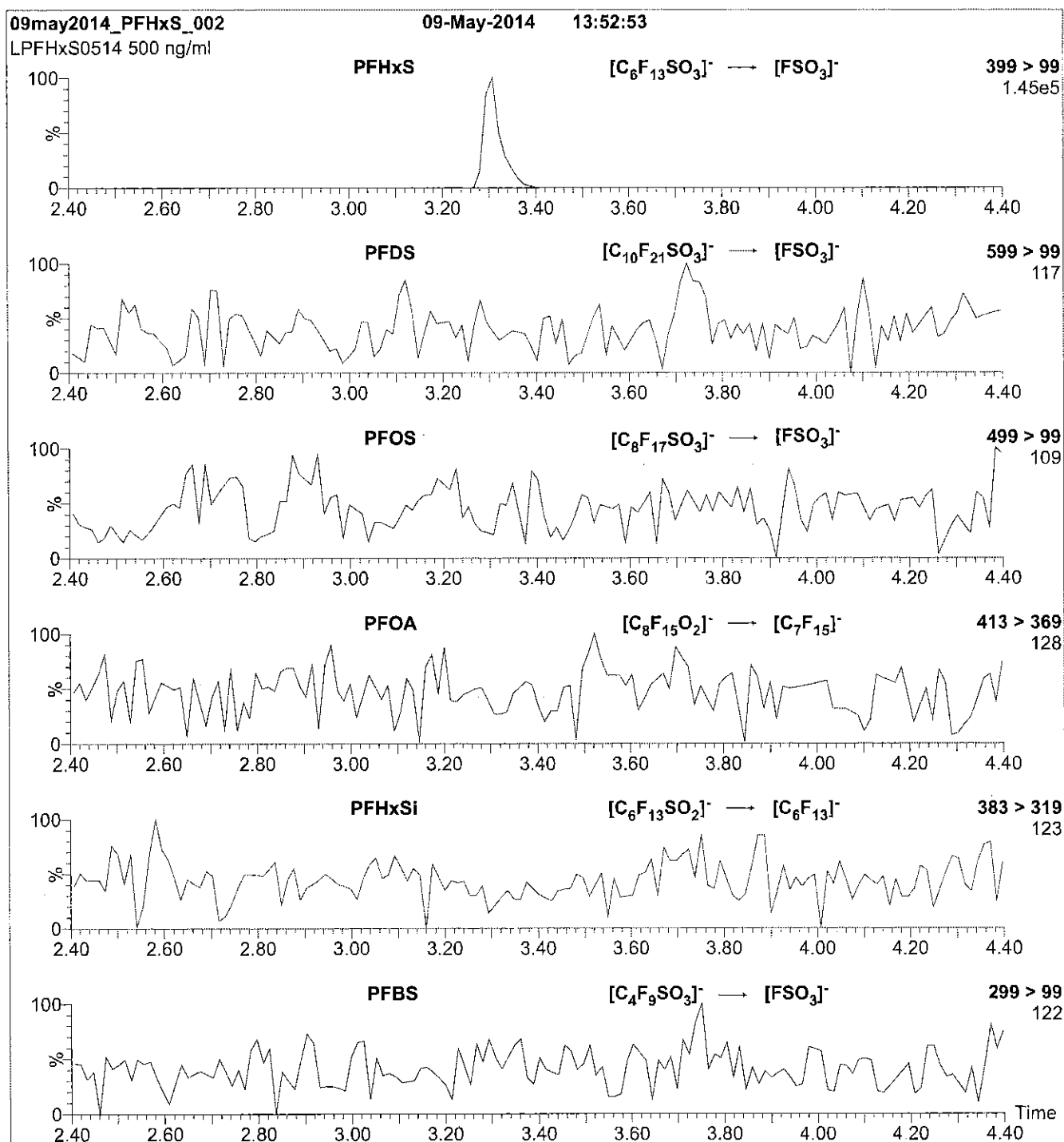
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFHxS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFHxS)

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

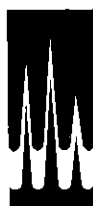
Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.17e-3$
Collision Energy (eV) = 30

Reagent

LCPFNA_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

PFNA0514

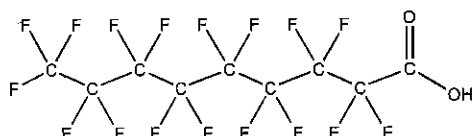
COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:

CAS #:

375-95-1



MOLECULAR FORMULA:

C₉H₁₇O₂

MOLECULAR WEIGHT:

464.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/09/2014

EXPIRY DATE: (mm/dd/yyyy)

05/09/2019

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-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/22/2014

(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.

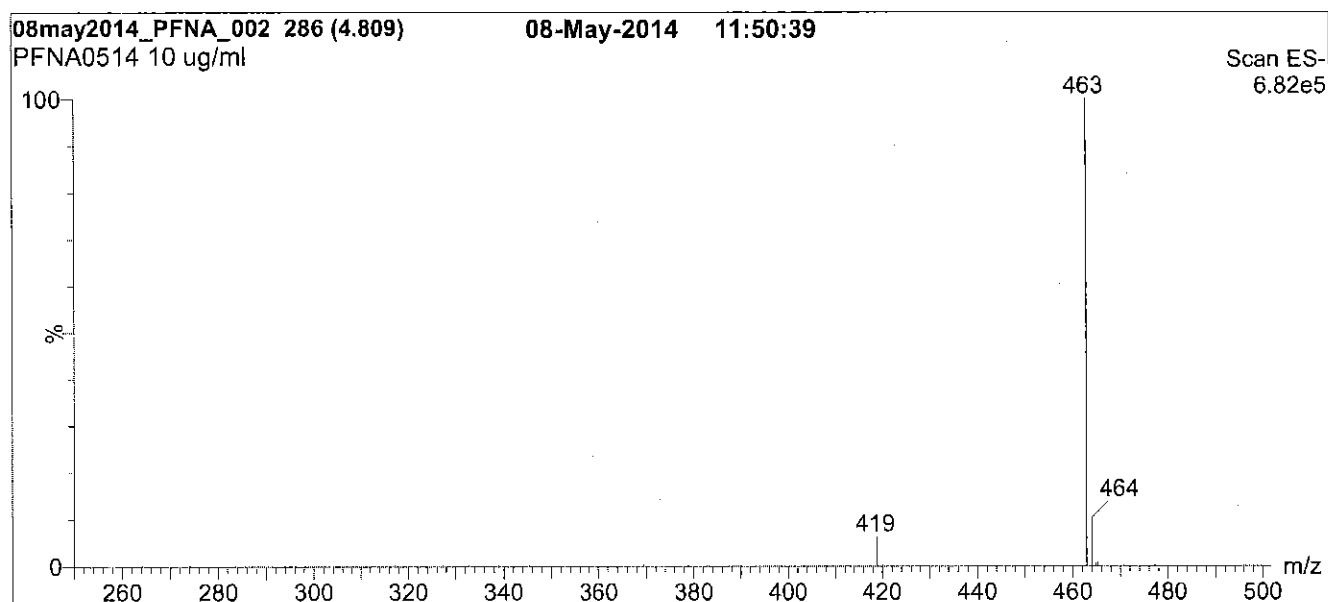
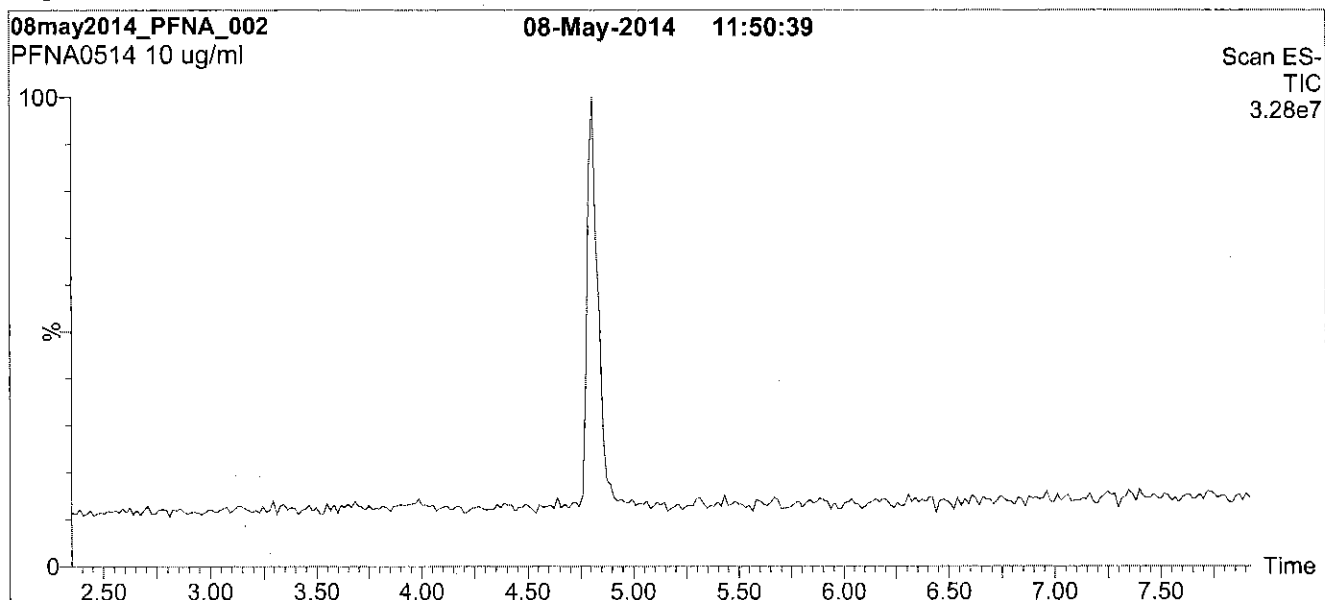
QUALITY MANAGEMENT:

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).



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Figure 1: PFNA; 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 C₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

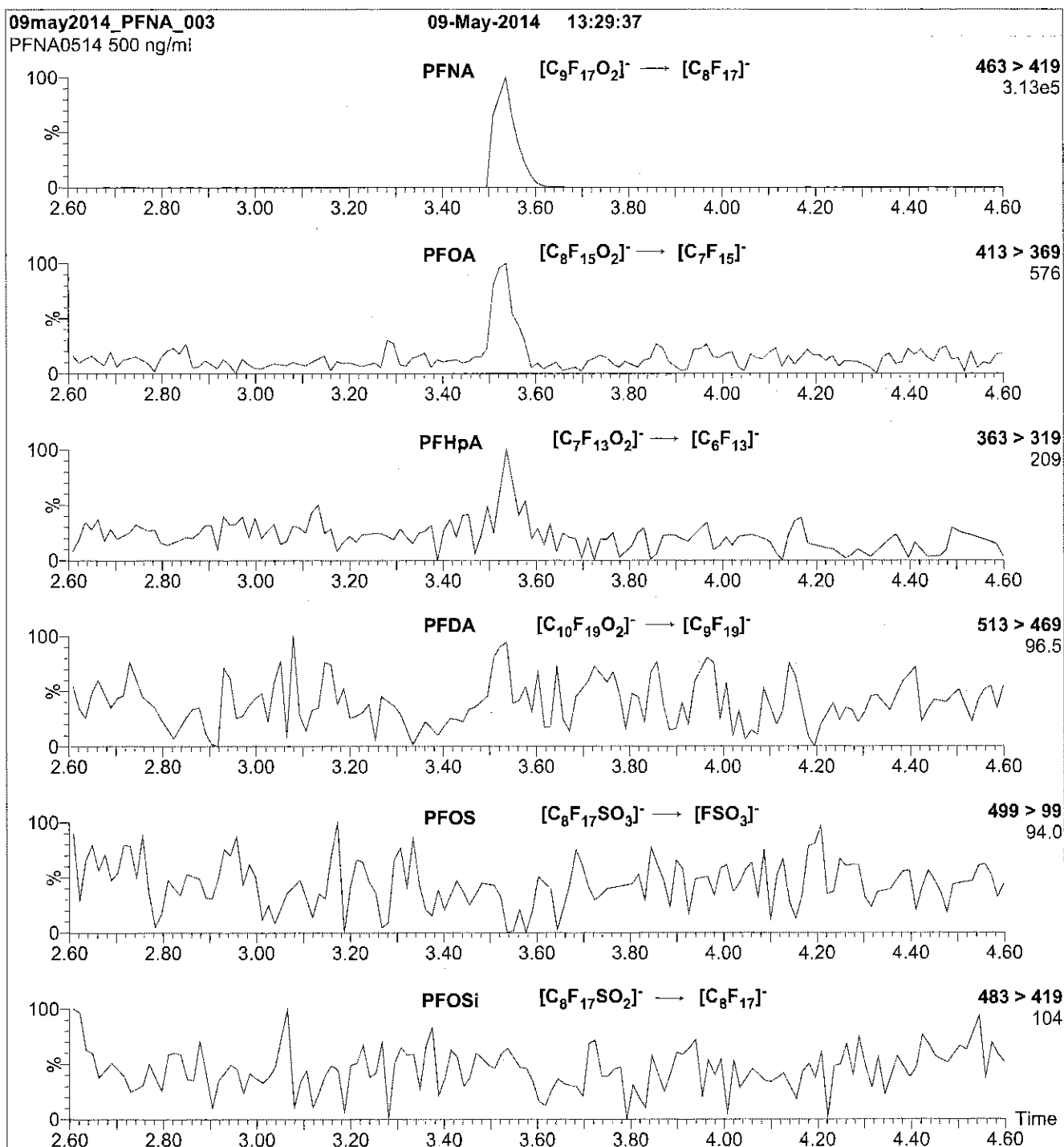
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 950 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: PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 11

Reagent

LCPFNS_00002



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFNS

LOT NUMBER:

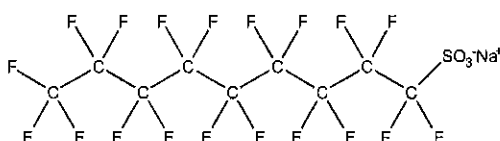
LPFNS0712

COMPOUND:

Sodium perfluoro-1-nonanesulfonate

STRUCTURE:**CAS #:**

98789-57-2

**MOLECULAR FORMULA:** $C_9F_{19}SO_3Na$ **MOLECULAR WEIGHT:**

572.12

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
48.0 ± 2.4 µg/ml (PFNS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/04/2012

EXPIRY DATE: (mm/dd/yyyy)

07/04/2017

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/15/2013

(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

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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:

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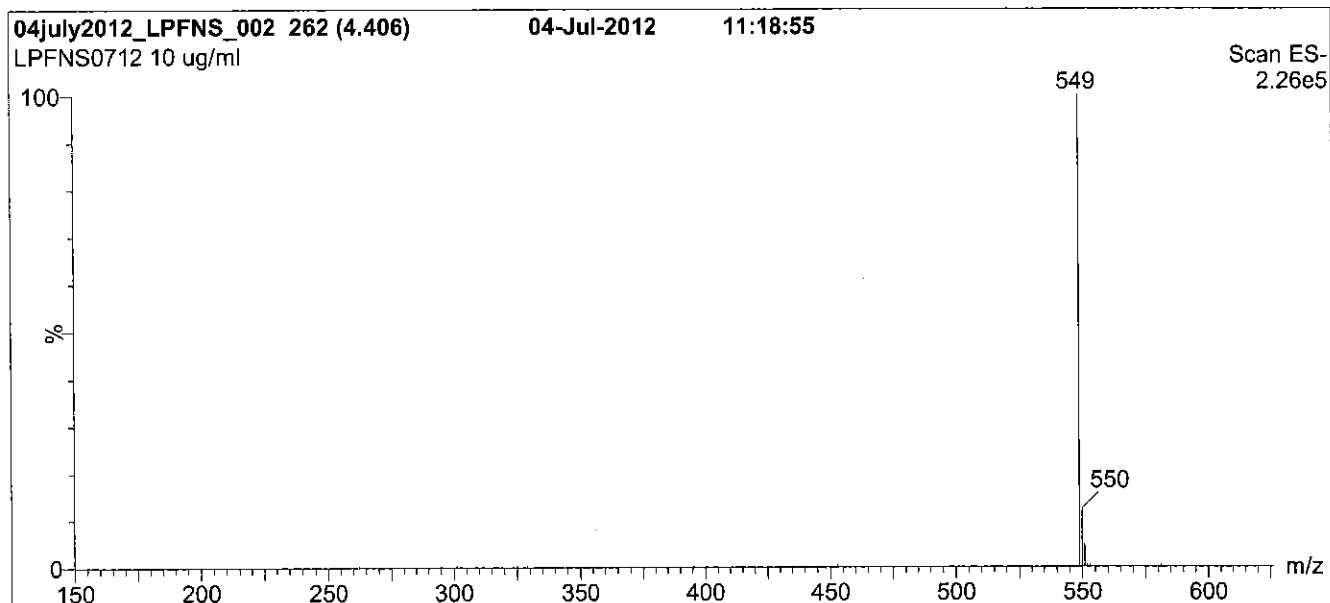
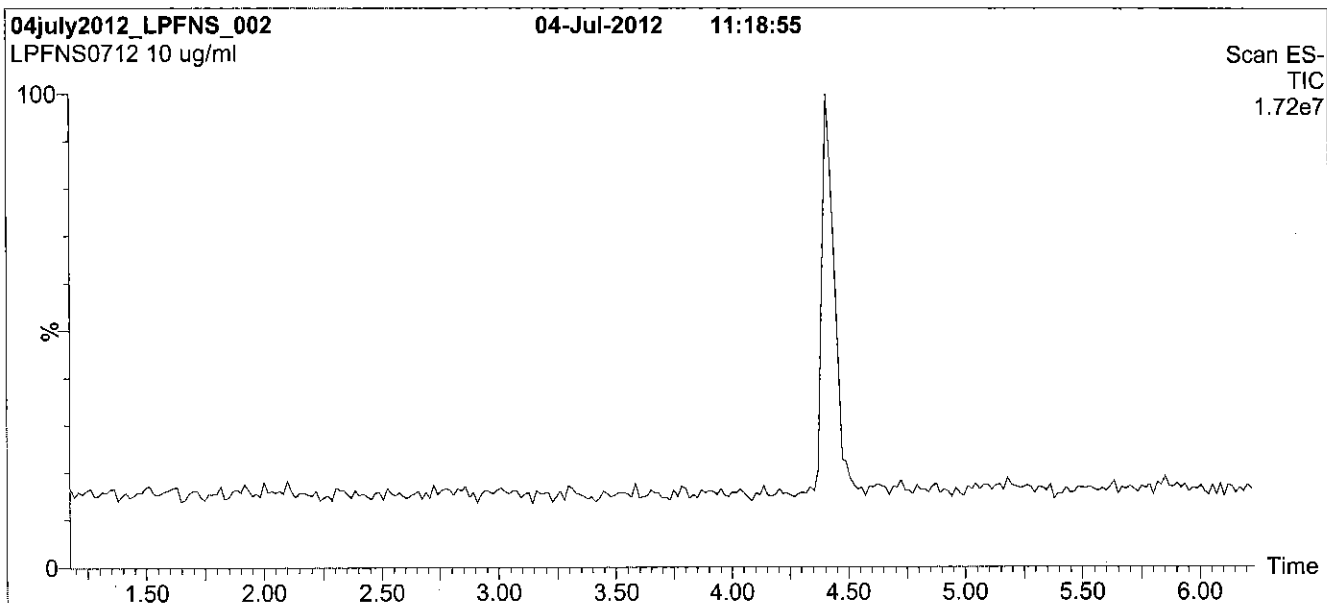
QUALITY MANAGEMENT:

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Figure 1: L-PFNS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

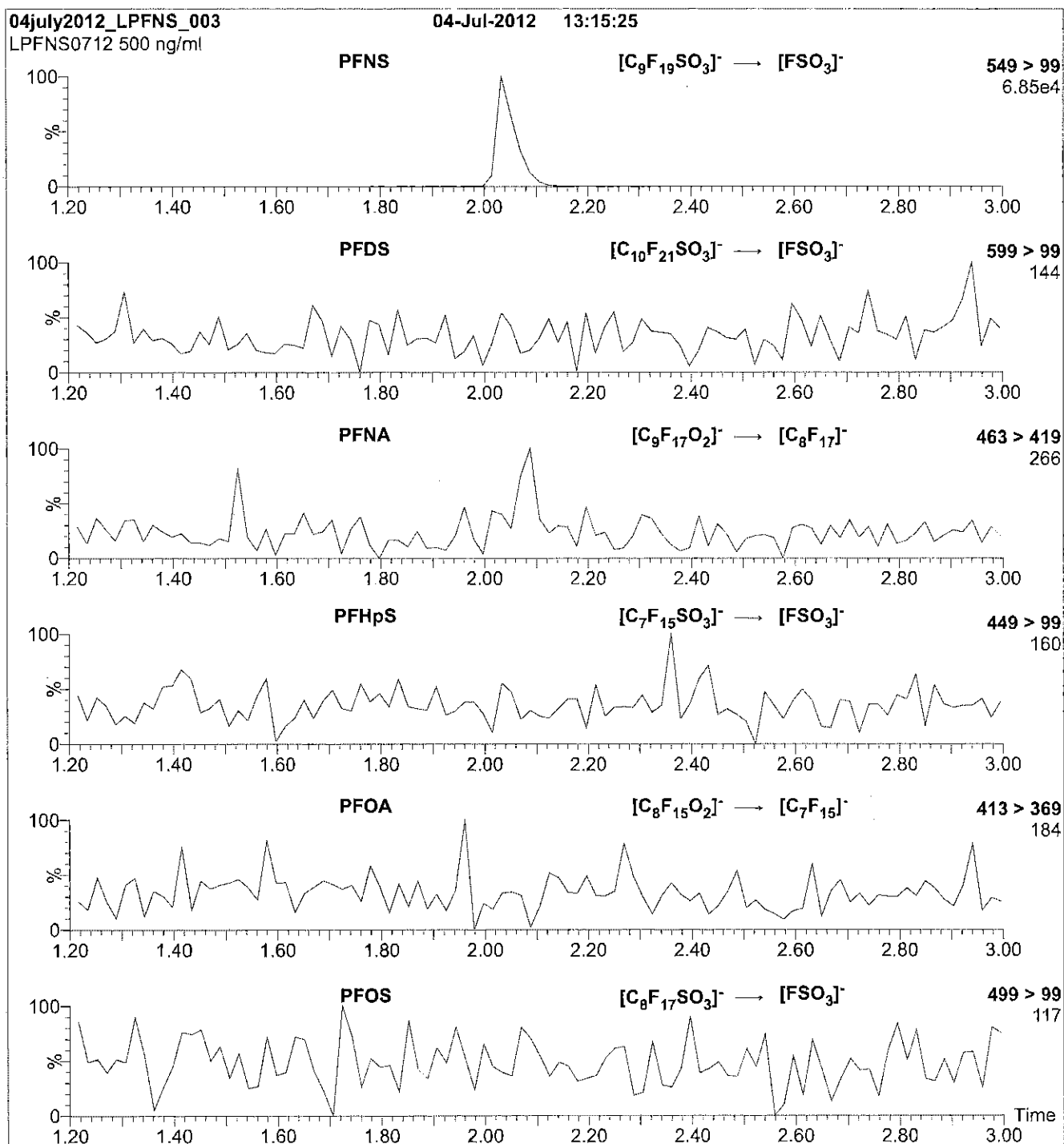
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFNS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFNS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 45

Reagent

LCPFOA_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Rec 7/15/14

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA1013

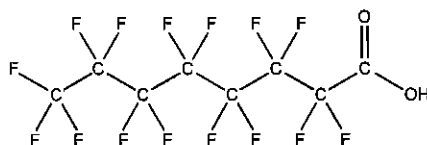
COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #:

335-67-1



MOLECULAR FORMULA:

$C_8H_{15}O_2$

MOLECULAR WEIGHT:

414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/11/2013

EXPIRY DATE: (mm/dd/yyyy)

10/11/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/18/2013

(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:

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LIMITED WARRANTY:

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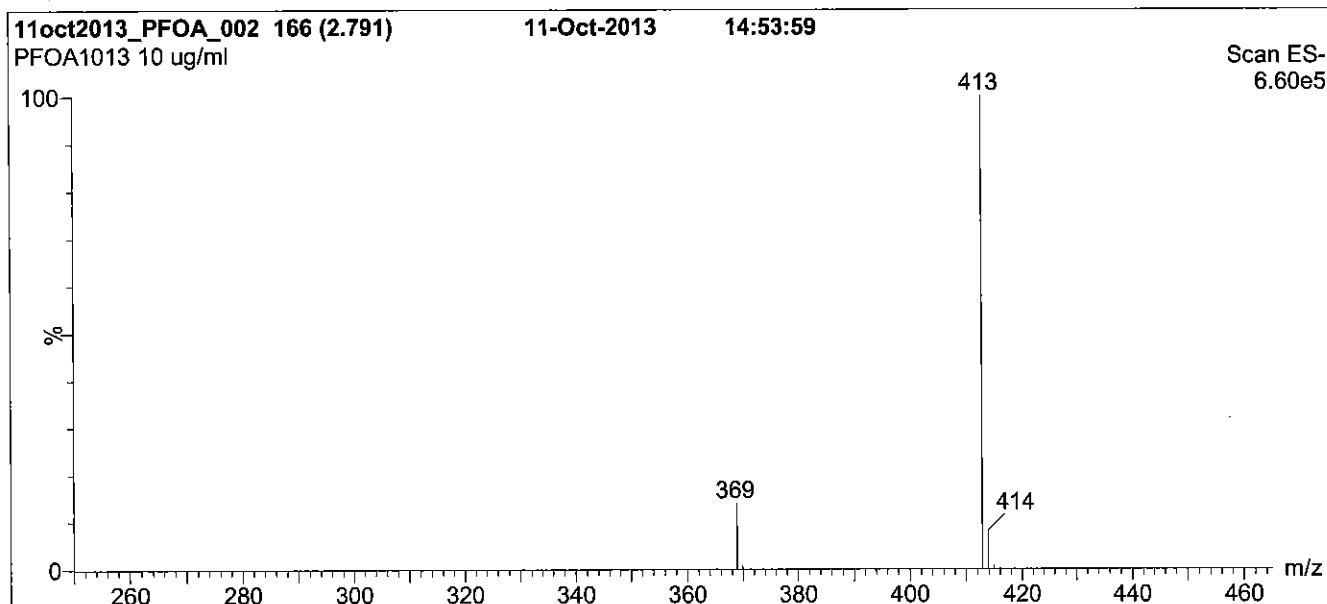
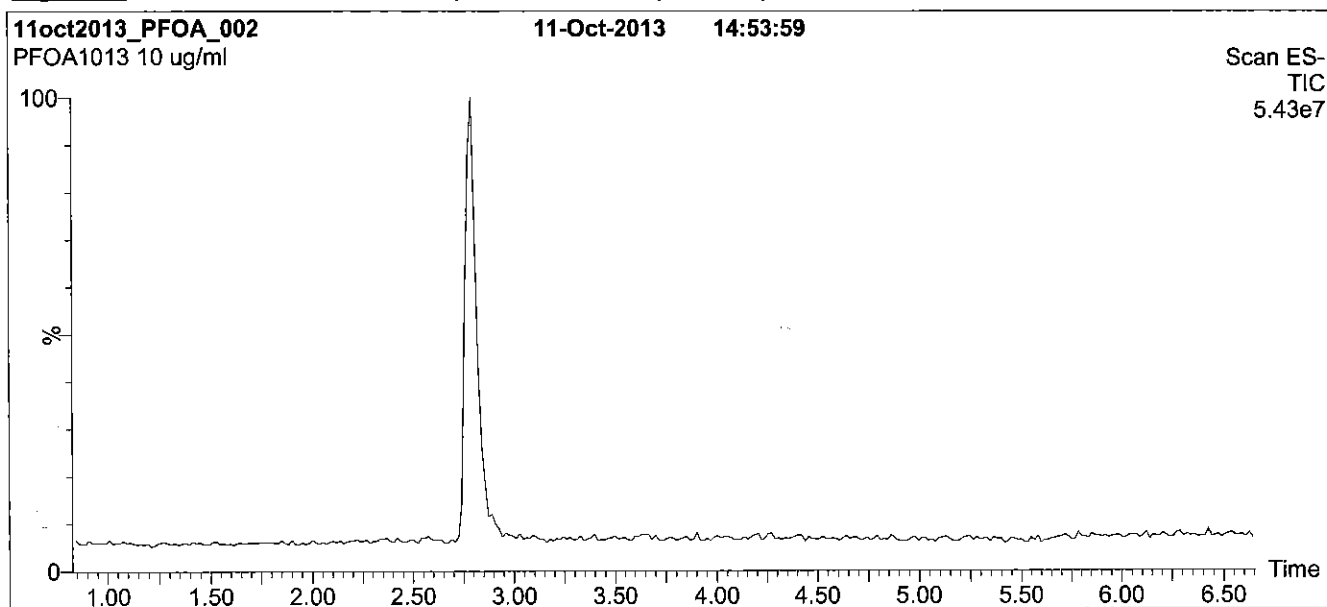
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 10 min

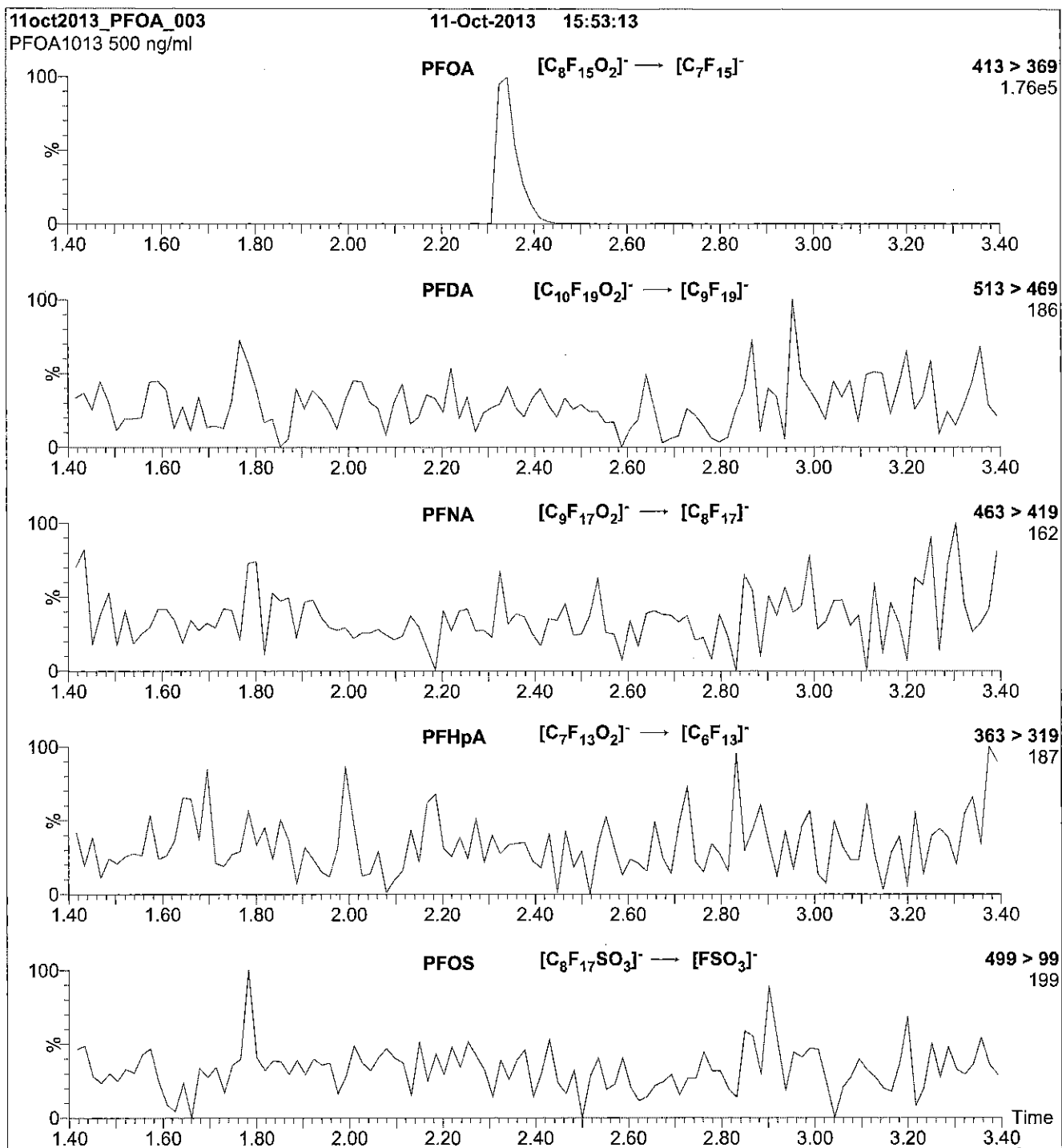
Flow: 300 μ l/min

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: PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

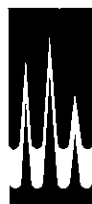
Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFODA_00004



WELLINGTON LABORATORIES

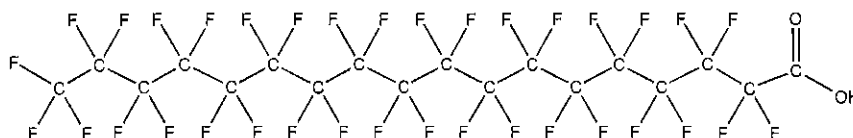
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid

LOT NUMBER: PFODA0807

STRUCTURE:

CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}H_{35}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 914.15
SOLVENT(S): Methanol
Water (4%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/25/2014
EXPIRY DATE: (mm/dd/yyyy) 04/25/2017
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: 04/28/2014
(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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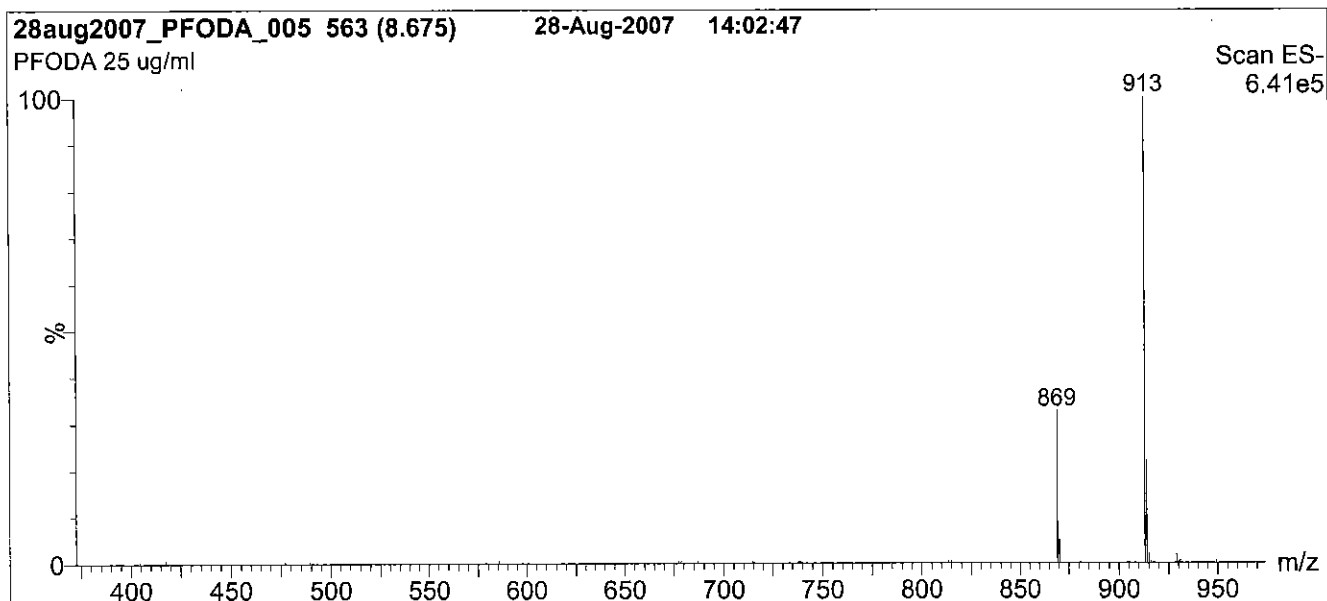
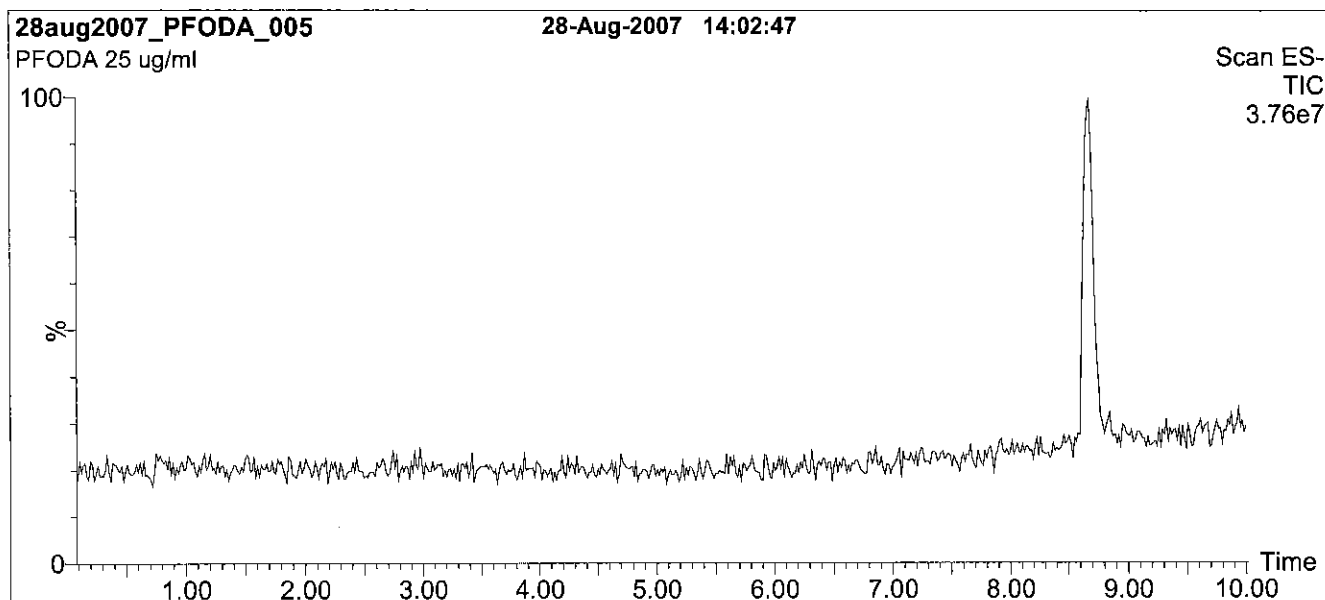
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 75% (80:20 MeOH:ACN) / 25% H₂O
(both with 10 mM NH₄OAc buffer)
Hold 5 min. Ramp to 100% organic over 6 min.
Hold 3 min before returning to initial conditions.
Time: 16 min

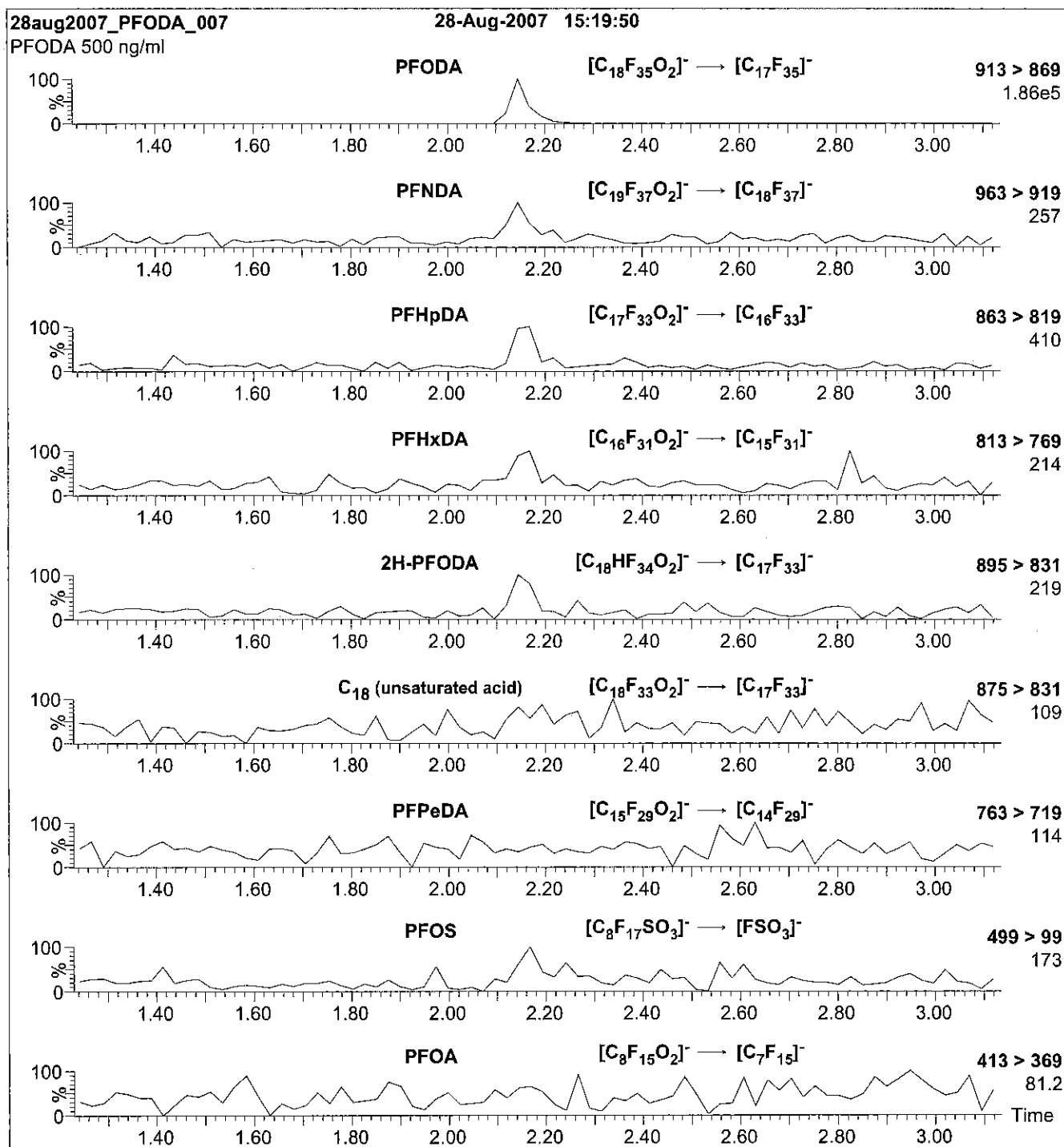
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1100 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 75% (80:20 MeOH:ACN) / 25% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 15

Reagent

LCPFOS_00004

3/17/15 SV



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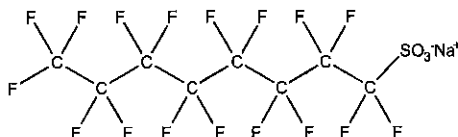
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFOS
COMPOUND: Sodium perfluoro-1-octanesulfonate

LOT NUMBER: LPFOS0614

STRUCTURE:

CAS #: 4021-47-0



MOLECULAR FORMULA: $C_8F_{17}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $47.8 \pm 2.4 \mu\text{g/ml}$ (PFOS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/20/2014
EXPIRY DATE: (mm/dd/yyyy) 06/20/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 522.11
SOLVENT(S): Methanol

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/27/2014
(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.

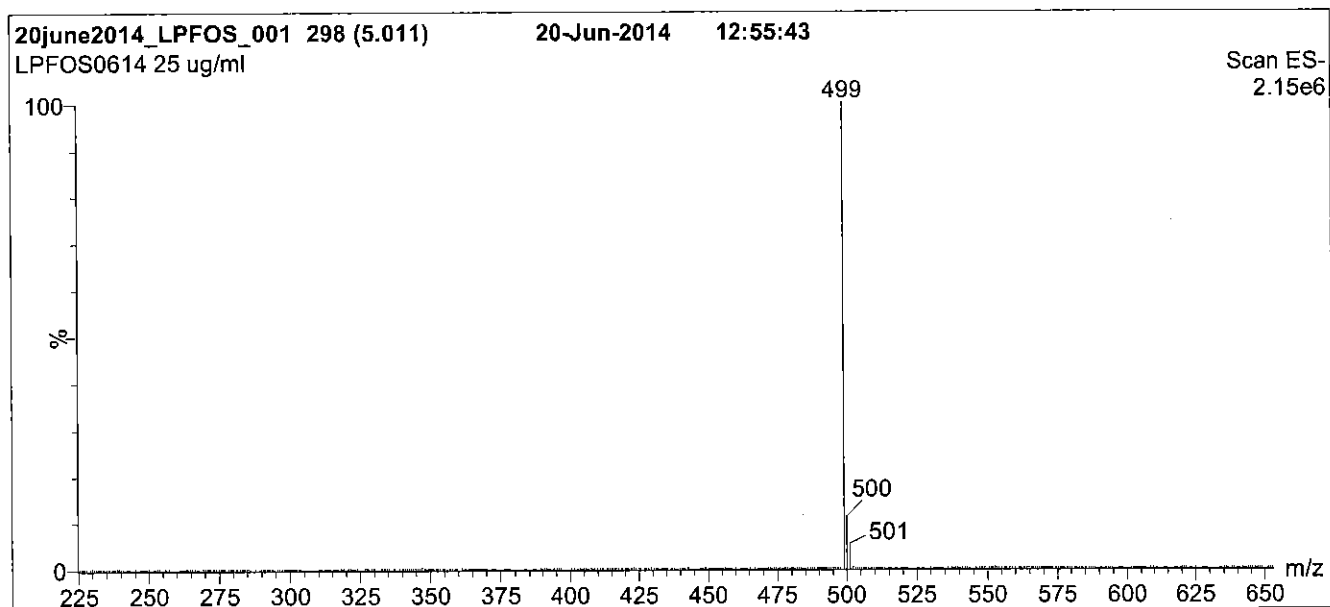
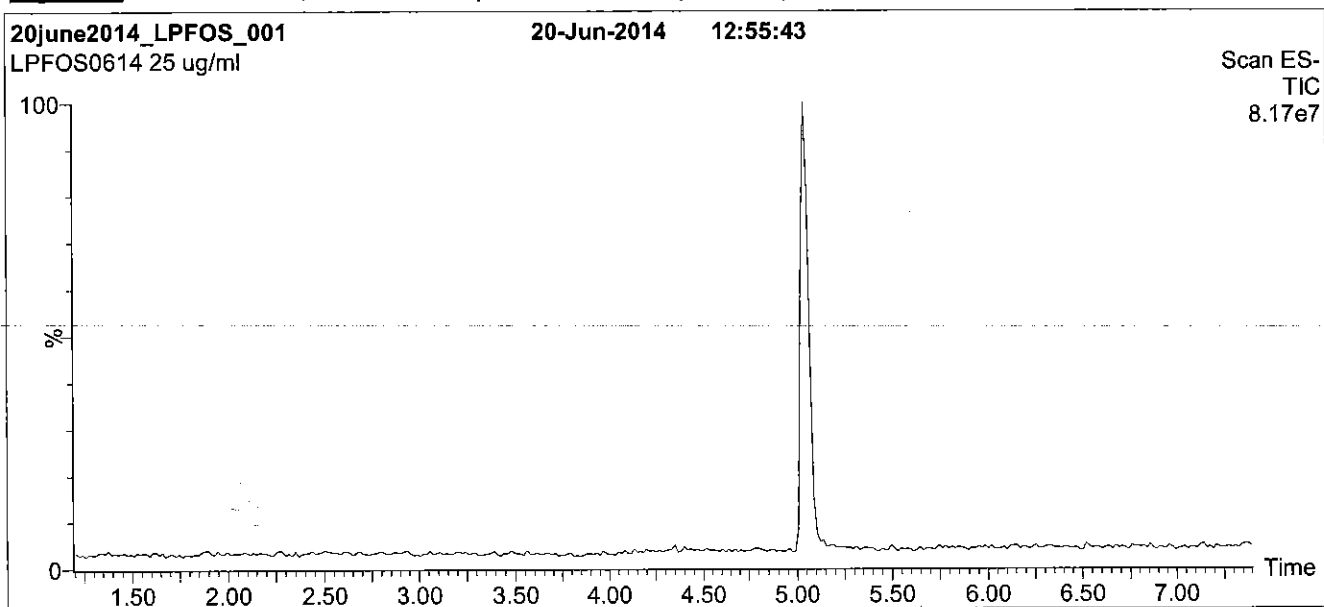
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Figure 1: L-PFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

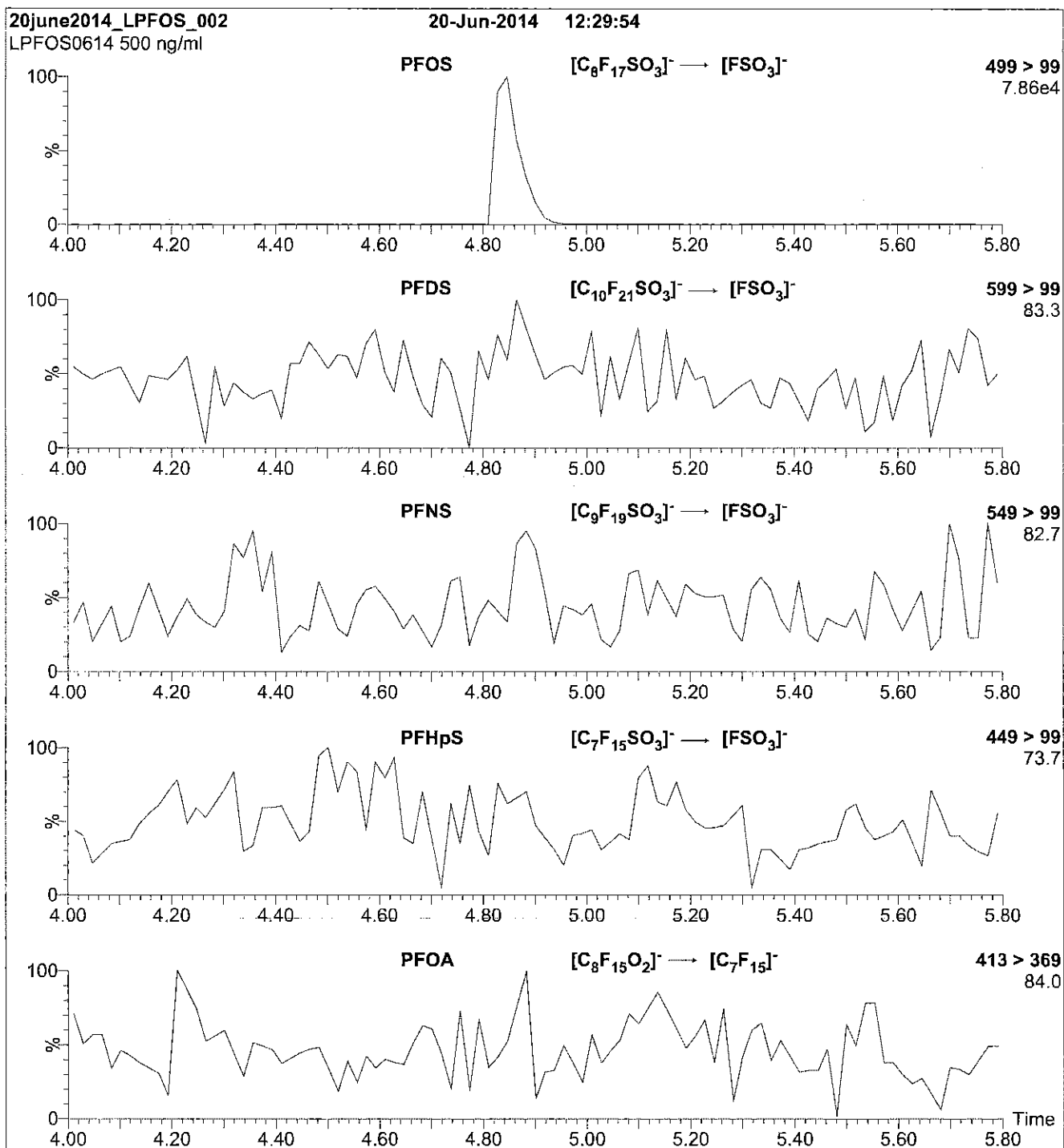
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 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: L-PFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFOS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 40

Reagent

LCPFOSA_00005

07/21/15 87



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FOSA-I

LOT NUMBER:

FOSA0714I

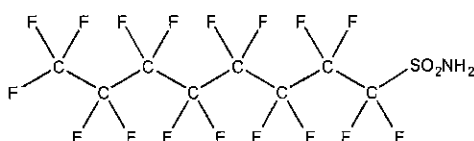
COMPOUND:

Perfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

754-91-6



MOLECULAR FORMULA:

C₈H₂F₁₇NO₂S

MOLECULAR WEIGHT:

499.14

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/31/2014

EXPIRY DATE: (mm/dd/yyyy)

Stability studies ongoing

RECOMMENDED STORAGE:

Refrigerate ampoule

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2014

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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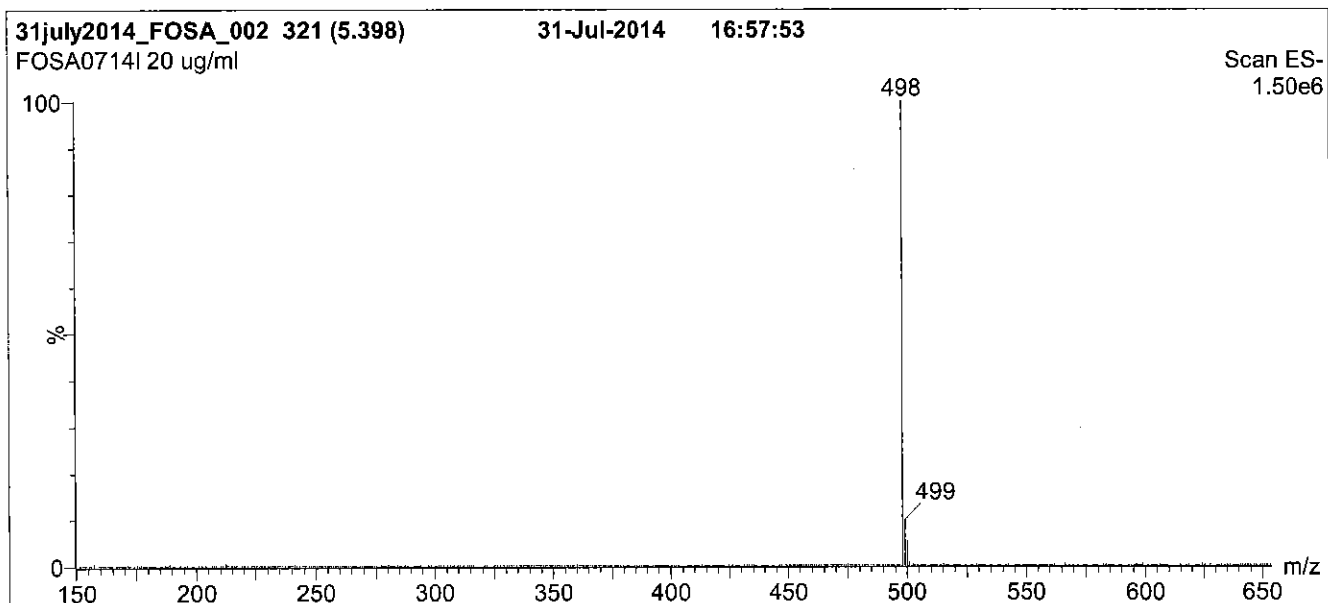
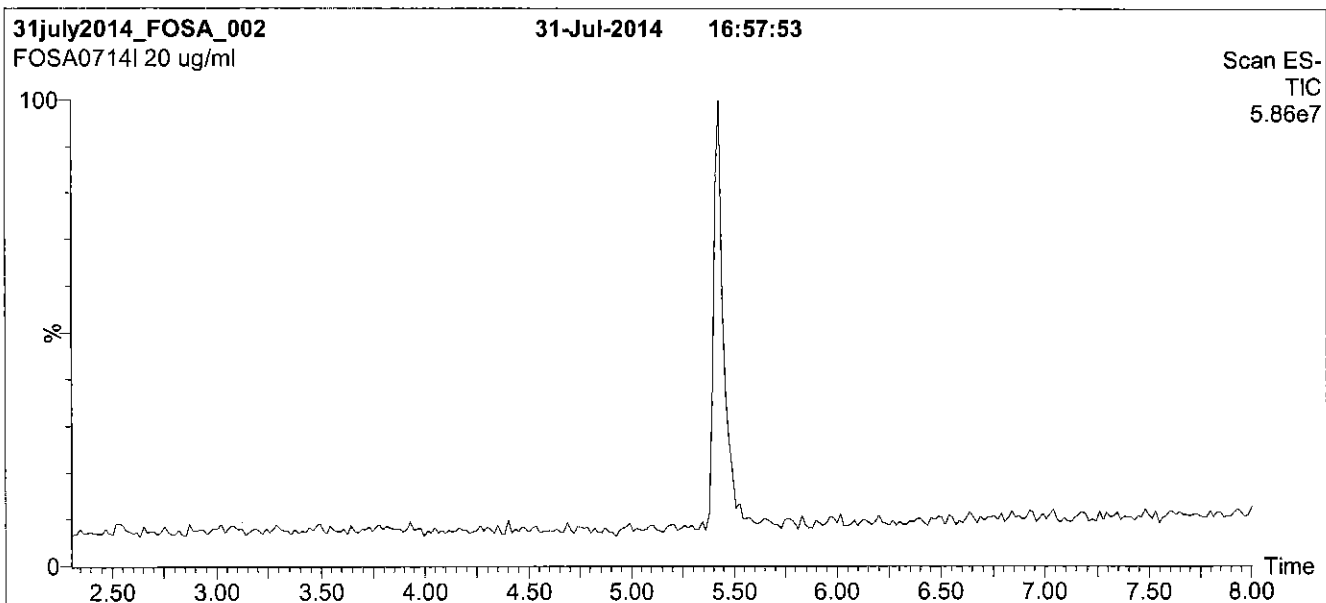
QUALITY MANAGEMENT:

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Figure 1: FOSA-I; 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 C₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc 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

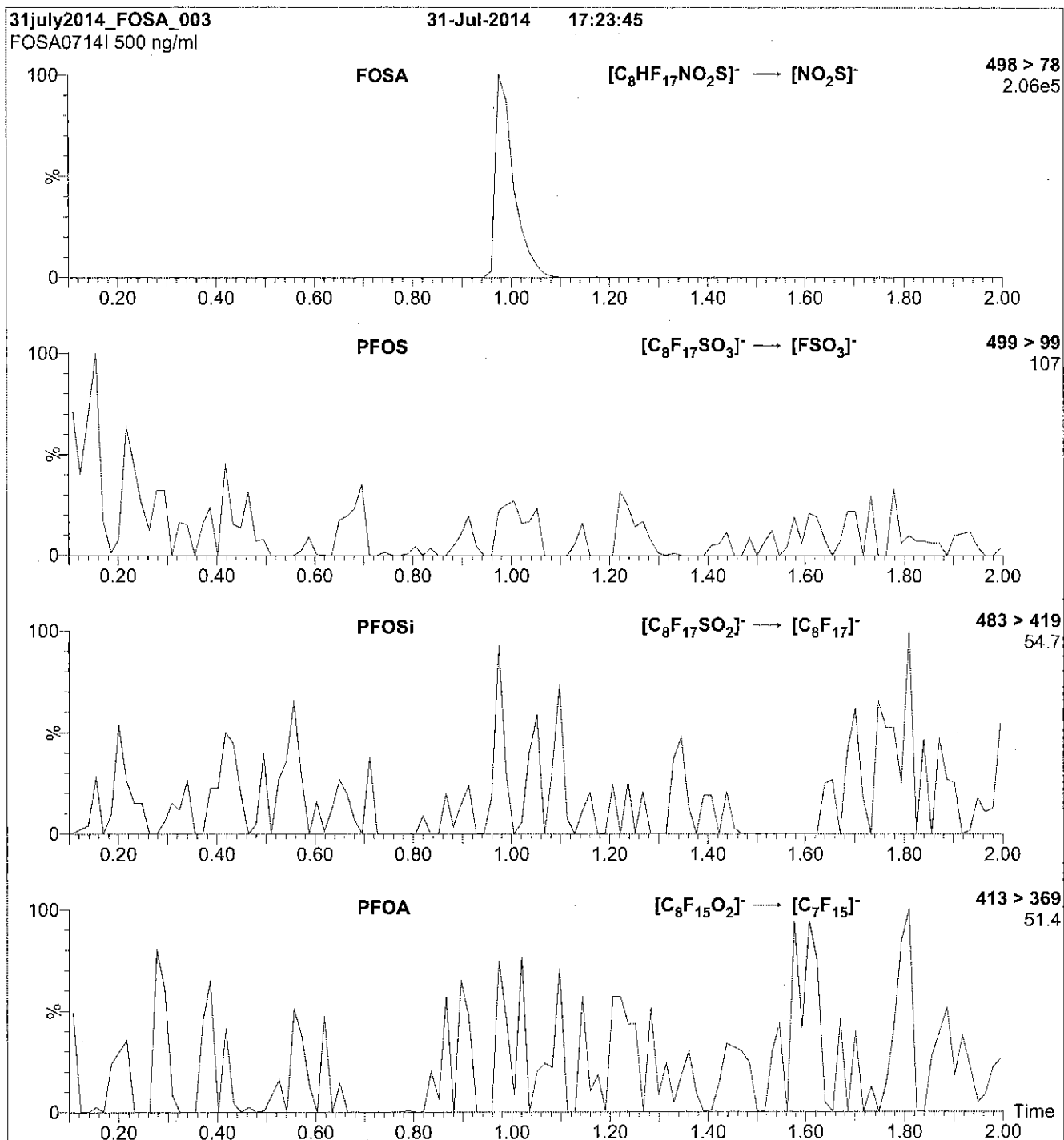
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml FOSA-I)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00003



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CERTIFICATE OF ANALYSIS DOCUMENTATION

Rec 7/15/14

PRODUCT CODE:

PFPeA

LOT NUMBER:

PFPeA0113

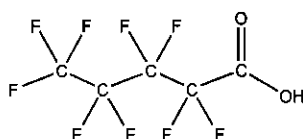
COMPOUND:

Perfluoro-n-pentanoic acid

STRUCTURE:

CAS #:

2706-90-3



MOLECULAR FORMULA:

$C_5H_2F_8O_2$

MOLECULAR WEIGHT:

264.05

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/03/2013

EXPIRY DATE: (mm/dd/yyyy)

01/03/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/14/2013

(mm/dd/yyyy)

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SYNTHESIS / CHARACTERIZATION:

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LIMITED WARRANTY:

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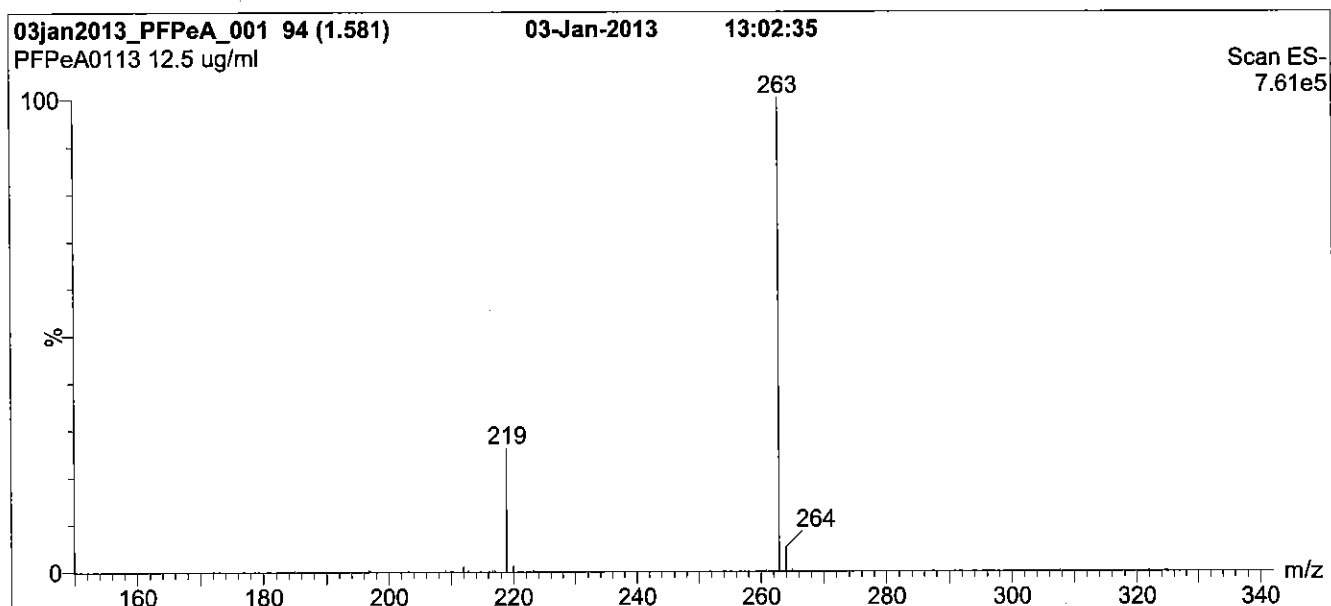
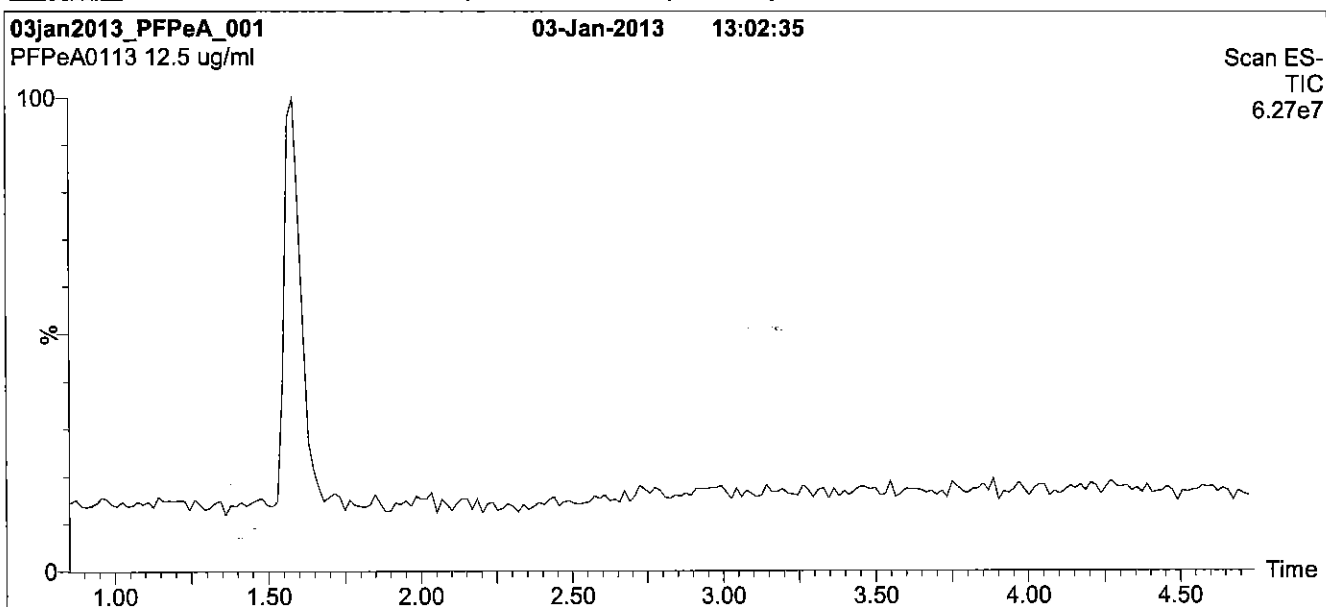
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Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

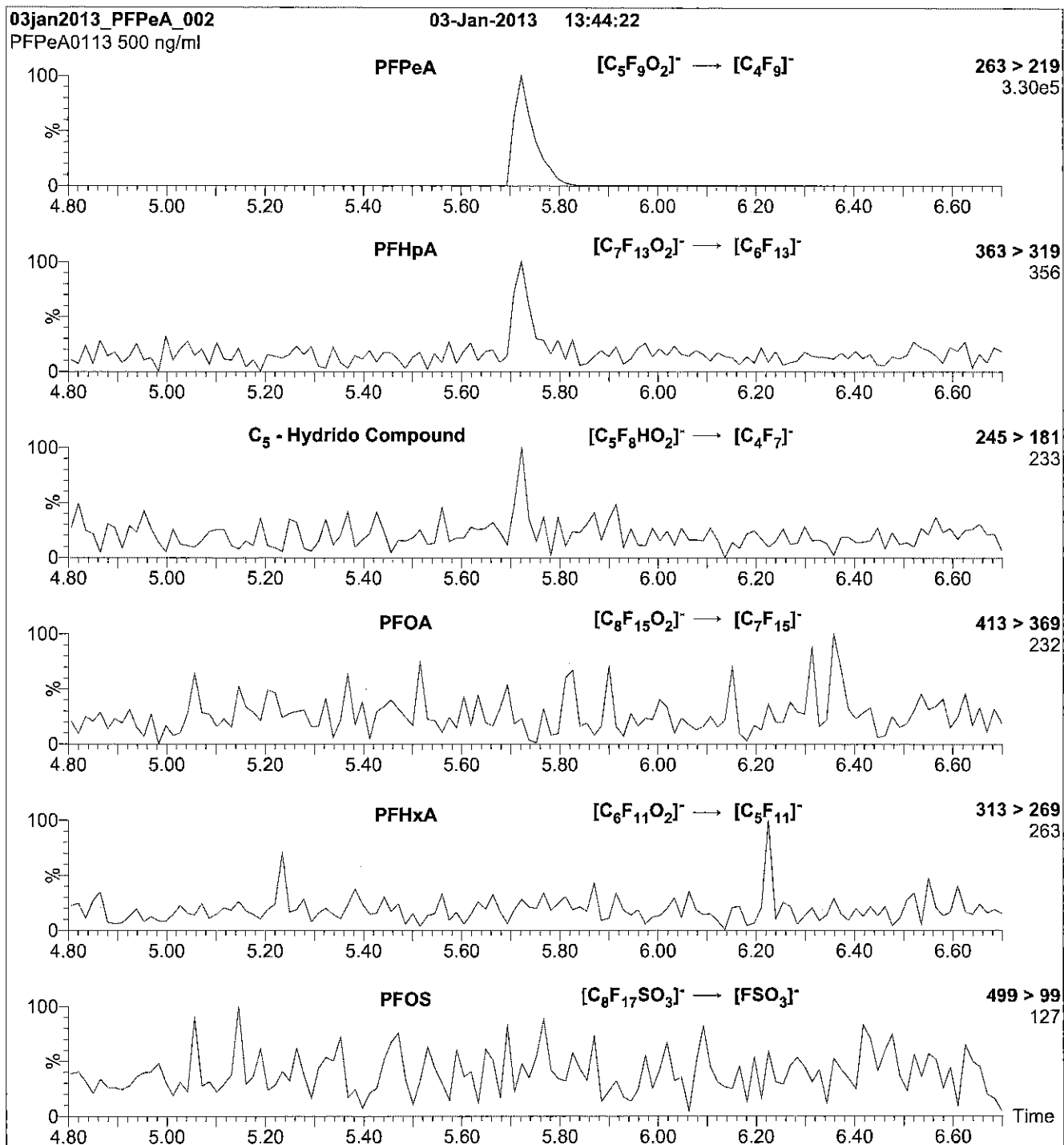
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCFPPeS_00002

12 2445 2



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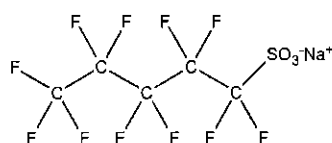
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
COMPOUND: Sodium perfluoro-1-pentanesulfonate

LOT NUMBER: LPFPeS0712

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_5F_{11}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $46.9 \pm 2.3 \mu\text{g/ml}$ (PFPeS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/04/2012
EXPIRY DATE: (mm/dd/yyyy) 07/04/2017
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 372.09
SOLVENT(S): Methanol

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/15/2013

(mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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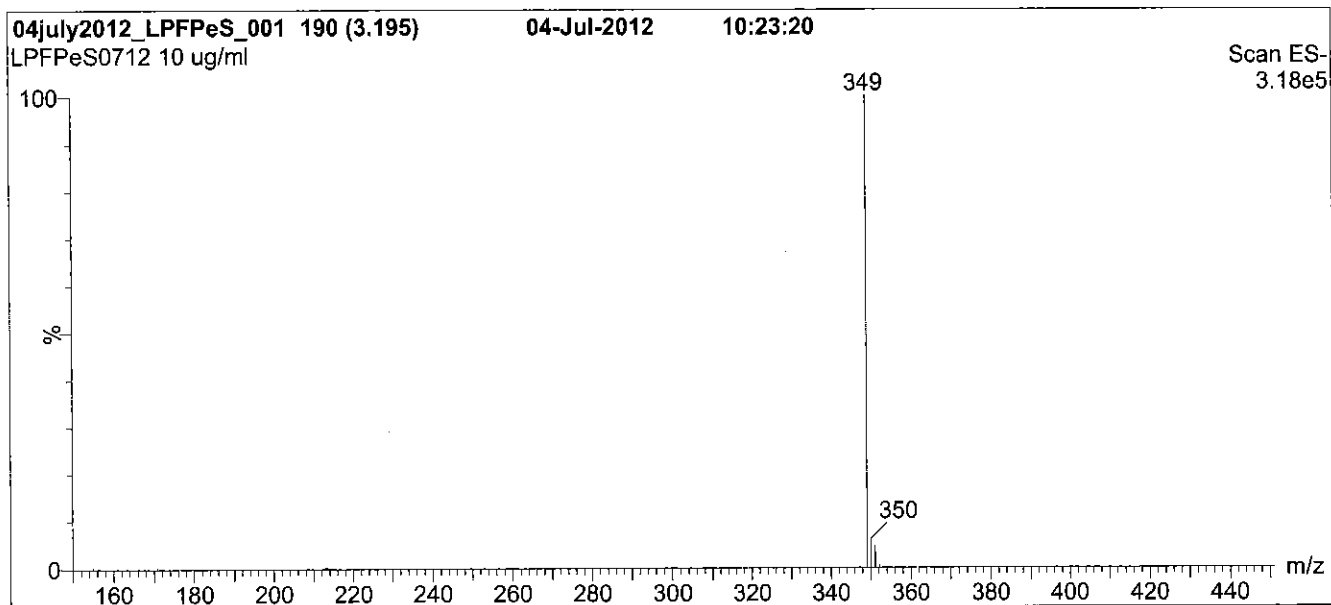
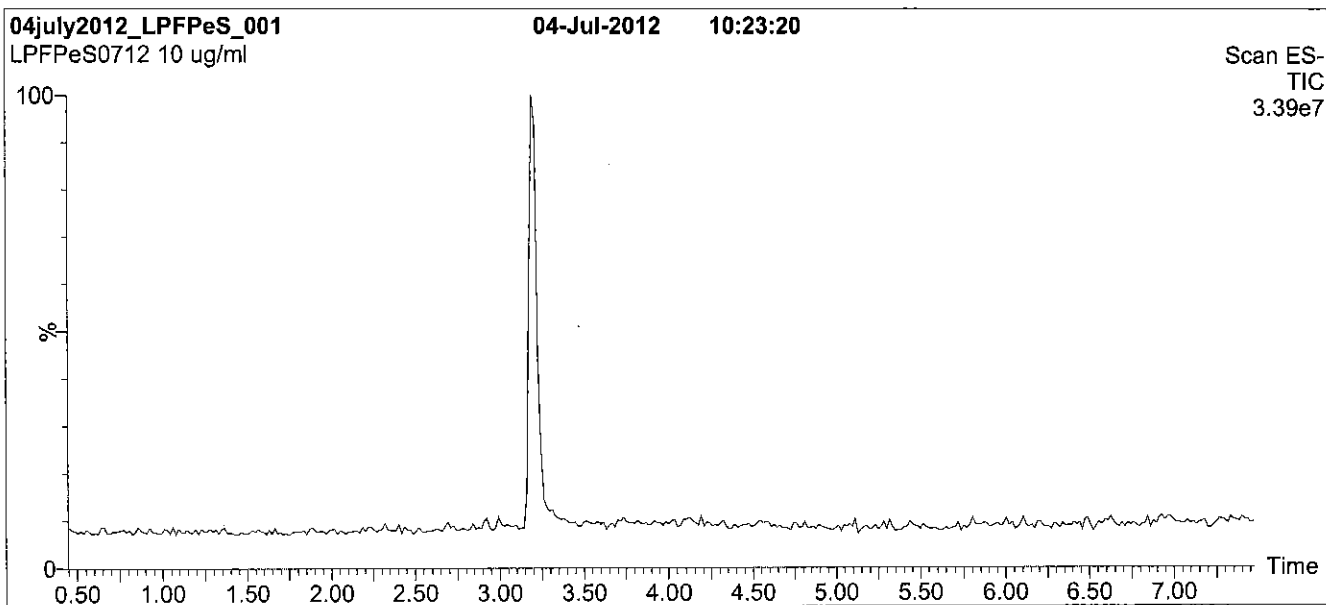
QUALITY MANAGEMENT:

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).



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Figure 1: L-PFPeS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

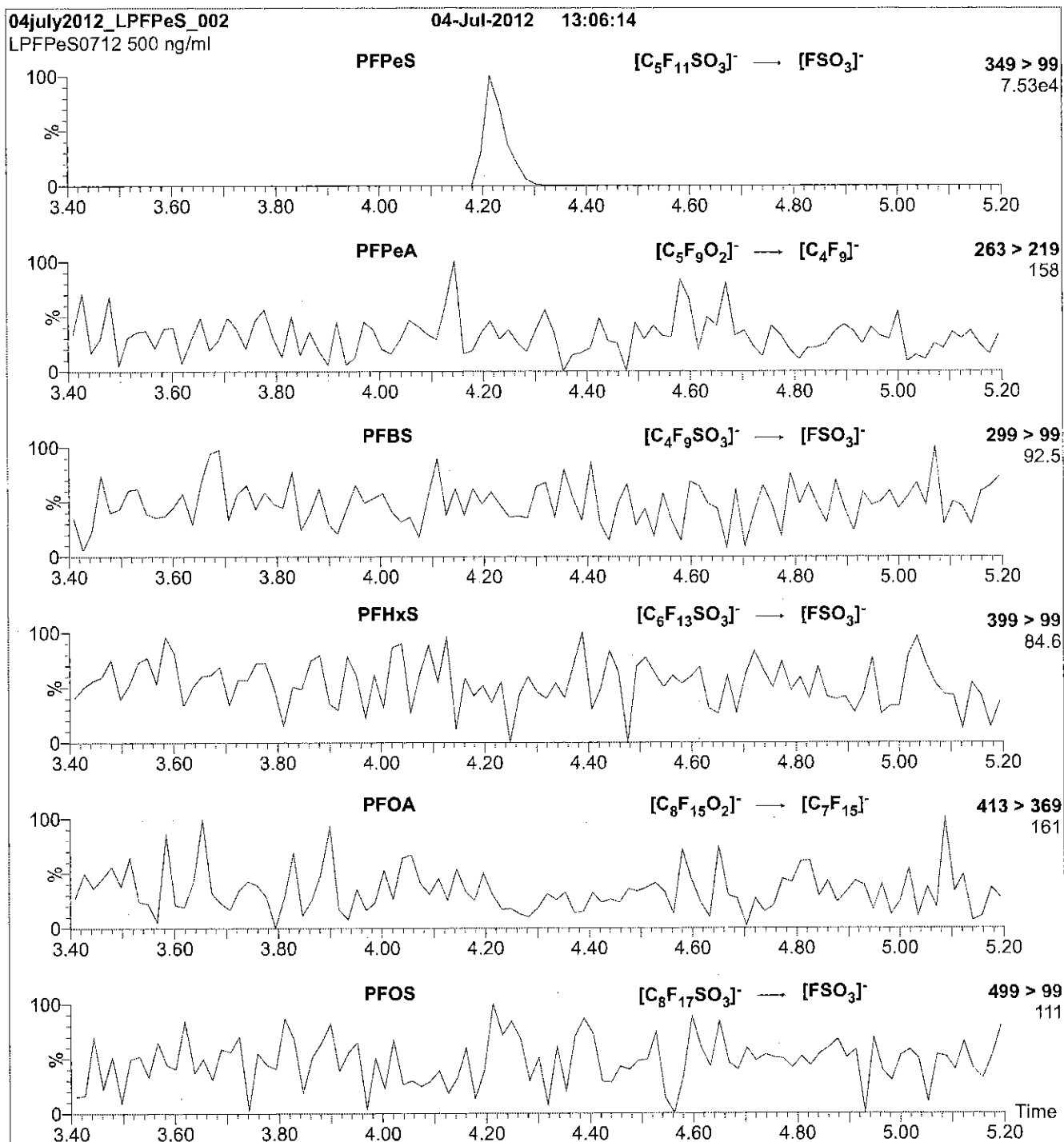
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFPeS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFPeS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 30

Reagent

LCPFTeDA_00003

vs 2/11/15 srw

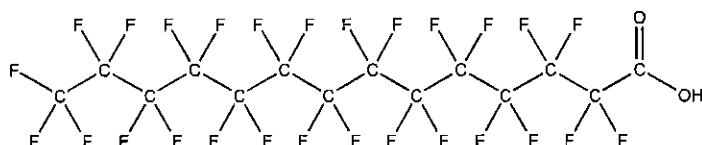


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA **LOT NUMBER:** PFTeDA0613
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE: **CAS #:** 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$ **MOLECULAR WEIGHT:** 714.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDa ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim Date: 07/17/2013
(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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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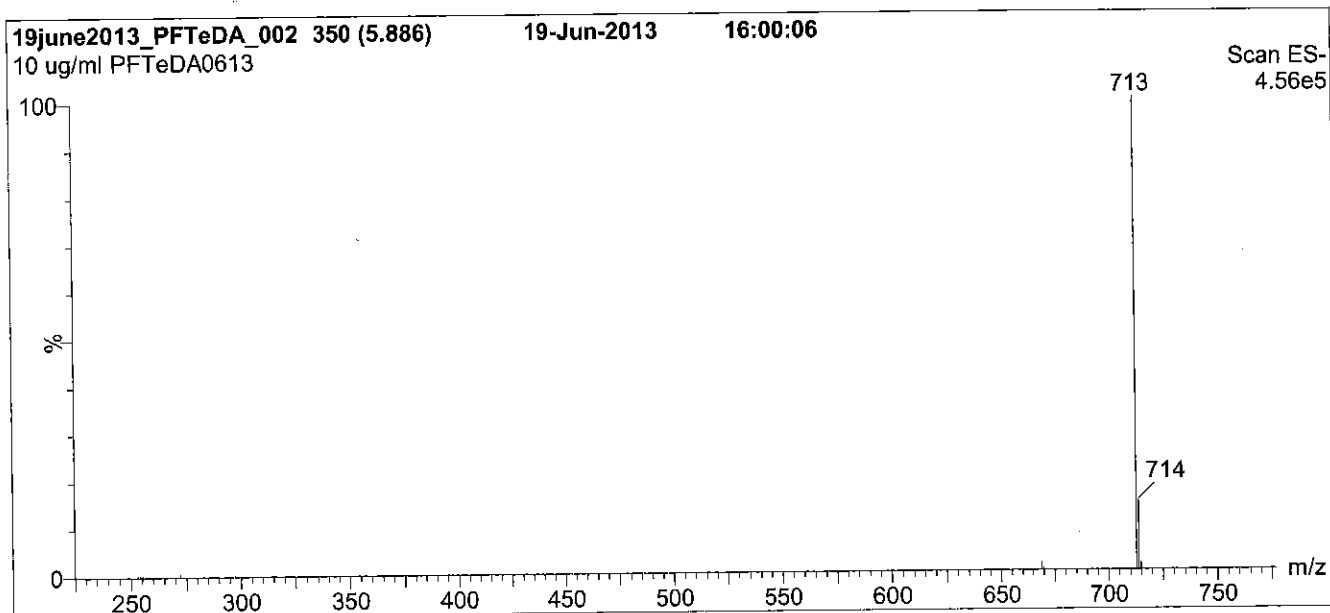
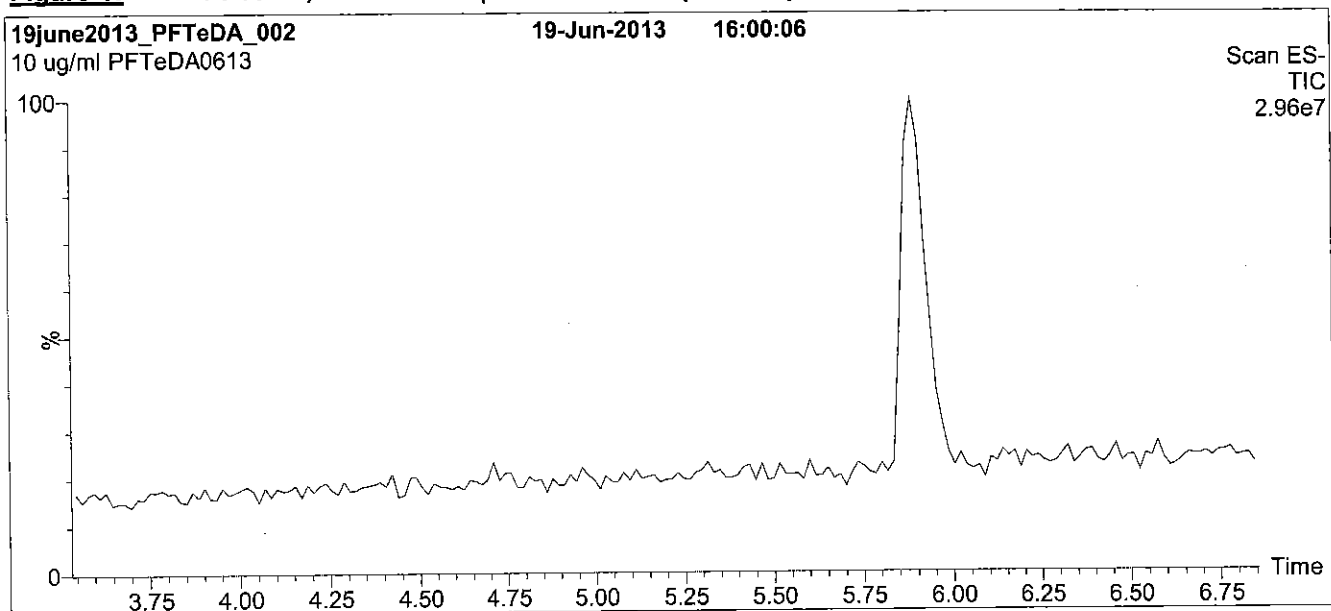
QUALITY MANAGEMENT:

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).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.50 min.
Time: 10 min

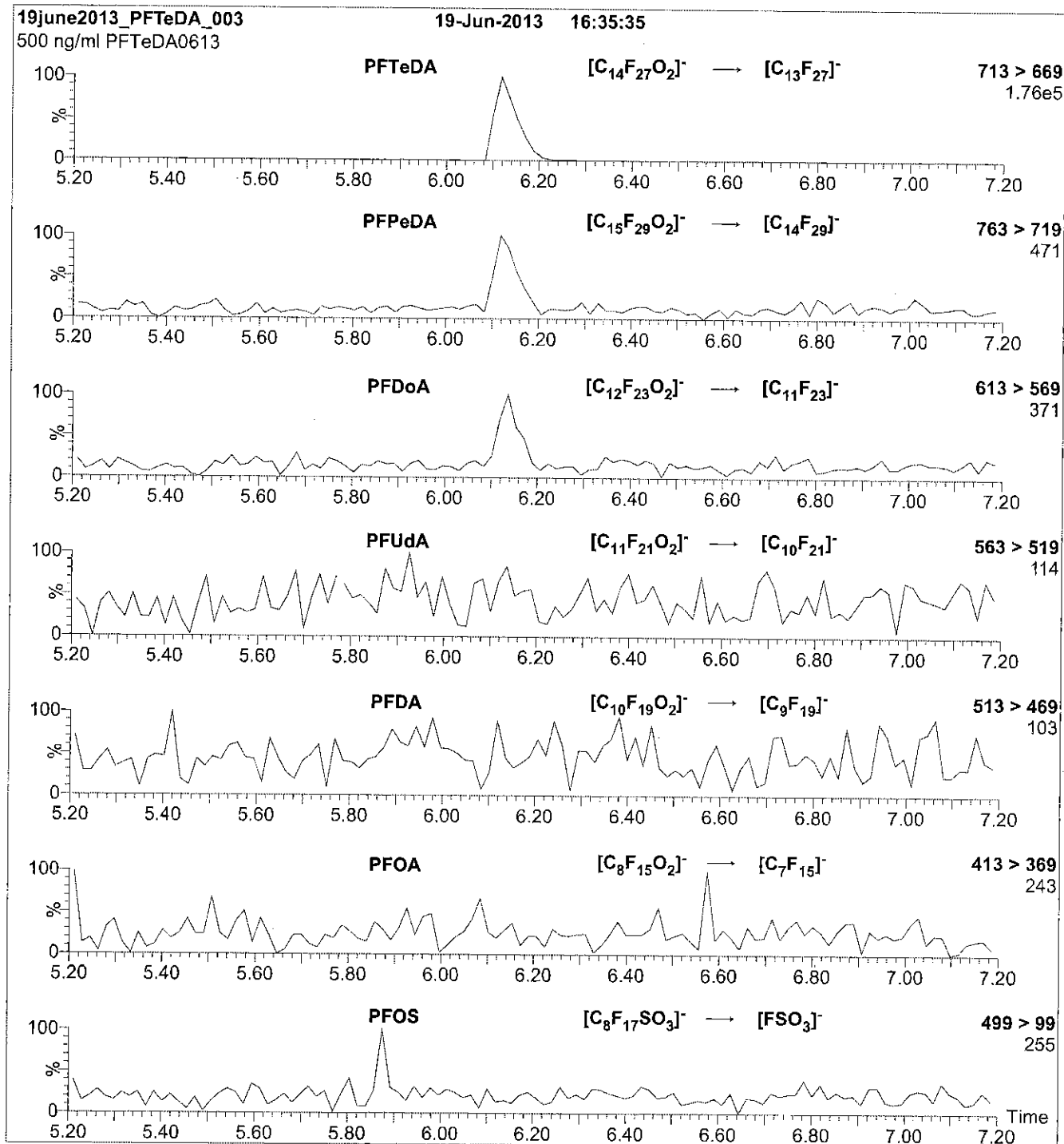
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00003



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTTrDA

LOT NUMBER:

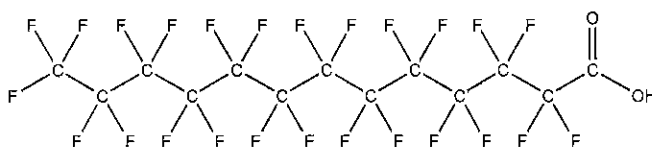
PFTTrDA1213

COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:**CAS #:**

72629-94-8

**MOLECULAR FORMULA:** $C_{13}H_{26}O_2$ **MOLECULAR WEIGHT:**

664.11

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/10/2013

EXPIRY DATE: (mm/dd/yyyy)

12/10/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUDA ($C_{11}H_{21}O_2$), ~ 0.4% of PFDa ($C_{12}H_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/11/2013

(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:

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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:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

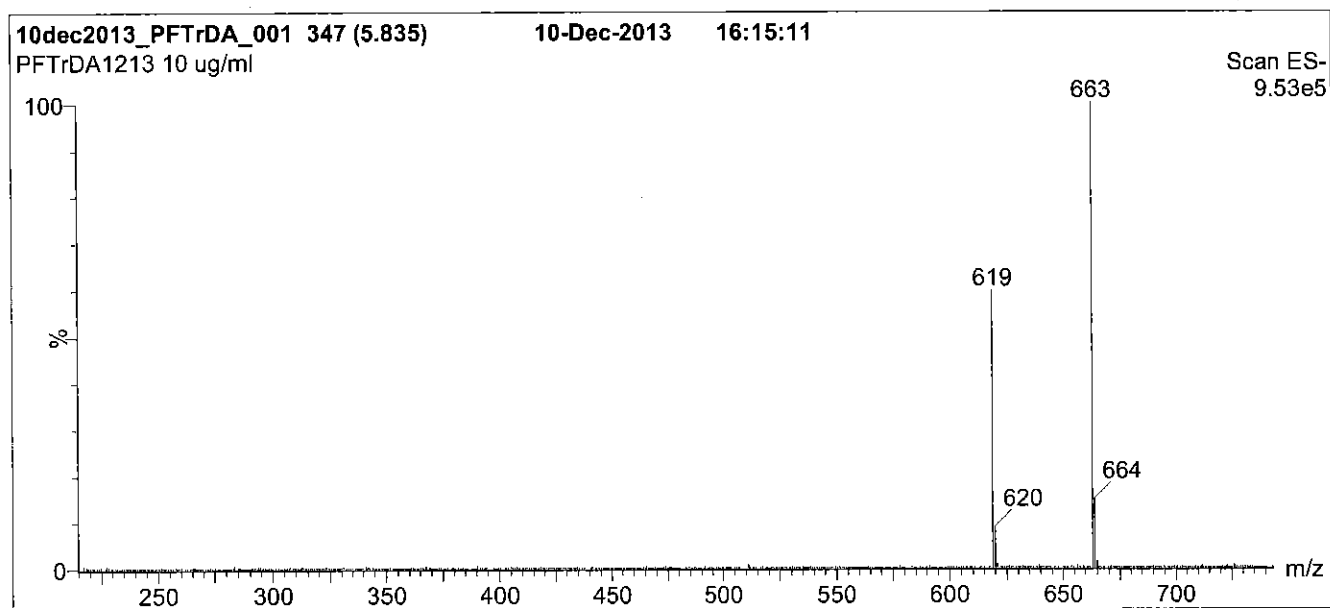
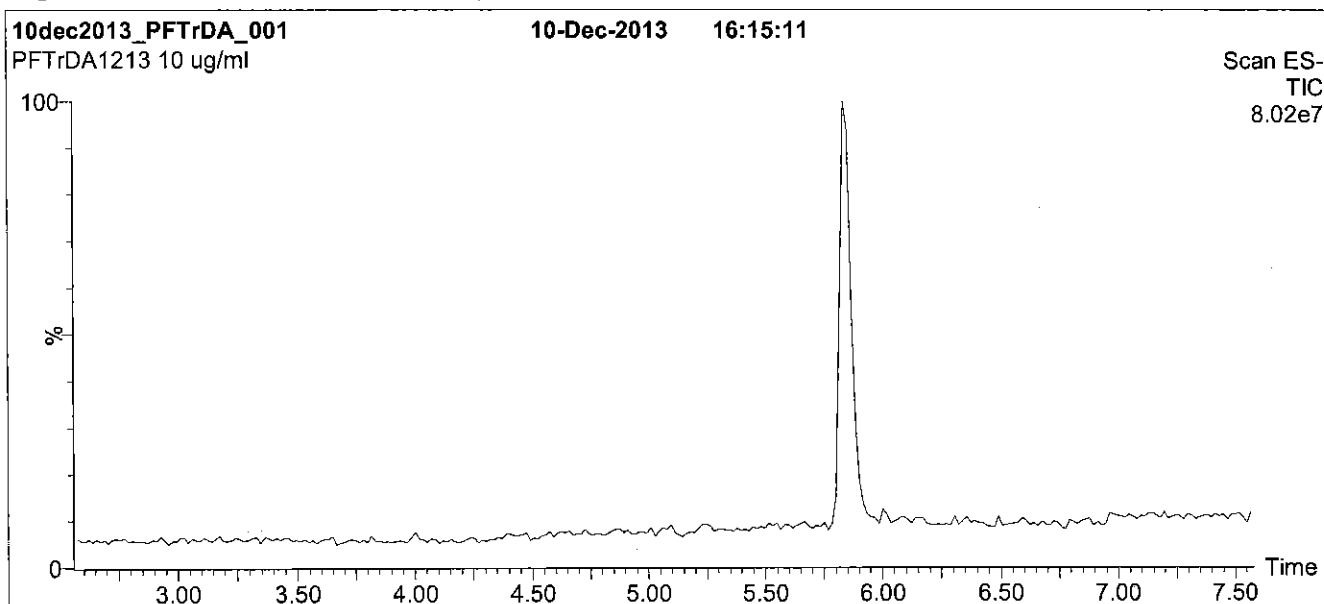
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).



REFERENCE MATERIAL PRODUCER

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

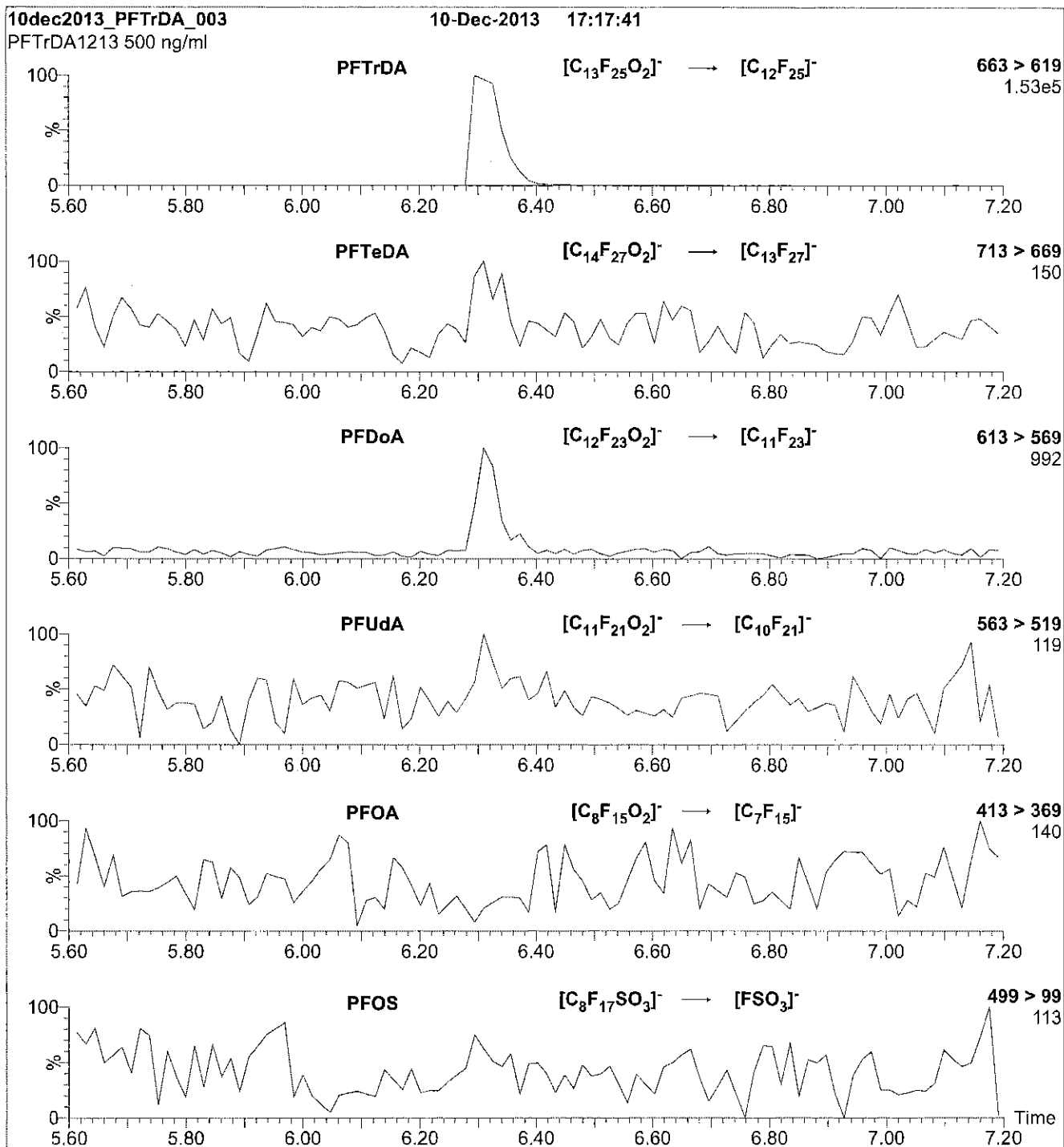
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00003

PC 2/11/15 SFV



WELLINGTON LABORATORIES

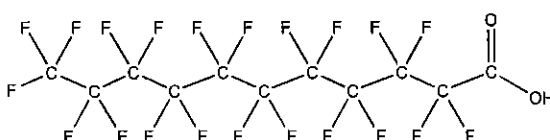
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid

LOT NUMBER: PFUdA0613

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 564.09
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/19/2013
EXPIRY DATE: (mm/dd/yyyy) 06/19/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 07/03/2013
(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:

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EXPIRY DATE / PERIOD OF VALIDITY:

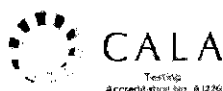
Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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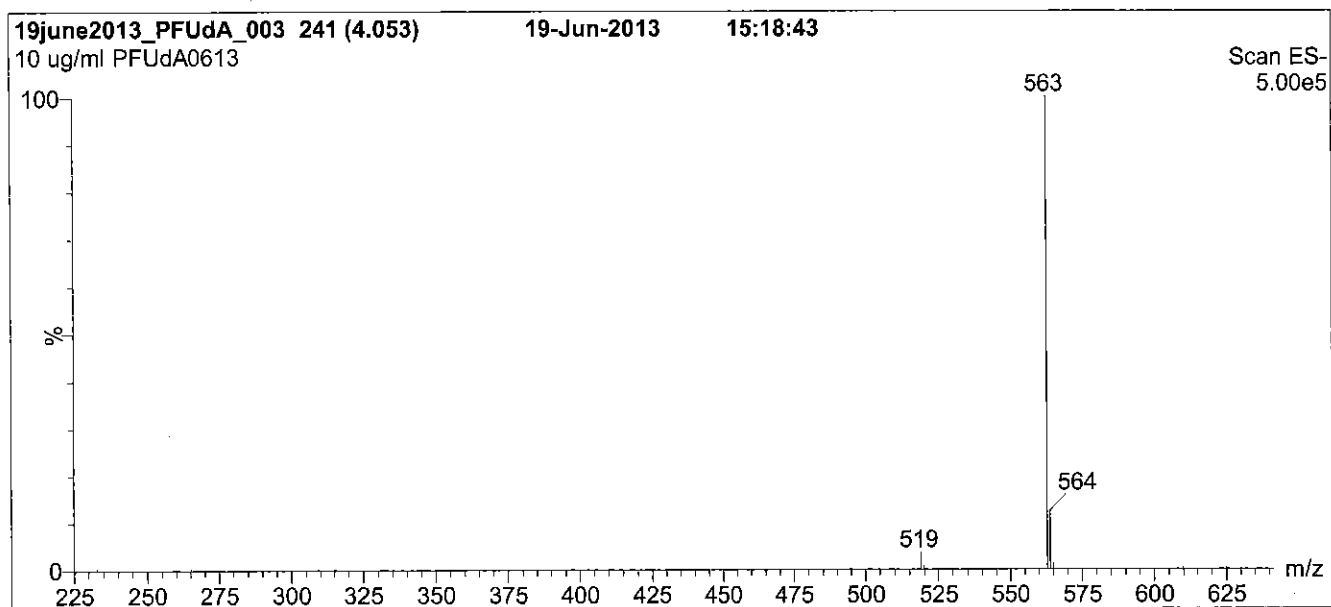
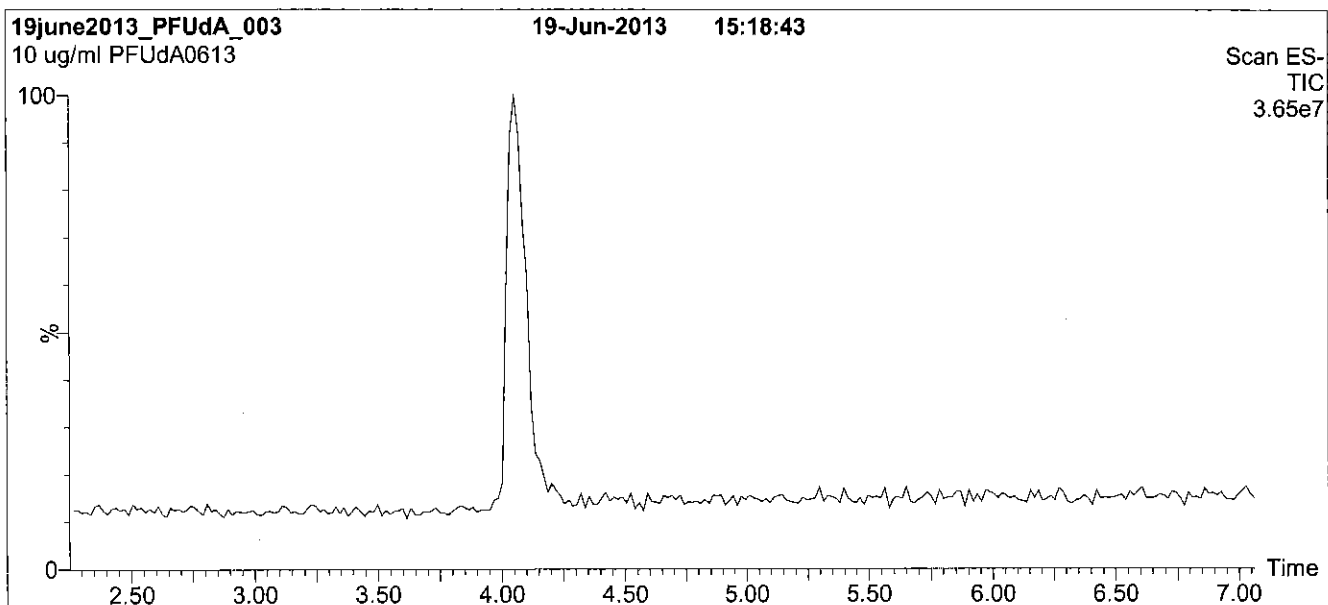
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

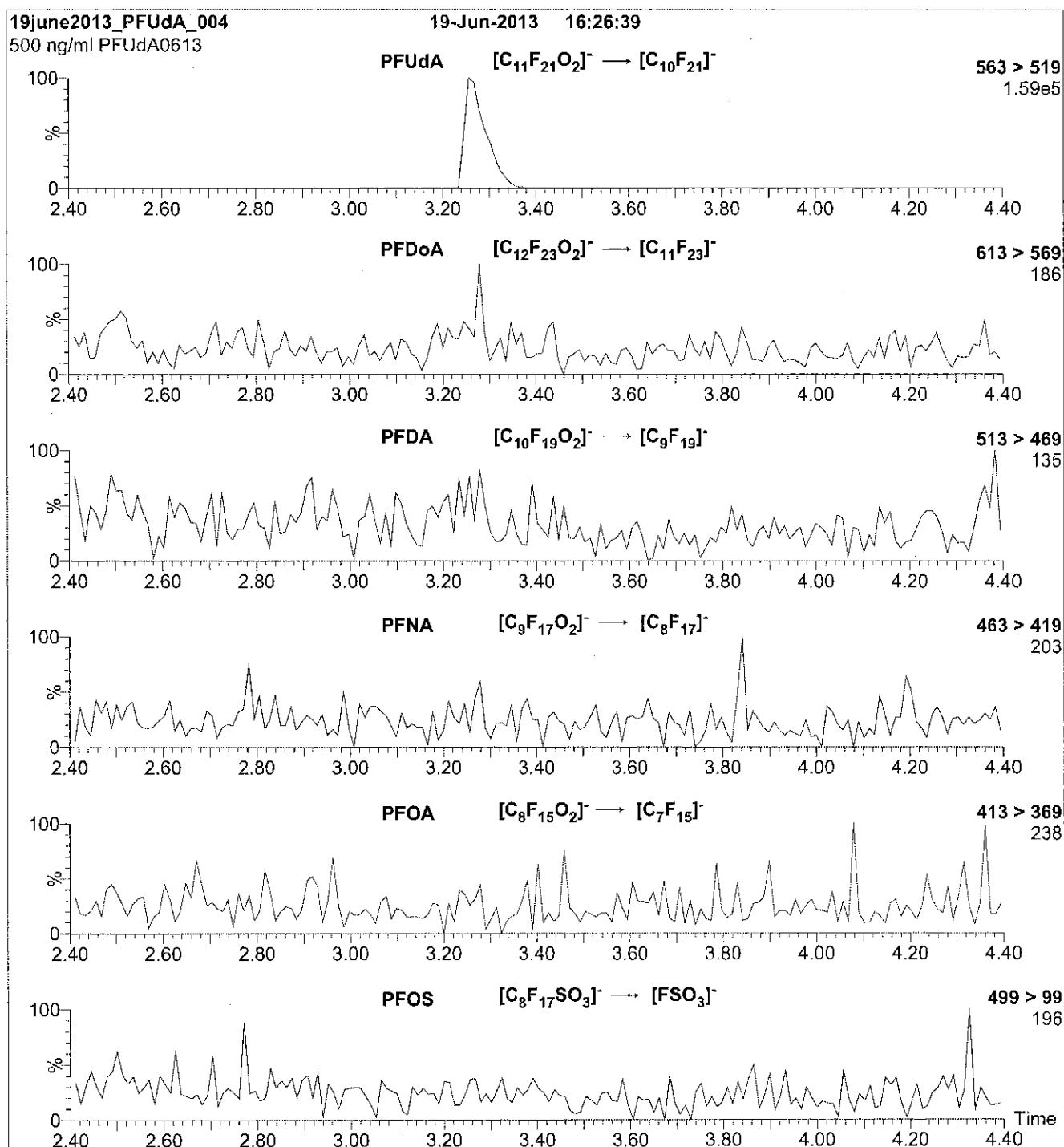
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
BC_2_22_16	320-17406-1	101	121	104	126	87	116
DW-1	320-17406-2	49	51	110	57	87	56
DW-1FB	320-17406-3	116	121	110	129	91	111
DW-56	320-17406-4	77	85	96	71	84	66
DW-56 RA	320-17406-4 RA	88	97	115	77	108	63
DW-56FB	320-17406-5	98	103	110	110	130	106
DW-56FB RA	320-17406-5 RA	105	103	94	104	98	96
DW-80	320-17406-6	62	59	110	58	149	50
DW-80 RA	320-17406-6 RA	63	59	91	54	92	43
DW-80FB	320-17406-7	104	97	108	112	156	113
DW-80FB RA	320-17406-7 RA	110	108	104	112	103	97
DW-44	320-17406-8	73	72	107	73	138	65
DW-44 RA	320-17406-8 RA	74	74	101	68	95	55
DW-44FB	320-17406-9	91	96	101	100	110	108
DW-44FB RA	320-17406-9 RA	99	94	88	96	93	90
DW-15	320-17406-10	65	64	87	73	92	72
DW-15 RA	320-17406-10 RA	84	83	103	76	107	71
DW-15FB	320-17406-11	94	98	100	103	98	104
DW-15FB RA	320-17406-11 RA	95	92	91	93	93	90
DW-19	320-17406-12	76	77	97	81	111	79
DW-19 RA	320-17406-12 RA	81	79	92	76	95	67
DW-19FB	320-17406-13	94	93	107	106	103	101
DW-19FB RA	320-17406-13 RA	95	95	87	94	93	88
DW-68	320-17406-14	77	92	97	103	105	123
DW-68 RA	320-17406-14 RA	79	87	84	89	87	95
DW-68FB	320-17406-15	93	95	102	108	116	107
DW-68FB RA	320-17406-15 RA	105	102	99	103	106	101
DW-55	320-17406-16	81	84	93	80	93	82
DW-55FB	320-17406-17	90	95	93	103	112	101
DW-55FB RA	320-17406-17 RA	106	106	99	105	102	95
DW-95	320-17406-18	50	50	85	46	88	40
DW-95 RA	320-17406-18 RA	72	69	101	60	100	42
DW-95FB	320-17406-19	97	93	100	98	105	97
DW-95FB RA	320-17406-19 RA	113	110	104	111	108	106
DW-6	320-17406-20	69	69	99	65	96	54

QC LIMITS

PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
DW-6 RA	320-17406-20 RA	83	81	105	73	105	54
DW-6FB	320-17406-21	91	95	98	99	103	97
DW-37	320-17406-22	79	78	114	67	114	44
DW-37FB	320-17406-23	88	82	90	101	117	98
DUP-022216	320-17406-24	65	62	101	59	113	57
	MB 320-101543/1-A	114	110	113	116	141	109
	MB 320-101659/1-A	95	99	98	111	98	113
	MB 320-101659/1-A RA	107	109	106	106	109	99
	LCS 320-101543/2-A	103	108	106	99	134	100
	LCS 320-101659/2-A	92	91	96	99	117	102
	LCS 320-101659/2-A RA	91	94	86	89	92	85
	LCSD 320-101543/3-A	106	110	109	101	150	109
	LCSD 320-101659/3-A	90	90	97	91	117	102
	LCSD 320-101659/3-A RA	95	91	90	87	84	85

	<u>QC LIMITS</u>
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 26FEB2016A4A_016.d
 Lab ID: LCS 320-101543/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
13C2 PFHxA	100	103	103	25-150	
13C4 PFOA	100	99.5	99	25-150	
13C4 PFOS	95.6	128	134	25-150	
13C4-PFHpA	100	108	108	25-150	
13C5 PFNA	100	100	100	25-150	
18O2 PFHxS	94.6	100	106	25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	42.3	120	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	36.8	92	60-140	
Perfluorohexanesulfonic acid (PFHxS)	37.8	30.7	81	60-140	
Perfluorononanoic acid (PFNA)	40.0	40.7	102	60-140	
Perfluorooctanesulfonic acid (PFOS)	38.2	28.7	75	60-140	
Perfluorooctanoic acid (PFOA)	40.0	40.6	101	60-140	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 26FEB2016A4A_039.d
 Lab ID: LCS 320-101659/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
13C2 PFHxA	100	92.1	92	25-150	
13C4 PFOA	100	99.3	99	25-150	
13C4 PFOS	95.6	112	117	25-150	
13C4-PFHpA	100	91.1	91	25-150	
13C5 PFNA	100	102	102	25-150	
18O2 PFHxS	94.6	90.5	96	25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	37.0	105	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	37.3	93	60-140	
Perfluorohexanesulfonic acid (PFHxS)	37.8	34.2	90	60-140	
Perfluorononanoic acid (PFNA)	40.0	41.8	105	60-140	
Perfluorooctanoic acid (PFOA)	40.0	40.1	100	60-140	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: 29FEB2016A6B_009.d
Lab ID: LCS 320-101659/2-A RA Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
13C2 PFHxA	100	91.4	91	25-150	
13C4 PFOA	100	88.6	89	25-150	
13C4 PFOS	95.6	88.3	92	25-150	
13C4-PFHpA	100	93.8	94	25-150	
13C5 PFNA	100	85.4	85	25-150	
18O2 PFHxS	94.6	81.3	86	25-150	
Perfluorooctanesulfonic acid (PFOS)	38.2	37.6	98	60-140	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 26FEB2016A4A_017.d
 Lab ID: LCSD 320-101543/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
13C2 PFHxA	100	106	106			25-150	
13C4 PFOA	100	101	101			25-150	
13C4 PFOS	95.6	143	150			25-150	
13C4-PFHpA	100	110	110			25-150	
13C5 PFNA	100	109	109			25-150	
18O2 PFHxS	94.6	103	109			25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	40.8	115	4	30	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	34.5	86	6	30	60-140	
Perfluorohexanesulfonic acid (PFHxS)	37.8	30.8	81	0	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	39.2	98	4	30	60-140	
Perfluorooctanesulfonic acid (PFOS)	38.2	27.5	72	4	30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	39.1	98	4	30	60-140	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 26FEB2016A4A_040.d
 Lab ID: LCSD 320-101659/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
13C2 PFHxA	100	89.6	90			25-150	
13C4 PFOA	100	91.3	91			25-150	
13C4 PFOS	95.6	112	117			25-150	
13C4-PFHpA	100	90.5	90			25-150	
13C5 PFNA	100	102	102			25-150	
18O2 PFHxS	94.6	92.2	97			25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	38.2	108	3	30	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	42.5	106	13	30	60-140	
Perfluorohexanesulfonic acid (PFHxS)	37.8	33.3	88	3	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	38.6	97	8	30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	39.5	99	2	30	60-140	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 29FEB2016A6B_010.d
 Lab ID: LCSD 320-101659/3-A RA Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
13C2 PFHxA	100	95.2	95			25-150	
13C4 PFOA	100	87.3	87			25-150	
13C4 PFOS	95.6	79.9	84			25-150	
13C4-PFHpA	100	91.5	91			25-150	
13C5 PFNA	100	84.9	85			25-150	
18O2 PFHxS	94.6	85.0	90			25-150	
Perfluorooctanesulfonic acid (PFOS)	38.2	42.2	110	11	30	60-140	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab File ID: 26FEB2016A4A_015.d Lab Sample ID: MB 320-101543/1-A
 Matrix: Water Date Extracted: 02/25/2016 10:17
 Instrument ID: A4 Date Analyzed: 02/26/2016 20:38
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-101543/2-A	26FEB2016A4 A 016.d	02/26/2016 20:59
	LCSD 320-101543/3-A	26FEB2016A4 A 017.d	02/26/2016 21:20
BC_2_22_16	320-17406-1	26FEB2016A4 A 033.d	02/27/2016 02:59
DW-1	320-17406-2	26FEB2016A4 A 034.d	02/27/2016 03:20
DW-1FB	320-17406-3	26FEB2016A4 A 035.d	02/27/2016 03:41
DW-56	320-17406-4	26FEB2016A4 A 037.d	02/27/2016 10:09
DW-56 RA	320-17406-4 RA	29FEB2016A6 B 007.d	02/29/2016 18:57

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab File ID: 26FEB2016A4A_038.d Lab Sample ID: MB 320-101659/1-A
 Matrix: Water Date Extracted: 02/26/2016 08:58
 Instrument ID: A4 Date Analyzed: 02/27/2016 10:31
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-101659/2-A	26FEB2016A4 A 039.d	02/27/2016 10:52
	LCSD 320-101659/3-A	26FEB2016A4 A 040.d	02/27/2016 11:13
DW-56FB	320-17406-5	26FEB2016A4 A 041.d	02/27/2016 11:34
DW-80	320-17406-6	26FEB2016A4 A 042.d	02/27/2016 11:56
DW-80FB	320-17406-7	26FEB2016A4 A 043.d	02/27/2016 12:17
DW-44	320-17406-8	26FEB2016A4 A 044.d	02/27/2016 12:38
DW-44FB	320-17406-9	26FEB2016A4 A 045.d	02/27/2016 12:59
DW-15	320-17406-10	26FEB2016A4 A 046.d	02/27/2016 13:20
DW-15FB	320-17406-11	26FEB2016A4 A 048.d	02/27/2016 14:03
DW-19	320-17406-12	26FEB2016A4 A 049.d	02/27/2016 14:24
DW-19FB	320-17406-13	26FEB2016A4 A 050.d	02/27/2016 14:45
DW-68	320-17406-14	26FEB2016A4 A 051.d	02/27/2016 15:06
DW-68FB	320-17406-15	26FEB2016A4 A 052.d	02/27/2016 15:27
DW-55FB	320-17406-17	26FEB2016A4 A 054.d	02/27/2016 16:10
DW-95	320-17406-18	26FEB2016A4 A 055.d	02/27/2016 16:31
DW-95FB	320-17406-19	26FEB2016A4 A 056.d	02/27/2016 16:52
DW-6	320-17406-20	26FEB2016A4 A 057.d	02/27/2016 17:13
DW-6FB	320-17406-21	26FEB2016A4 A 059.d	02/27/2016 17:56
DW-37	320-17406-22	26FEB2016A4 A 060.d	02/27/2016 18:17
DW-37FB	320-17406-23	26FEB2016A4 A 061.d	02/27/2016 18:38
DUP-022216	320-17406-24	26FEB2016A4 A 062.d	02/27/2016 18:59

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab File ID: 29FEB2016A6B_008.d Lab Sample ID: MB 320-101659/1-A
 Matrix: Water Date Extracted: 02/26/2016 08:58
 Instrument ID: A6 Date Analyzed: 02/29/2016 19:18
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-101659/2-A RA	29FEB2016A6 B 009.d	02/29/2016 19:40
	LCSD 320-101659/3-A RA	29FEB2016A6 B 010.d	02/29/2016 20:01
DW-56FB RA	320-17406-5 RA	29FEB2016A6 B 011.d	02/29/2016 20:22
DW-80 RA	320-17406-6 RA	29FEB2016A6 B 012.d	02/29/2016 20:43
DW-80FB RA	320-17406-7 RA	29FEB2016A6 B 013.d	02/29/2016 21:05
DW-44 RA	320-17406-8 RA	29FEB2016A6 B 014.d	02/29/2016 21:26
DW-44FB RA	320-17406-9 RA	29FEB2016A6 B 015.d	02/29/2016 21:47
DW-15 RA	320-17406-10 RA	29FEB2016A6 B 016.d	02/29/2016 22:08
DW-15FB RA	320-17406-11 RA	29FEB2016A6 B 018.d	02/29/2016 22:51
DW-19 RA	320-17406-12 RA	29FEB2016A6 B 019.d	02/29/2016 23:12
DW-19FB RA	320-17406-13 RA	29FEB2016A6 B 020.d	02/29/2016 23:33
DW-68 RA	320-17406-14 RA	29FEB2016A6 B 021.d	02/29/2016 23:54
DW-68FB RA	320-17406-15 RA	29FEB2016A6 B 022.d	03/01/2016 00:16
DW-55	320-17406-16	29FEB2016A6 B 023.d	03/01/2016 00:37
DW-55FB RA	320-17406-17 RA	29FEB2016A6 B 024.d	03/01/2016 00:58
DW-95 RA	320-17406-18 RA	29FEB2016A6 B 025.d	03/01/2016 01:19
DW-95FB RA	320-17406-19 RA	29FEB2016A6 B 026.d	03/01/2016 01:41
DW-6 RA	320-17406-20 RA	29FEB2016A6 B 027.d	03/01/2016 02:02

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>BC_2_22_16</u>	Lab Sample ID: <u>320-17406-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_033.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 11:02</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/25/2016 10:17</u>
Sample wt/vol: <u>489.6(mL)</u>	Date Analyzed: <u>02/27/2016 02:59</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.6	2.0	0.94
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.6	2.0	0.82
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.6	2.0	0.89
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.6	2.0	0.67
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.1	U	4.1	3.1	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.6	2.0	0.76

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		25-150
STL00990	13C4 PFOA	126		25-150
STL00991	13C4 PFOS	87		25-150
STL01892	13C4-PFHxA	121		25-150
STL00995	13C5 PFNA	116		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_033.d
 Lims ID: 320-17406-A-1-A Lab Sample ID: 320-17406-1
 Client ID: BC_2_22_16
 Sample Type: Client
 Inject. Date: 27-Feb-2016 02:59:35 ALS Bottle#: 18 Worklist Smp#: 29
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-1-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:19:39 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:49:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.837	7.404	0.433	1.000	1620	0.0715				
D 6 13C2 PFHxA										
314.6 > 269.7	9.097	8.604	0.493		4069805	50.5		101	6444	
D 8 13C4-PFHpA										
366.6 > 321.6	10.335	9.856	0.479		4095422	60.3		121	7637	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.361	9.892	0.469	1.000	5083	0.1326				
D 11 18O2 PFHxS										
402.5 > 83.6	10.361	9.892	0.469		1787639	49.3		104	4613	
D 12 13C4 PFOA										
416.5 > 371.6	11.383	10.958	0.425		4932990	62.9		126	9131	
D 16 13C4 PFOS										
502.4 > 79.7	12.258	11.876	0.382		675485	41.4		86.7	1668	
D 17 13C5 PFNA										
467.5 > 422.6	12.284	11.898	0.386		3770898	58.2		116	6795	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_033.d

Injection Date: 27-Feb-2016 02:59:35

Instrument ID: A4

Lims ID: 320-17406-A-1-A

Lab Sample ID: 320-17406-1

Client ID: BC_2_22_16

Operator ID: JRB

ALS Bottle#: 18

Worklist Smp#: 29

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

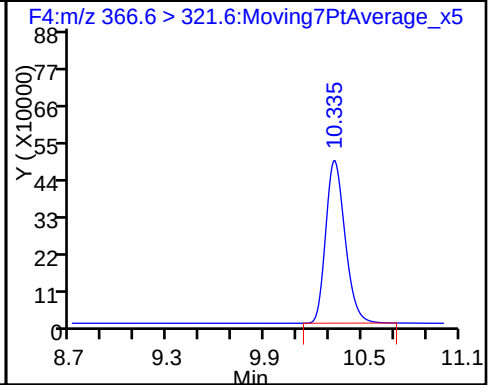
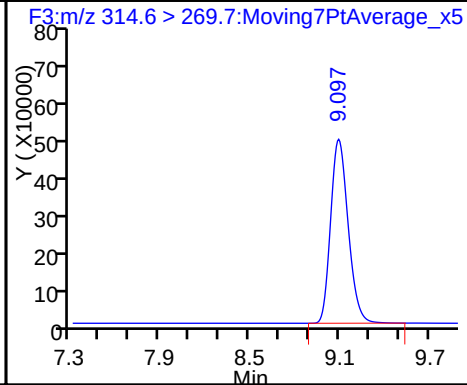
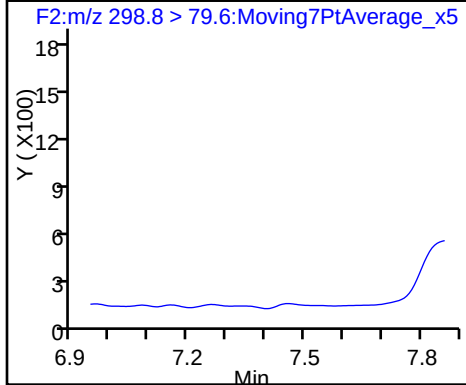
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

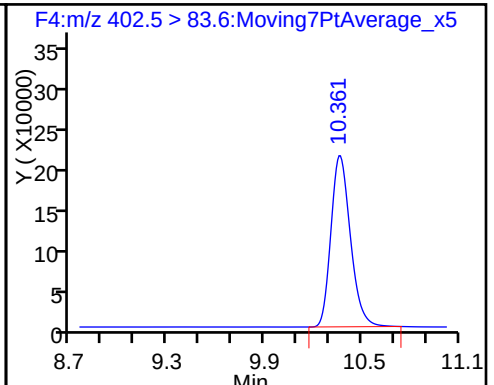
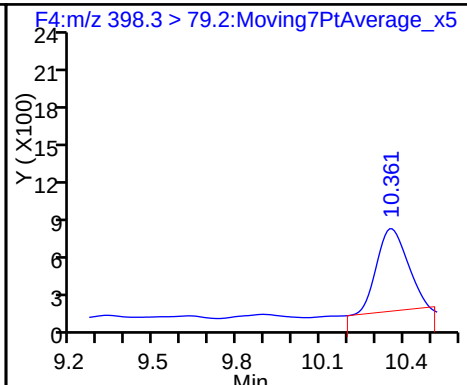
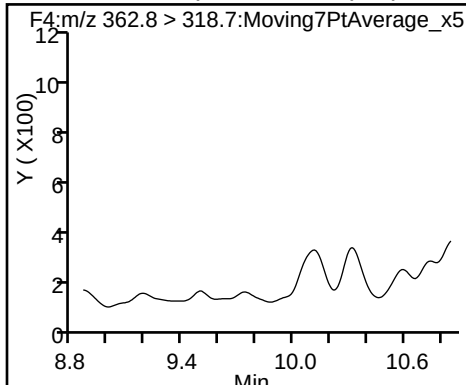
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid

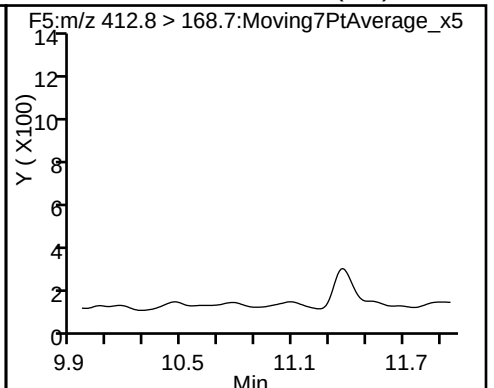
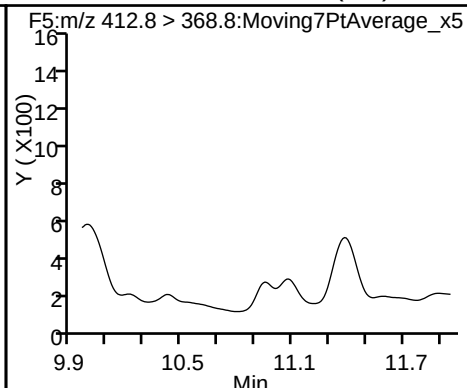
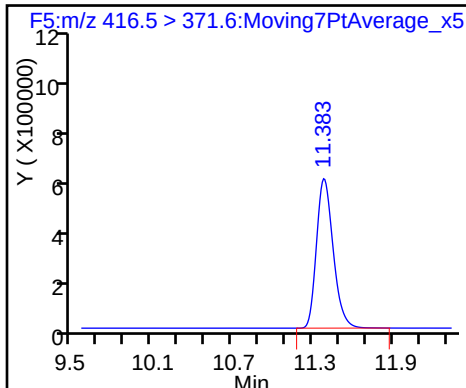
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

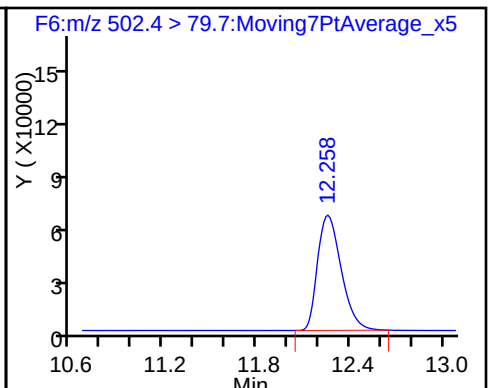
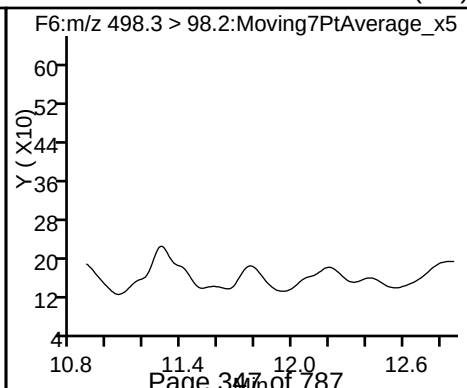
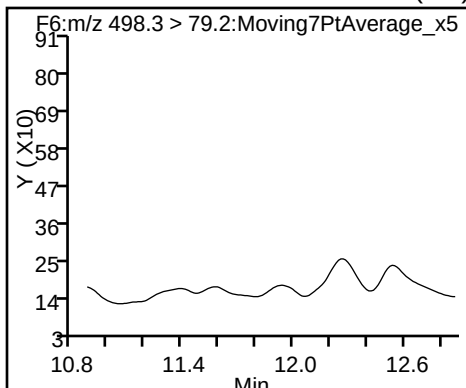
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

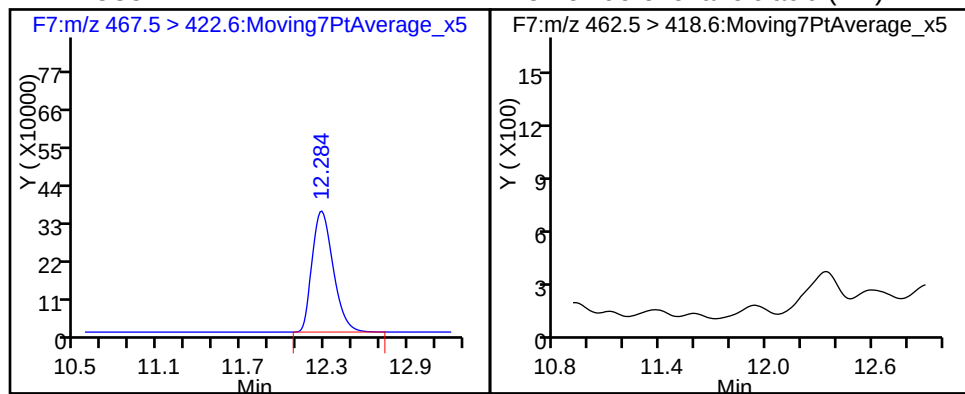
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-1</u>	Lab Sample ID: <u>320-17406-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_034.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 11:31</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/25/2016 10:17</u>
Sample wt/vol: <u>546.1 (mL)</u>	Date Analyzed: <u>02/27/2016 03:20</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.84
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.80
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.60
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	2.7	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	49		25-150
STL00990	13C4 PFOA	57		25-150
STL00991	13C4 PFOS	87		25-150
STL01892	13C4-PFHpA	51		25-150
STL00995	13C5 PFNA	56		25-150
STL00994	18O2 PFHxS	110		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_034.d
 Lims ID: 320-17406-A-2-A Lab Sample ID: 320-17406-2
 Client ID: DW-1
 Sample Type: Client
 Inject. Date: 27-Feb-2016 03:20:47 ALS Bottle#: 19 Worklist Smp#: 30
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-2-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:19:39 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 27-Feb-2016 11:50:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.245	8.604	0.641		1971178	24.5		48.9	6128	
D 8 13C4-PFHpA										
366.6 > 321.6	10.480	9.856	0.624		1719035	25.3		50.6	4317	
D 11 18O2 PFHxS										
402.5 > 83.6	10.515	9.892	0.623		1880266	51.8		110	4531	
D 12 13C4 PFOA										
416.5 > 371.6	11.523	10.958	0.565		2249982	28.7		57.4	3952	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.533	10.958	0.575	1.000	6170	0.2610			4.4	
D 16 13C4 PFOS										
502.4 > 79.7	12.384	11.876	0.508		676468	41.5		86.8	1765	
D 17 13C5 PFNA										
467.5 > 422.6	12.411	11.898	0.513		1821645	28.1		56.2	2970	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_034.d

Injection Date: 27-Feb-2016 03:20:47

Instrument ID: A4

Lims ID: 320-17406-A-2-A

Lab Sample ID: 320-17406-2

Client ID: DW-1

Operator ID: JRB

ALS Bottle#: 19

Worklist Smp#: 30

Injection Vol: 15.0 ul

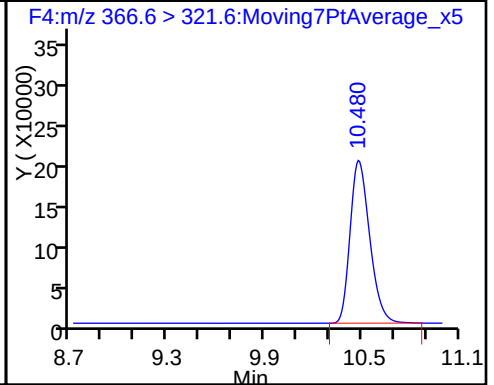
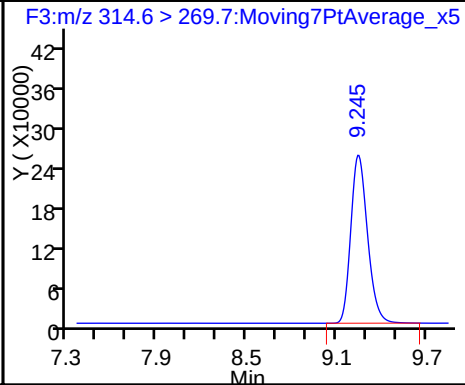
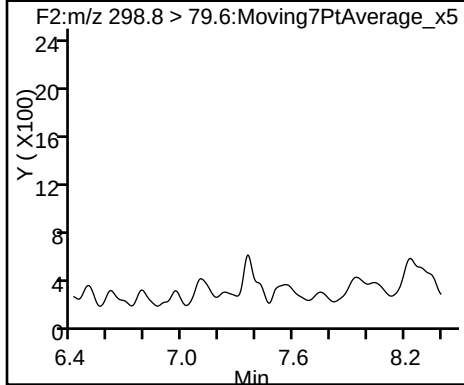
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

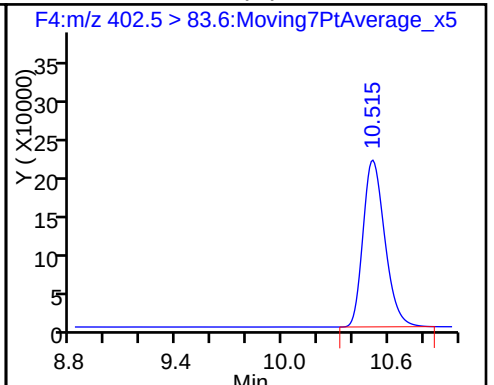
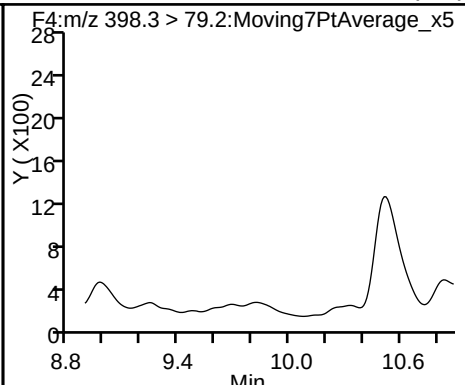
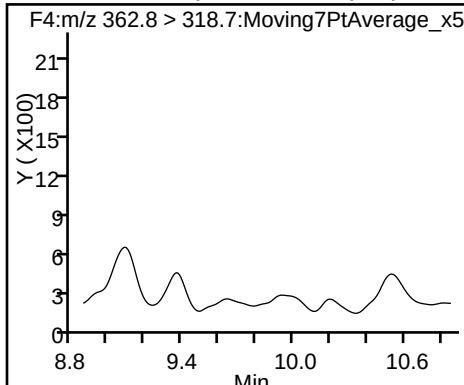
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

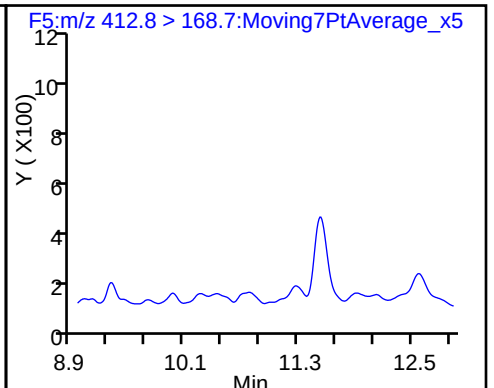
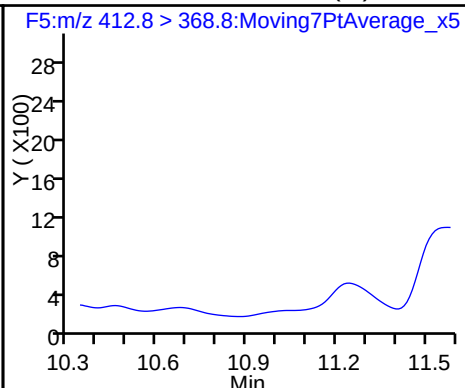
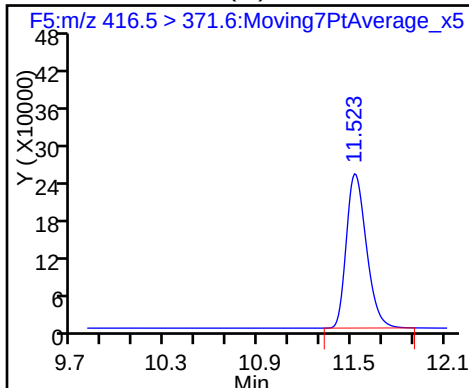
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (M)

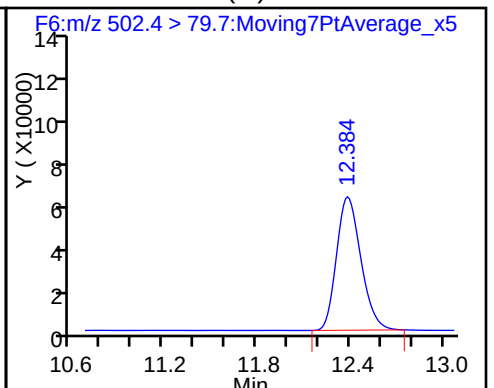
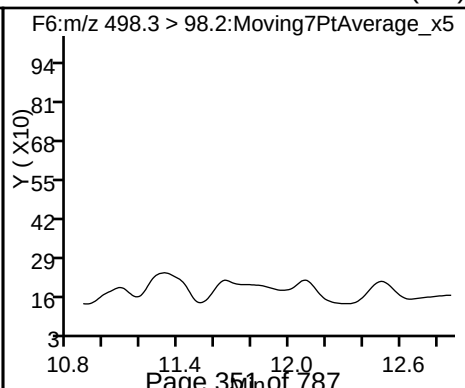
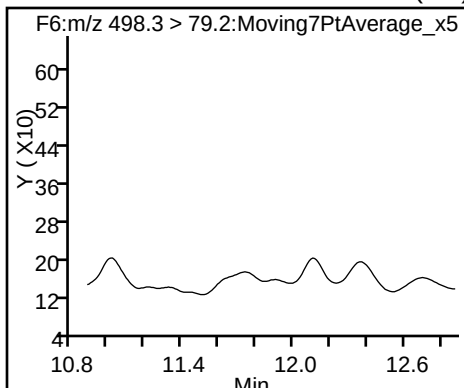
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (ND)

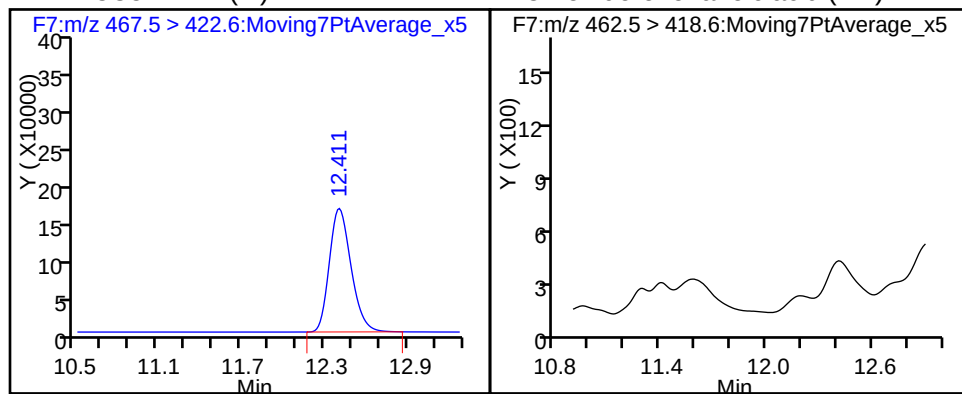
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-1FB</u>	Lab Sample ID: <u>320-17406-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_035.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 11:21</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/25/2016 10:17</u>
Sample wt/vol: <u>508.3 (mL)</u>	Date Analyzed: <u>02/27/2016 03:41</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.90
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.64
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	3.9	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	116		25-150
STL00990	13C4 PFOA	129		25-150
STL00991	13C4 PFOS	91		25-150
STL01892	13C4-PFHxA	121		25-150
STL00995	13C5 PFNA	111		25-150
STL00994	18O2 PFHxS	110		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_035.d
 Lims ID: 320-17406-A-3-A Lab Sample ID: 320-17406-3
 Client ID: DW-1FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 03:41:57 ALS Bottle#: 20 Worklist Smp#: 31
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-3-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:19:39 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 27-Feb-2016 11:50:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.074	8.604	0.470		4671076	58.0		116	7606	
D 8 13C4-PFHpA										
366.6 > 321.6	10.310	9.856	0.454		4100060	60.4		121	5078	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.335	9.892	0.443	1.000	9077	0.2247				
D 11 18O2 PFHxS										
402.5 > 83.6	10.344	9.892	0.452		1883769	51.9		110	3595	
D 12 13C4 PFOA										
416.5 > 371.6	11.364	10.958	0.406		5068825	64.7		129	9012	
D 16 13C4 PFOS										
502.4 > 79.7	12.232	11.876	0.356		706334	43.3		90.6	1802	
D 17 13C5 PFNA										
467.5 > 422.6	12.259	11.898	0.361		3579968	55.3		111	7514	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_035.d

Injection Date: 27-Feb-2016 03:41:57

Instrument ID: A4

Lims ID: 320-17406-A-3-A

Lab Sample ID: 320-17406-3

Client ID: DW-1FB

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 31

Injection Vol: 15.0 ul

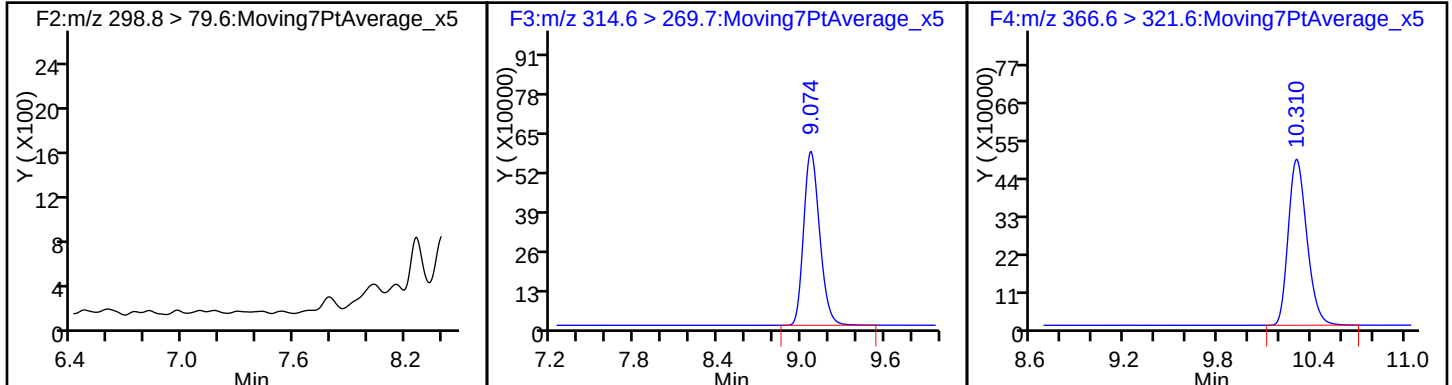
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

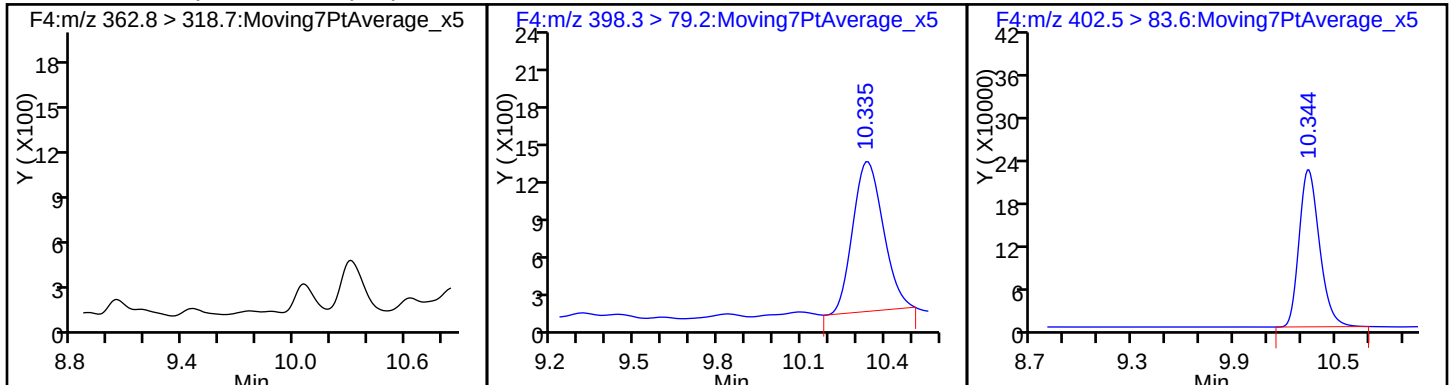
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid

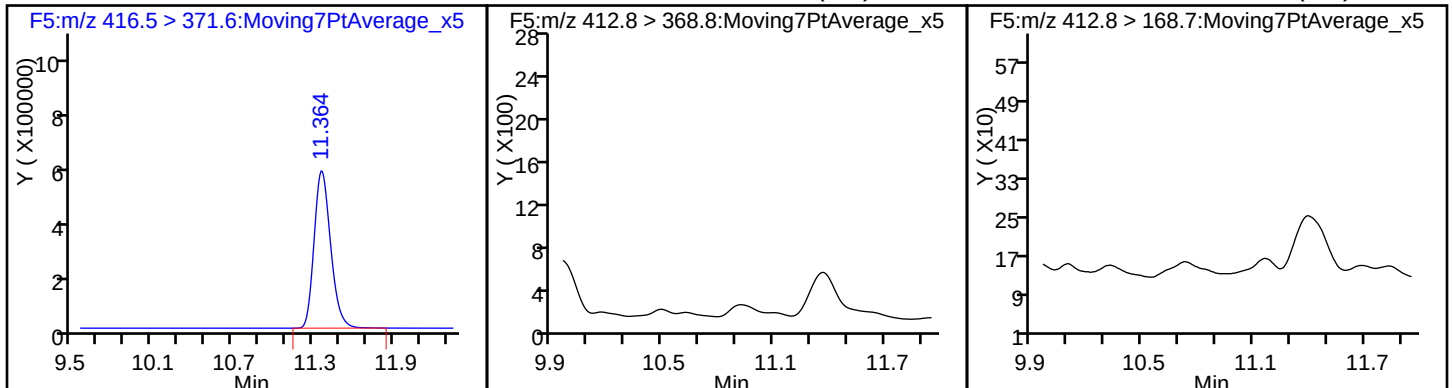
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

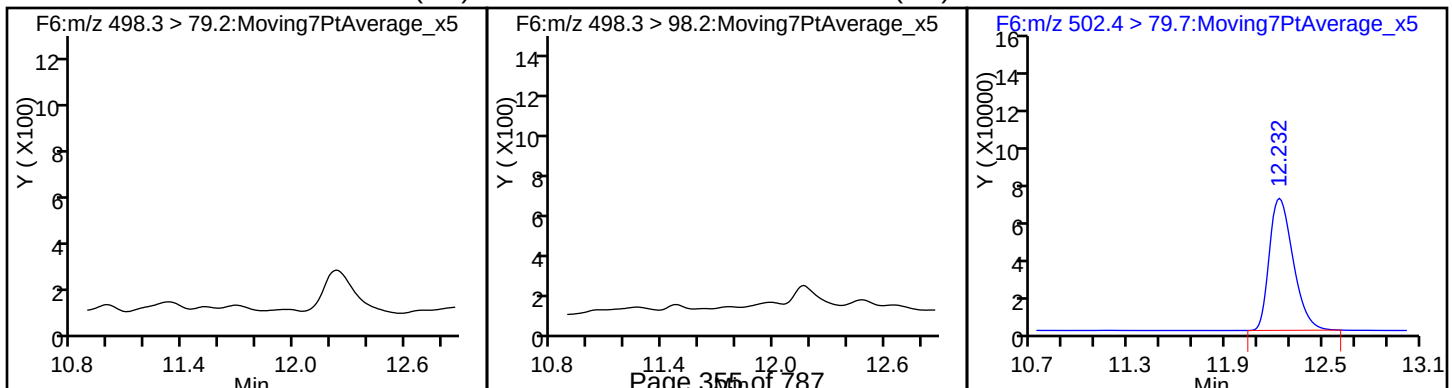
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

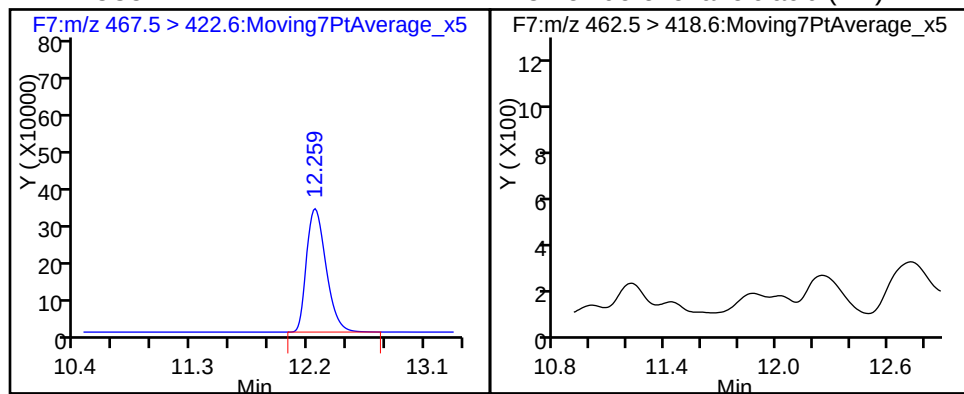
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-56</u>	Lab Sample ID: <u>320-17406-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_037.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 12:06</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/25/2016 10:17</u>
Sample wt/vol: <u>538(mL)</u>	Date Analyzed: <u>02/27/2016 10:09</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.3	1.9	0.85
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	J	2.3	1.9	0.75
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	1.9	0.81
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.3	1.9	0.70

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	77		25-150
STL00990	13C4 PFOA	71		25-150
STL00991	13C4 PFOS	84		25-150
STL01892	13C4-PFHpA	85		25-150
STL00995	13C5 PFNA	66		25-150
STL00994	18O2 PFHxS	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_037.d
 Lims ID: 320-17406-A-4-A Lab Sample ID: 320-17406-4
 Client ID: DW-56
 Sample Type: Client
 Inject. Date: 27-Feb-2016 10:09:44 ALS Bottle#: 21 Worklist Smp#: 33
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-4-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 12:02:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.401	7.404	-0.003	1.000	7763	0.3737				
D 6 13C2 PFHxA										
314.6 > 269.7	8.901	8.604	0.297		3083943	38.3		76.5	8327	
D 8 13C4-PFHpA										
366.6 > 321.6	10.131	9.856	0.275		2878121	42.4		84.8	5669	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.361	9.859	0.502	1.000	28680	0.9698			4.9	
D 11 18O2 PFHxS										
402.5 > 83.6	10.165	9.892	0.273		1639081	45.2		95.5	2837	
D 12 13C4 PFOA										
416.5 > 371.6	11.190	10.958	0.232		2764029	35.3		70.5	6579	
D 16 13C4 PFOS										
502.4 > 79.7	12.075	11.876	0.199		653965	40.1		83.9	1691	
D 17 13C5 PFNA										
467.5 > 422.6	12.096	11.898	0.198		2133594	32.9		65.9	4180	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_037.d

Injection Date: 27-Feb-2016 10:09:44

Instrument ID: A4

Lims ID: 320-17406-A-4-A

Lab Sample ID: 320-17406-4

Client ID: DW-56

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 33

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

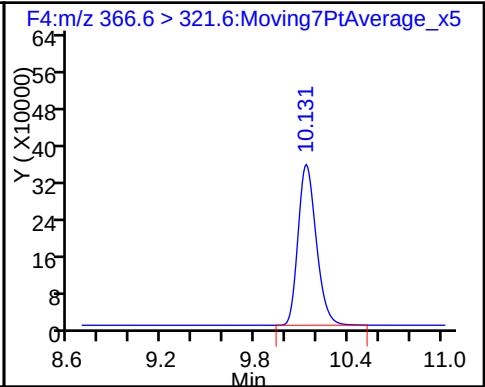
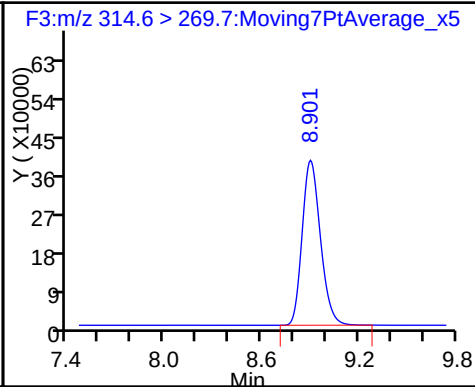
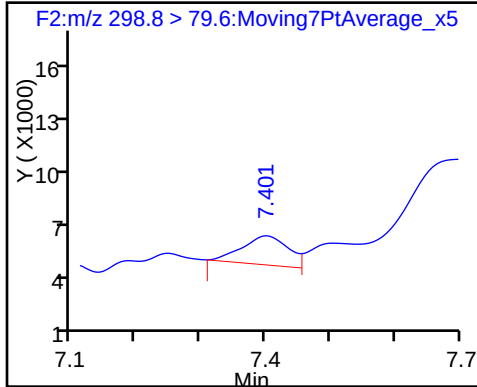
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA (M)

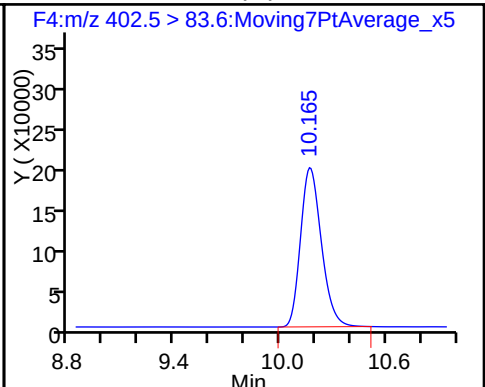
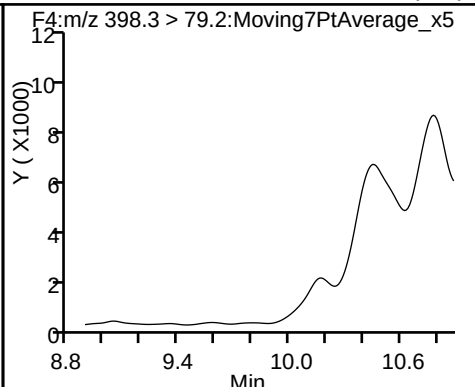
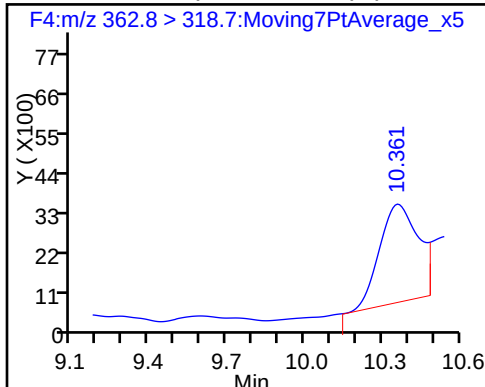
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (M)

58 Perfluorohexanesulfonic acid (ND)

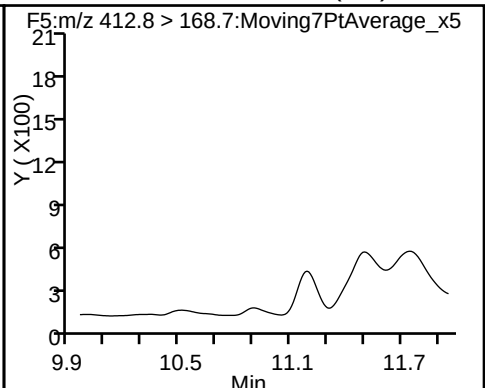
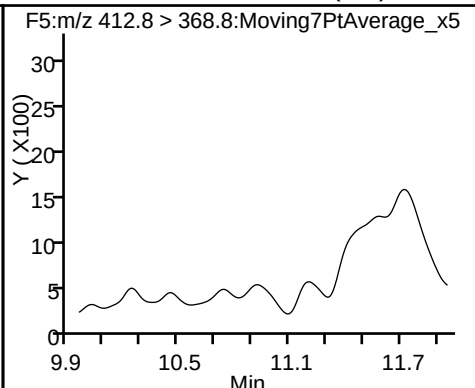
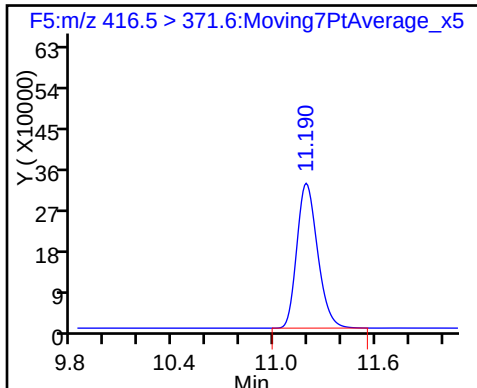
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

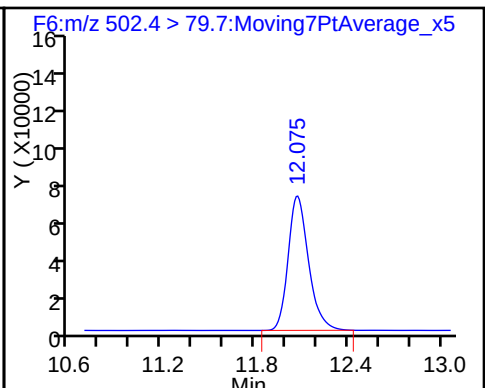
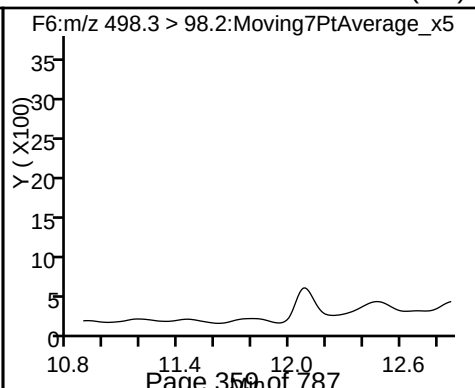
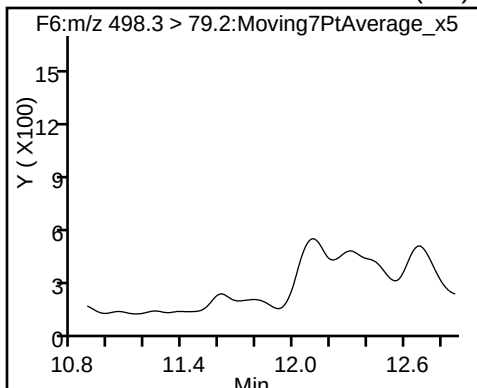
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

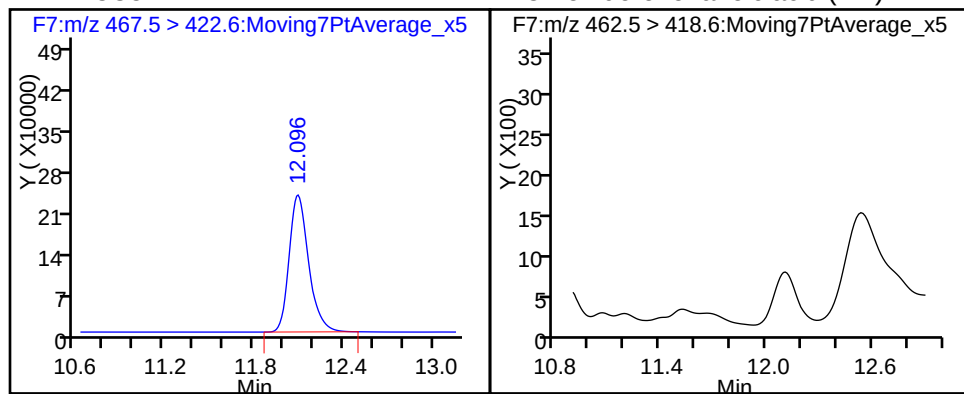
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-56 RA Lab Sample ID: 320-17406-4 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_007.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 12:06
 Extraction Method: 3535 Date Extracted: 02/25/2016 10:17
 Sample wt/vol: 538 (mL) Date Analyzed: 02/29/2016 18:57
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		25-150
STL00990	13C4 PFOA	77		25-150
STL00991	13C4 PFOS	108		25-150
STL01892	13C4-PFHpA	97		25-150
STL00995	13C5 PFNA	63		25-150
STL00994	18O2 PFHxS	115		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_007.d
 Lims ID: 320-17406-A-4-A Lab Sample ID: 320-17406-4
 Client ID: DW-56
 Sample Type: Client
 Inject. Date: 29-Feb-2016 18:57:38 ALS Bottle#: 2 Worklist Smp#: 7
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-4-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:30:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.002	8.035	-0.033		1267619	44.0		88.0	102842	
D 8 13C4-PFHpA										
367.0 > 322.0	9.223	9.261	-0.038		1627249	48.6		97.2	130359	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.363	9.296	0.067	1.000	5294	0.5567				
D 11 18O2 PFHxS										
403.0 > 84.0	9.258	9.297	-0.039		787890	54.2		115	42839	
D 12 13C4 PFOA										
417.0 > 372.0	10.349	10.389	-0.040		1383405	38.5		77.0	103694	
D 16 13C4 PFOS										
503.0 > 80.0	11.312	11.350	-0.038		857918	51.7		108	62889	
D 17 13C5 PFNA										
468.0 > 423.0	11.328	11.368	-0.040		970081	31.5		63.0	145032	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_007.d

Injection Date: 29-Feb-2016 18:57:38

Instrument ID: A6

Lims ID: 320-17406-A-4-A

Lab Sample ID: 320-17406-4

Client ID: DW-56

Operator ID: JRB

ALS Bottle#: 2

Worklist Smp#: 7

Injection Vol: 15.0 ul

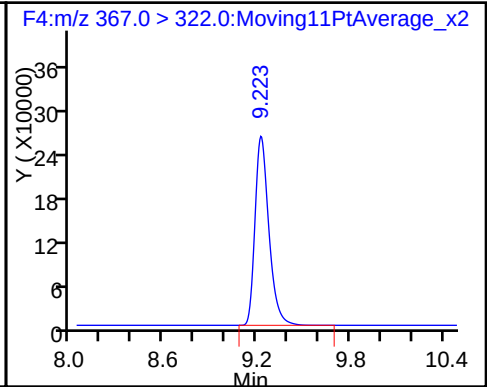
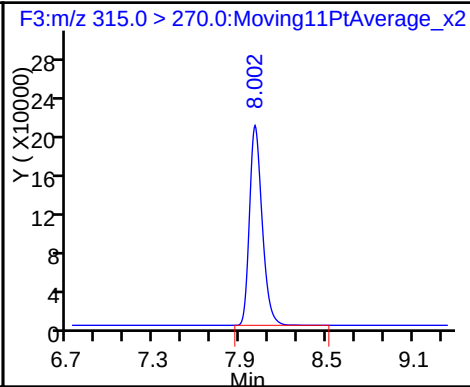
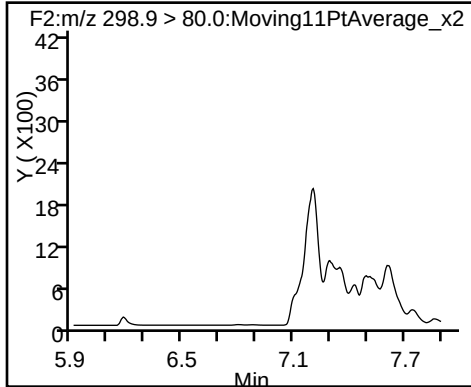
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

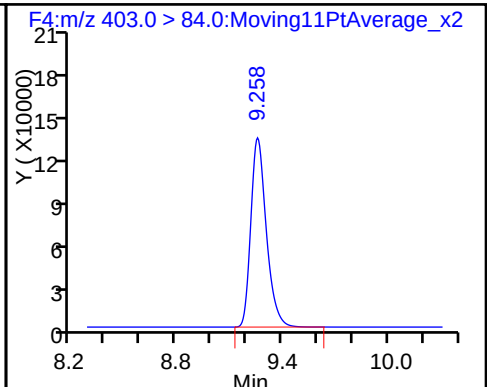
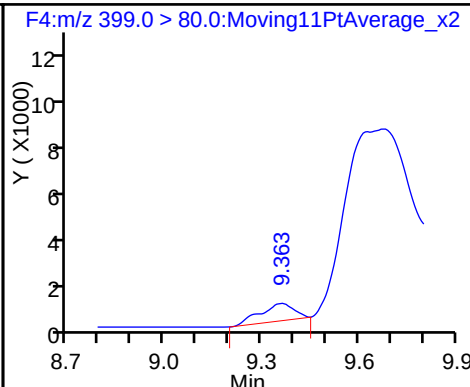
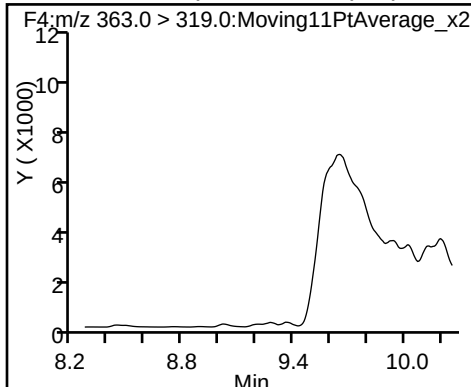
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

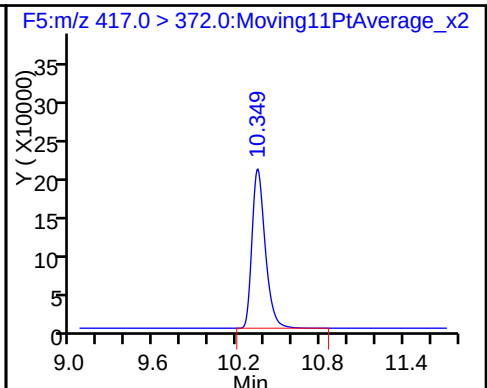
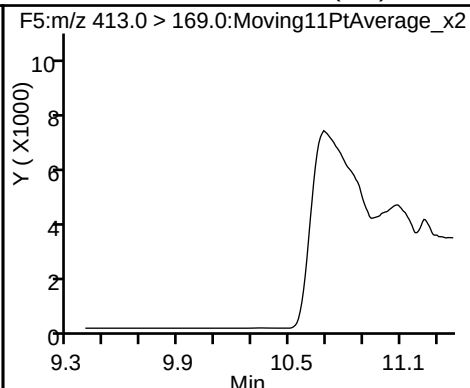
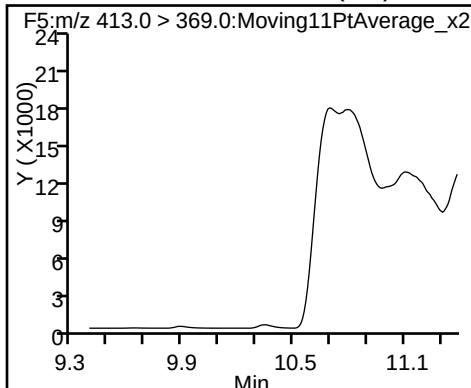
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

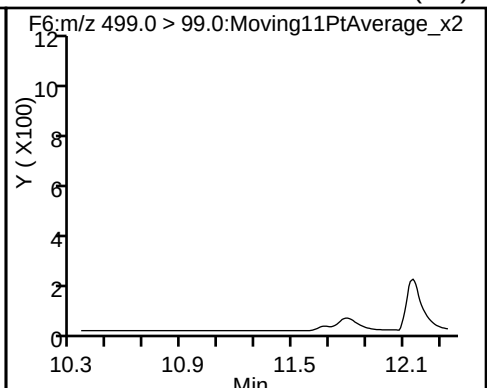
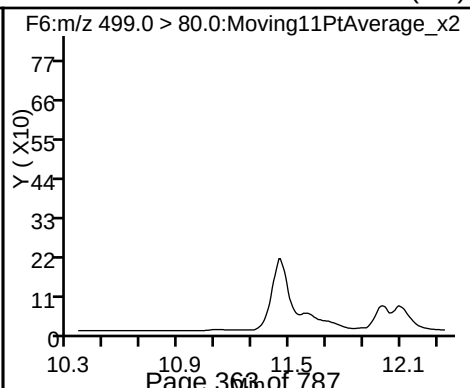
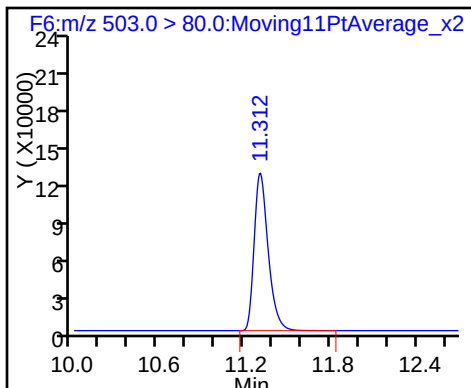
D 12 13C4 PFOA



D 16 13C4 PFOS

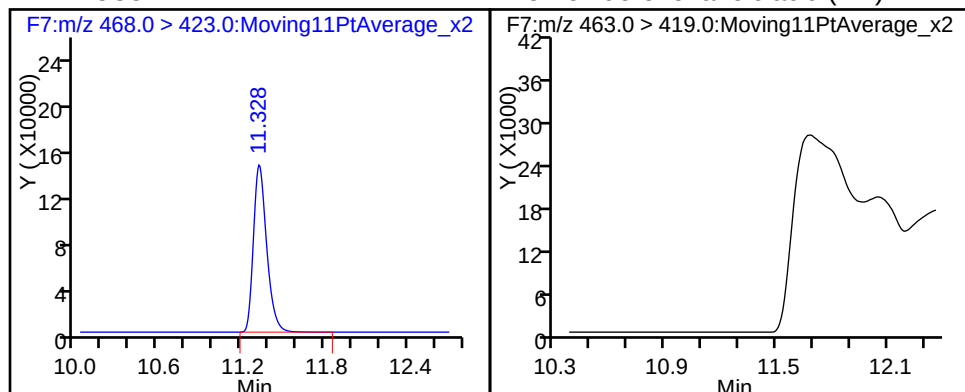
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-56FB Lab Sample ID: 320-17406-5
 Matrix: Water Lab File ID: 26FEB2016A4A_041.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 11:56
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 507.4 (mL) Date Analyzed: 02/27/2016 11:34
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.90
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.64
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		25-150
STL00990	13C4 PFOA	110		25-150
STL00991	13C4 PFOS	130		25-150
STL01892	13C4-PFHpA	103		25-150
STL00995	13C5 PFNA	106		25-150
STL00994	18O2 PFHxS	110		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_041.d
 Lims ID: 320-17406-B-5-A Lab Sample ID: 320-17406-5
 Client ID: DW-56FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 11:34:54 ALS Bottle#: 25 Worklist Smp#: 37
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-5-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc Date: 28-Feb-2016 13:06:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.058	8.604	0.454		3960762	49.1		98.3	8736	
D 8 13C4-PFHpA										
366.6 > 321.6	10.310	9.856	0.454		3491499	51.4		103	5452	
D 11 18O2 PFHxS										
402.5 > 83.6	10.335	9.892	0.443		1879890	51.8		110	4291	
D 12 13C4 PFOA										
416.5 > 371.6	11.364	10.958	0.406		4322206	55.1		110	7756	
D 16 13C4 PFOS										
502.4 > 79.7	12.232	11.876	0.356		1009654	61.9		130	2014	
D 17 13C5 PFNA										
467.5 > 422.6	12.259	11.898	0.361		3424162	52.8		106	6896	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_041.d

Injection Date: 27-Feb-2016 11:34:54

Instrument ID: A4

Lims ID: 320-17406-B-5-A

Lab Sample ID: 320-17406-5

Client ID: DW-56FB

Operator ID: JRB

ALS Bottle#: 25

Worklist Smp#: 37

Injection Vol: 15.0 ul

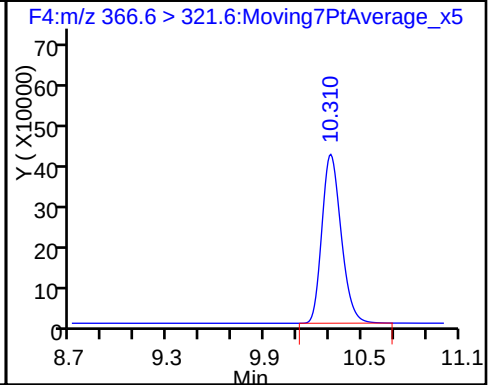
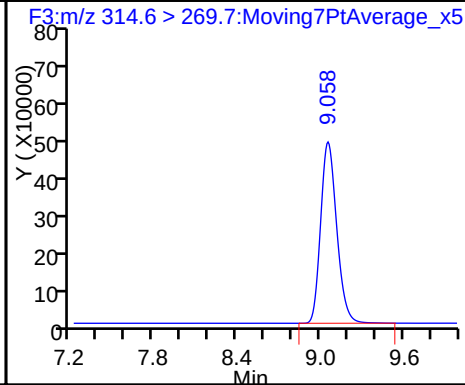
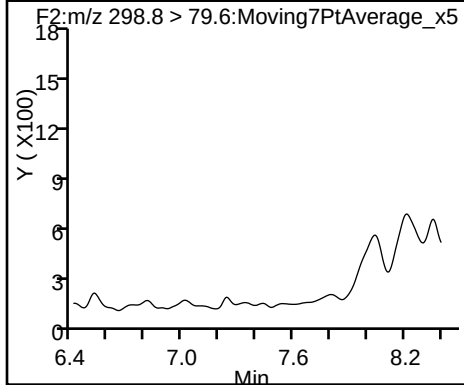
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

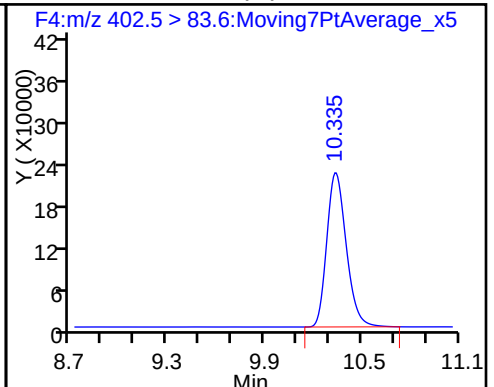
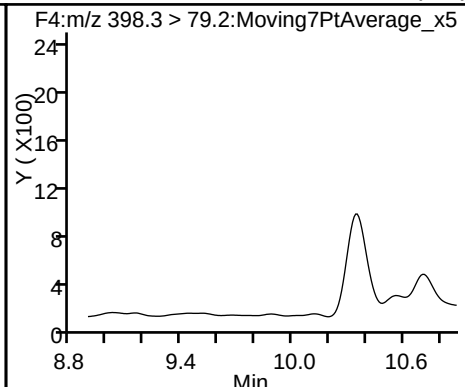
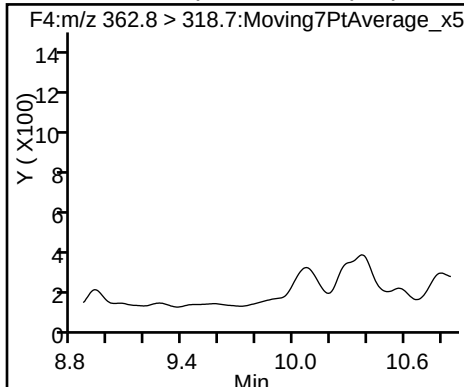
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

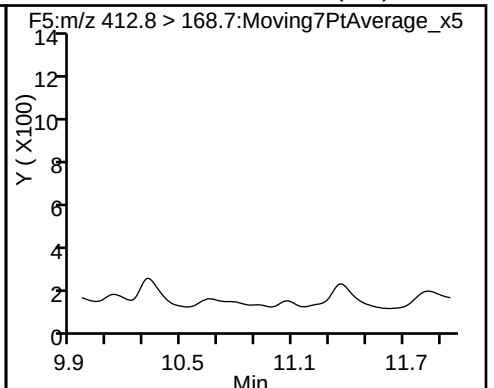
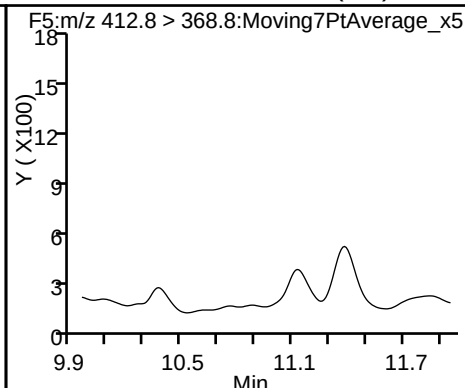
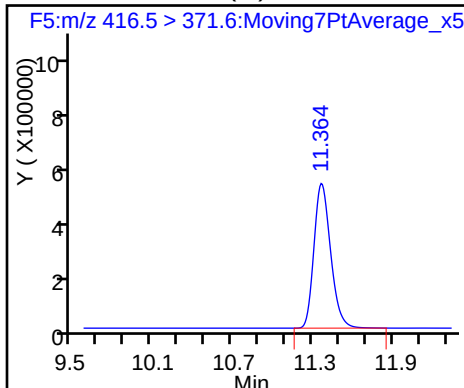
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

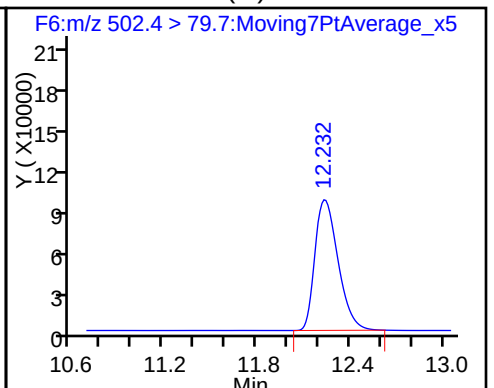
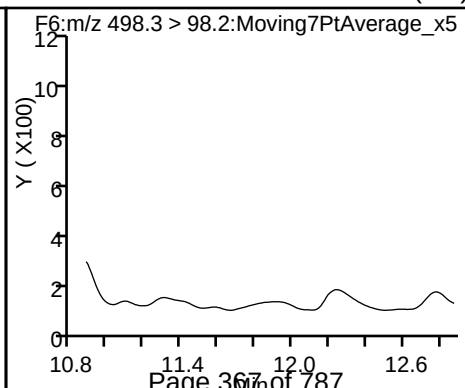
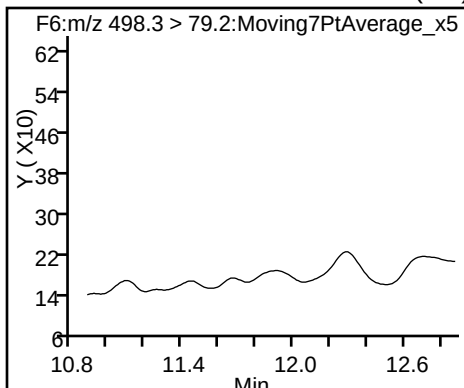
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

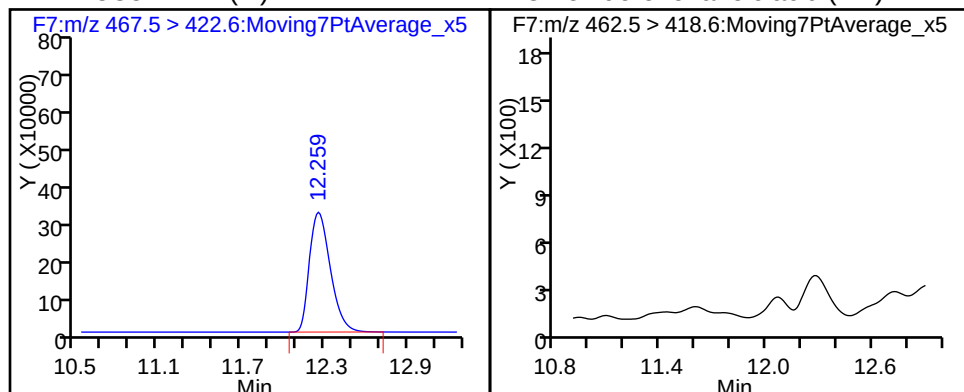
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-56FB RA</u>	Lab Sample ID: <u>320-17406-5 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_011.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 11:56</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>507.4 (mL)</u>	Date Analyzed: <u>02/29/2016 20:22</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	3.9	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		25-150
STL00990	13C4 PFOA	104		25-150
STL00991	13C4 PFOS	98		25-150
STL01892	13C4-PFHpA	103		25-150
STL00995	13C5 PFNA	96		25-150
STL00994	18O2 PFHxS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_011.d
 Lims ID: 320-17406-B-5-A Lab Sample ID: 320-17406-5
 Client ID: DW-56FB
 Sample Type: Client
 Inject. Date: 29-Feb-2016 20:22:34 ALS Bottle#: 6 Worklist Smp#: 11
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-b-5-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.012	8.035	-0.023		1509422	52.4		105	79207	
D 8 13C4-PFHpA										
367.0 > 322.0	9.236	9.261	-0.025		1721828	51.4		103	54387	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.329	9.296	0.033	1.000	7082	0.8246				
D 11 18O2 PFHxS										
403.0 > 84.0	9.271	9.297	-0.026		648895	44.7		94.4	33992	
D 12 13C4 PFOA										
417.0 > 372.0	10.357	10.389	-0.032		1875812	52.2		104	92584	
D 16 13C4 PFOS										
503.0 > 80.0	11.321	11.350	-0.029		775270	46.7		97.8	10471	
D 17 13C5 PFNA										
468.0 > 423.0	11.337	11.368	-0.031		1484192	48.2		96.4	10346	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_011.d

Injection Date: 29-Feb-2016 20:22:34

Instrument ID: A6

Lims ID: 320-17406-B-5-A

Lab Sample ID: 320-17406-5

Client ID: DW-56FB

Operator ID: JRB

ALS Bottle#: 6

Worklist Smp#: 11

Injection Vol: 15.0 ul

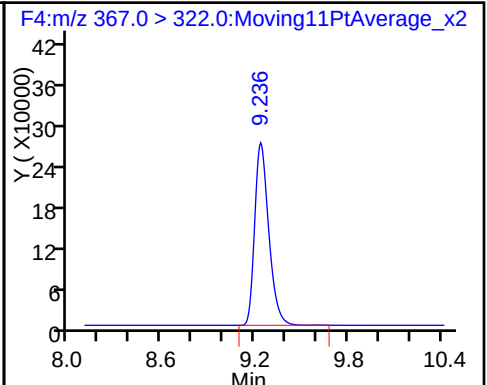
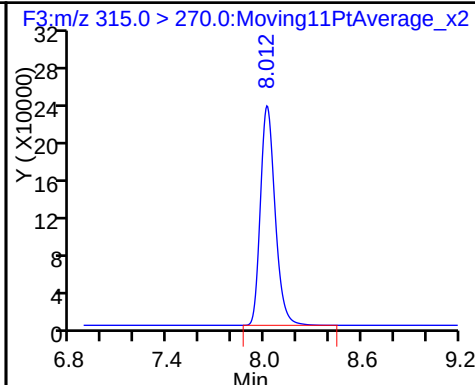
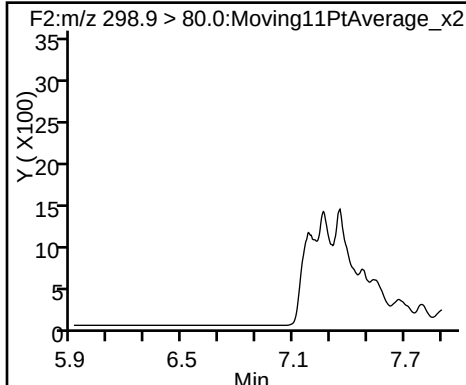
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

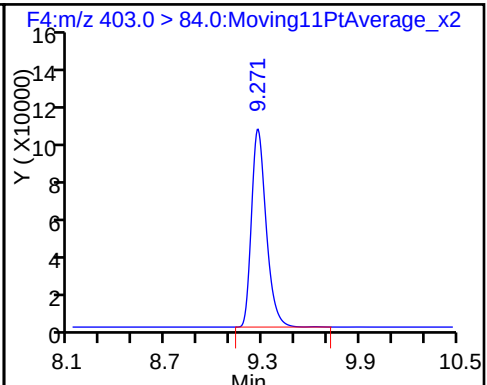
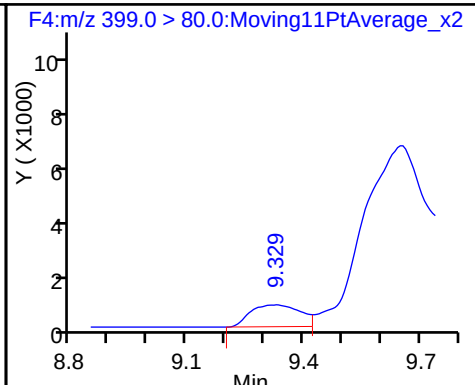
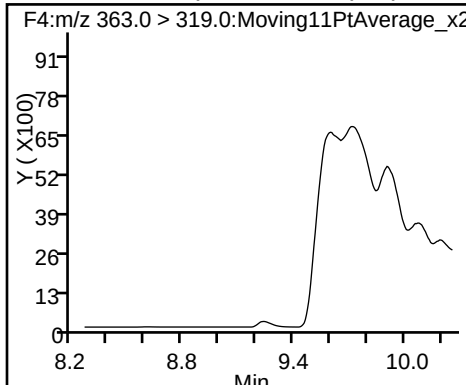
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

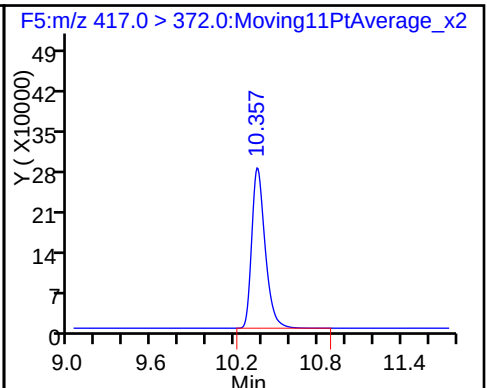
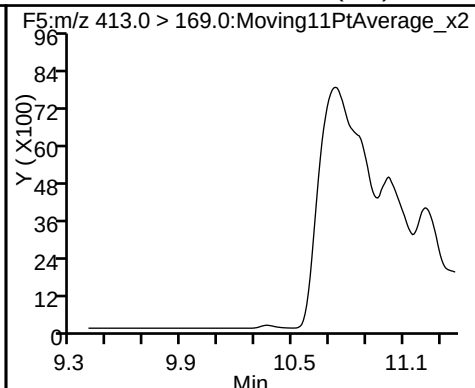
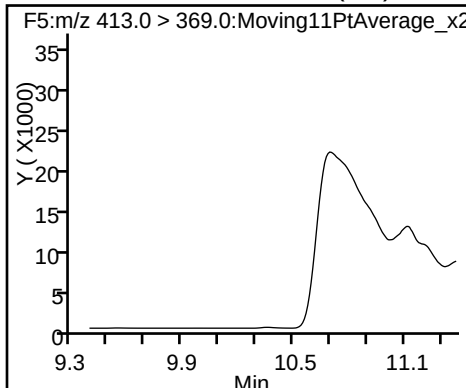
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

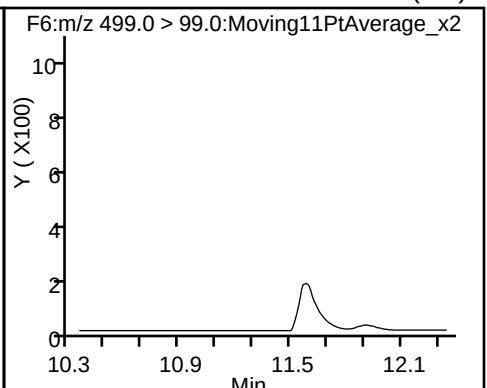
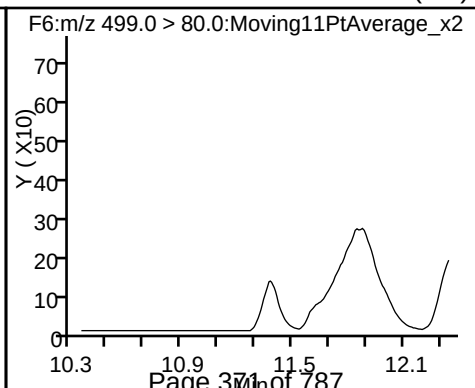
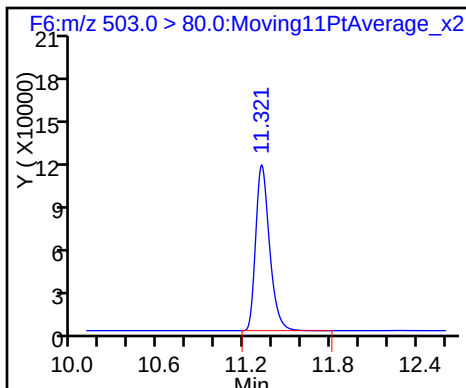
D 12 13C4 PFOA



D 16 13C4 PFOS

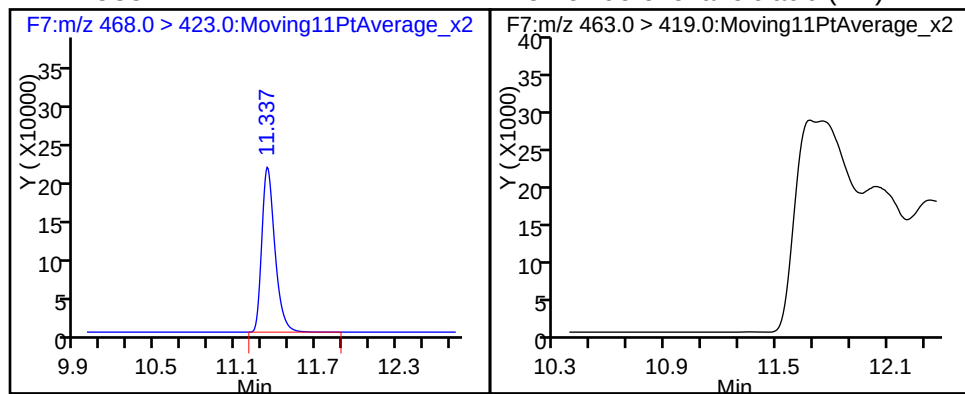
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-80</u>	Lab Sample ID: <u>320-17406-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_042.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 12:31</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>562.5 (mL)</u>	Date Analyzed: <u>02/27/2016 11:56</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.77
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	62		25-150
STL00990	13C4 PFOA	58		25-150
STL00991	13C4 PFOS	149		25-150
STL01892	13C4-PFHpA	59		25-150
STL00995	13C5 PFNA	50		25-150
STL00994	18O2 PFHxS	110		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_042.d
 Lims ID: 320-17406-B-6-A Lab Sample ID: 320-17406-6
 Client ID: DW-80
 Sample Type: Client
 Inject. Date: 27-Feb-2016 11:56:03 ALS Bottle#: 26 Worklist Smp#: 38
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-6-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc Date: 28-Feb-2016 13:07:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.151	8.604	0.547		2502760	31.1		62.1	7022	
D 8 13C4-PFHpA										
366.6 > 321.6	10.420	9.856	0.564		1995395	29.4		58.8	6791	
D 11 18O2 PFHxS										
402.5 > 83.6	10.454	9.892	0.562		1891056	52.1		110	3884	
D 12 13C4 PFOA										
416.5 > 371.6	11.493	10.958	0.535		2257699	28.8		57.6	6498	
D 16 13C4 PFOS										
502.4 > 79.7	12.359	11.876	0.483		1161623	71.3		149	2194	
D 17 13C5 PFNA										
467.5 > 422.6	12.385	11.898	0.487		1616469	24.9		49.9	2796	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_042.d

Injection Date: 27-Feb-2016 11:56:03

Instrument ID: A4

Lims ID: 320-17406-B-6-A

Lab Sample ID: 320-17406-6

Client ID: DW-80

Operator ID: JRB

ALS Bottle#: 26

Worklist Smp#: 38

Injection Vol: 15.0 ul

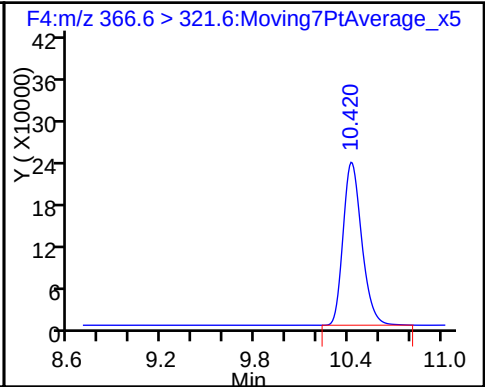
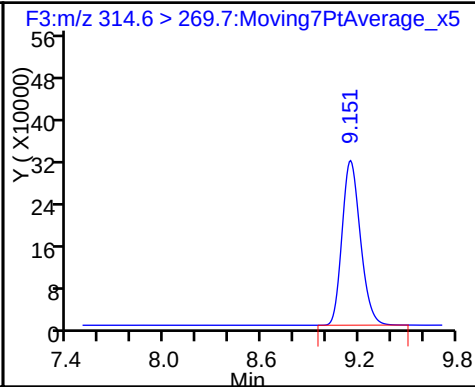
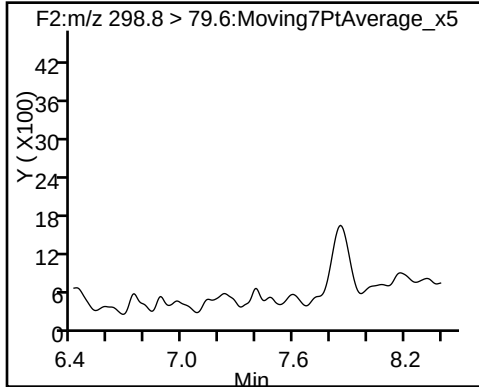
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

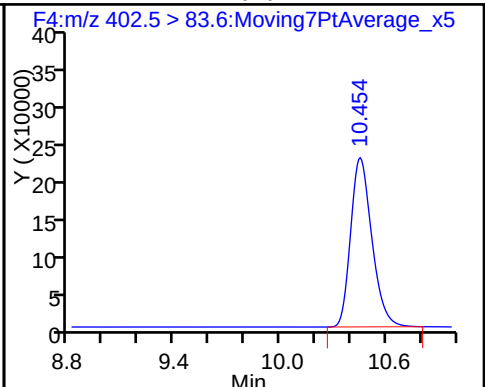
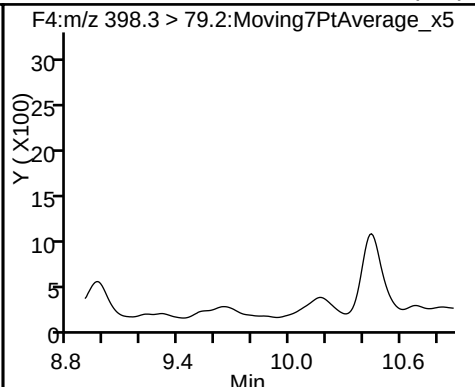
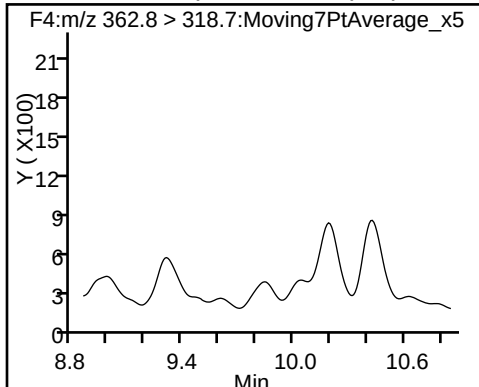
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

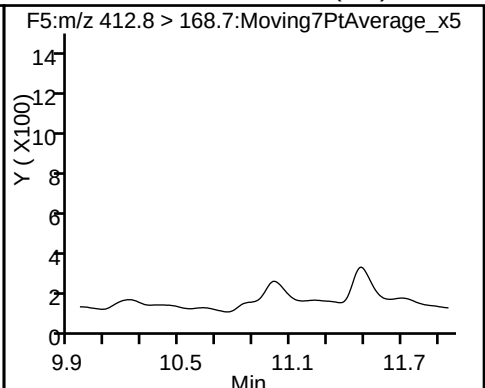
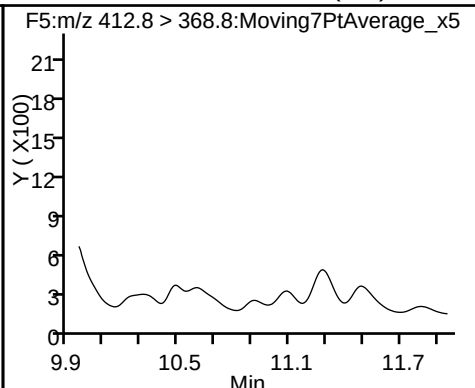
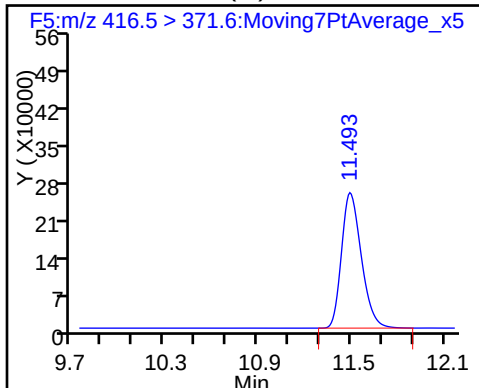
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

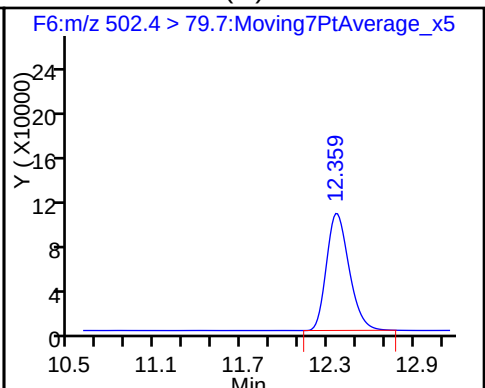
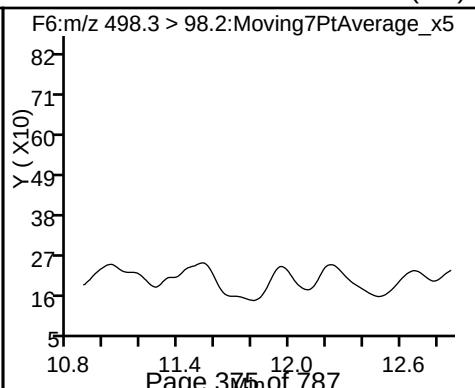
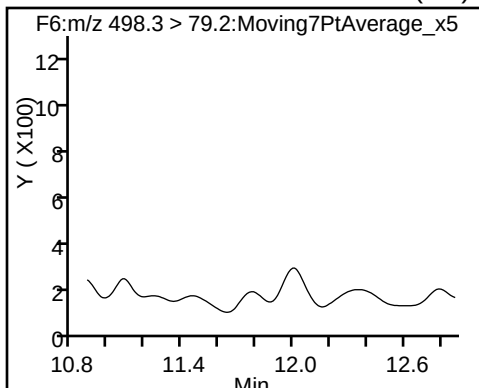
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

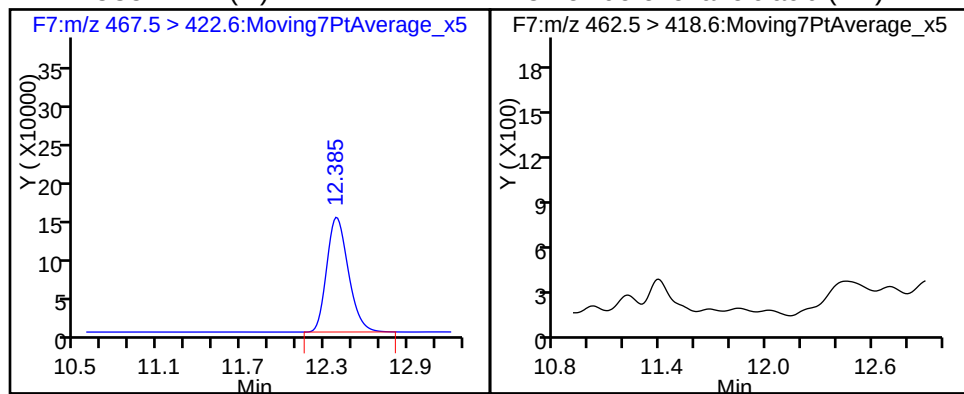
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-80 RA</u>	Lab Sample ID: <u>320-17406-6 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_012.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 12:31</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>562.5 (mL)</u>	Date Analyzed: <u>02/29/2016 20:43</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	63		25-150
STL00990	13C4 PFOA	54		25-150
STL00991	13C4 PFOS	92		25-150
STL01892	13C4-PFHpA	59		25-150
STL00995	13C5 PFNA	43		25-150
STL00994	18O2 PFHxS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_012.d
 Lims ID: 320-17406-B-6-A Lab Sample ID: 320-17406-6
 Client ID: DW-80
 Sample Type: Client
 Inject. Date: 29-Feb-2016 20:43:49 ALS Bottle#: 7 Worklist Smp#: 12
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-b-6-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 08:59:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.901	6.905	-0.004	1.000	4135	0.5090				
D 6 13C2 PFHxS										
315.0 > 270.0	8.003	8.035	-0.032		911787	31.7		63.3	10137	
D 8 13C4-PFHxS										
367.0 > 322.0	9.221	9.261	-0.040		987967	29.5		59.0	39980	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.215	9.262	-0.047	1.000	2338	0.4395			0.3	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.268	9.296	-0.028	1.000	3744	0.5083				
D 11 18O2 PFHxS										
403.0 > 84.0	9.256	9.297	-0.041		628100	43.2		91.4	51565	
D 12 13C4 PFOA										
417.0 > 372.0	10.345	10.389	-0.044		964617	26.9		53.7	71145	
D 16 13C4 PFOS										
503.0 > 80.0	11.301	11.350	-0.049		726156	43.8		91.6	54264	
D 17 13C5 PFNA										
468.0 > 423.0	11.324	11.368	-0.044		655360	21.3		42.6	12268	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_012.d

Injection Date: 29-Feb-2016 20:43:49

Instrument ID: A6

Lims ID: 320-17406-B-6-A

Lab Sample ID: 320-17406-6

Client ID: DW-80

Operator ID: JRB

ALS Bottle#: 7

Worklist Smp#: 12

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

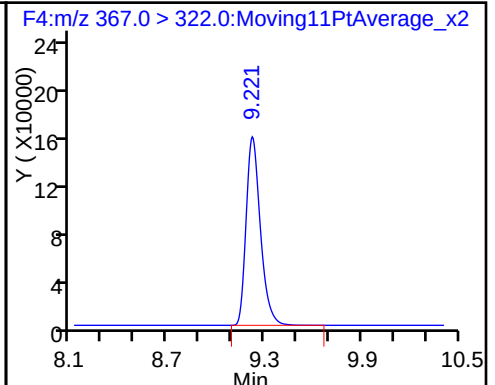
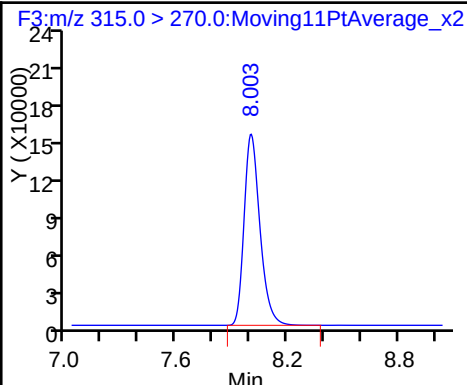
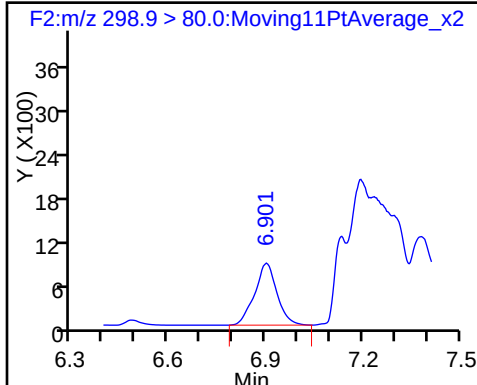
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

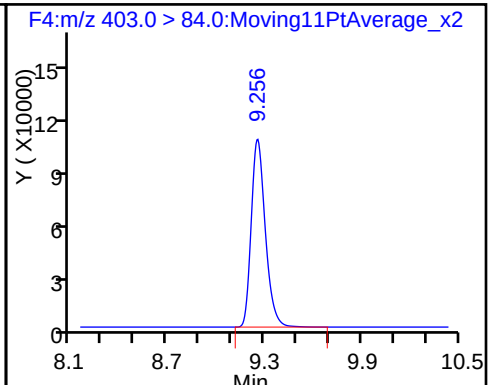
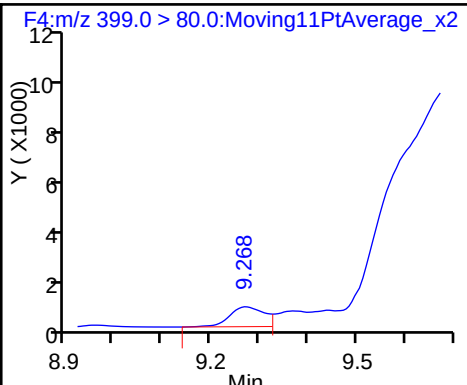
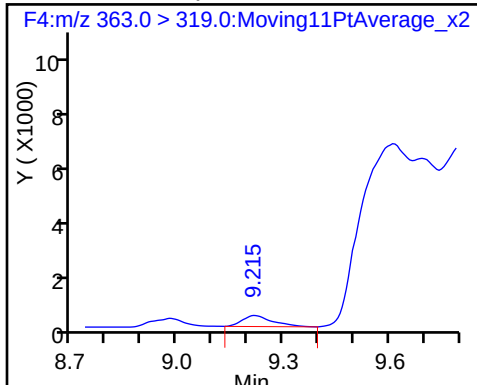
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

41 Perfluorohexanesulfonic acid

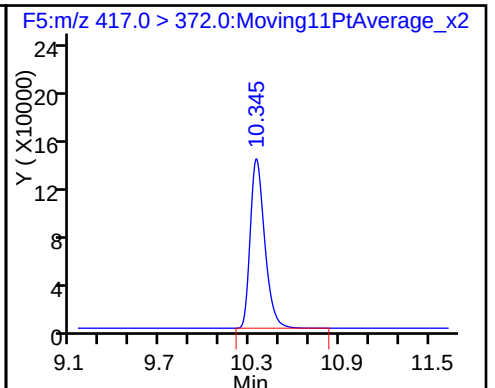
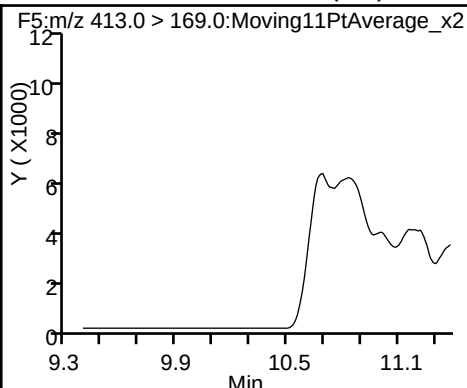
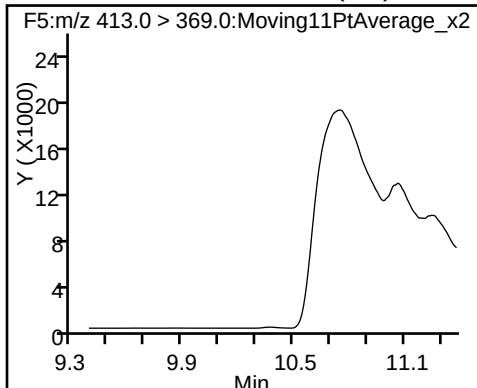
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

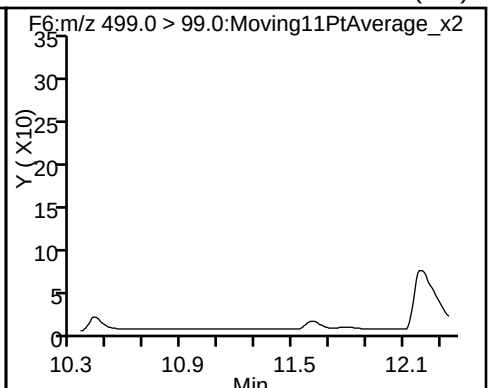
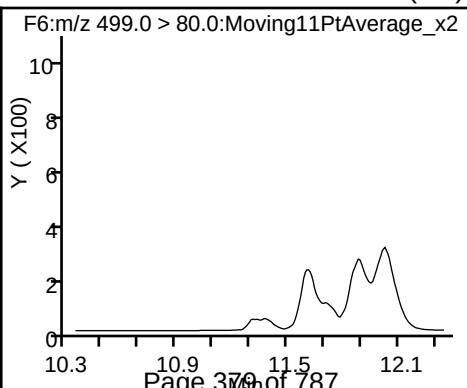
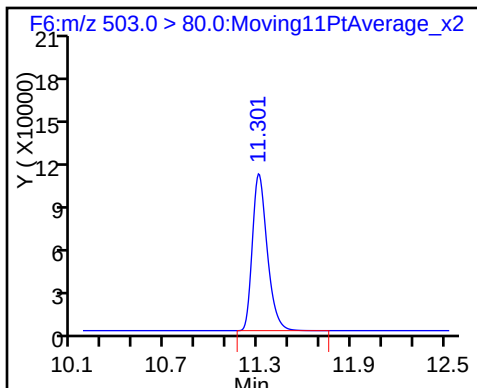
D 12 13C4 PFOA



D 16 13C4 PFOS

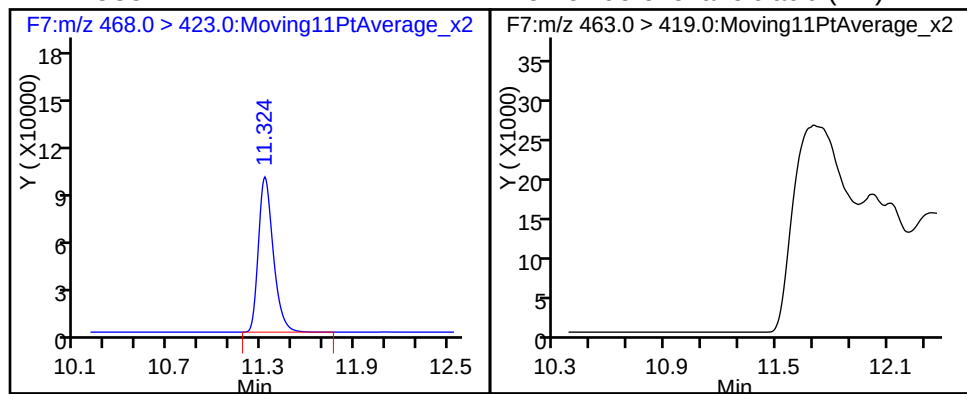
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-80FB</u>	Lab Sample ID: <u>320-17406-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_043.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 12:21</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>493 (mL)</u>	Date Analyzed: <u>02/27/2016 12:17</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.93
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.81
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.88
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.66
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.76

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	104		25-150
STL00990	13C4 PFOA	112		25-150
STL00991	13C4 PFOS	156	Q	25-150
STL01892	13C4-PFHpA	97		25-150
STL00995	13C5 PFNA	113		25-150
STL00994	18O2 PFHxS	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_043.d
 Lims ID: 320-17406-A-7-A Lab Sample ID: 320-17406-7
 Client ID: DW-80FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 12:17:14 ALS Bottle#: 27 Worklist Smp#: 39
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-7-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc Date: 28-Feb-2016 13:07:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.112	8.604	0.508		4204351	52.2		104	8467	
D 8 13C4-PFHpA										
366.6 > 321.6	10.352	9.856	0.496		3310122	48.7		97.5	6362	
D 11 18O2 PFHxS										
402.5 > 83.6	10.386	9.892	0.494		1852450	51.1		108	5104	
D 12 13C4 PFOA										
416.5 > 371.6	11.410	10.958	0.452		4390674	56.0		112	8924	
D 16 13C4 PFOS										
502.4 > 79.7	12.283	11.876	0.407		1215698	74.6		156	3055	
D 17 13C5 PFNA										
467.5 > 422.6	12.309	11.898	0.411		3667763	56.6		113	6866	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_043.d

Injection Date: 27-Feb-2016 12:17:14

Instrument ID: A4

Lims ID: 320-17406-A-7-A

Lab Sample ID: 320-17406-7

Client ID: DW-80FB

Operator ID: JRB

ALS Bottle#: 27

Worklist Smp#: 39

Injection Vol: 15.0 ul

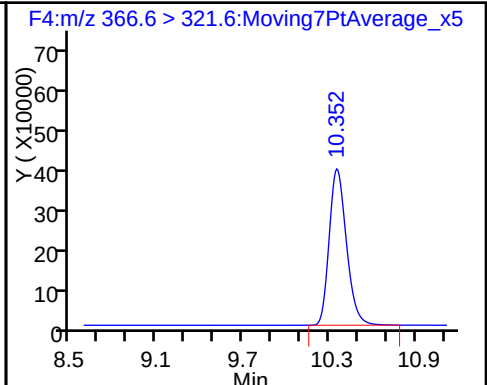
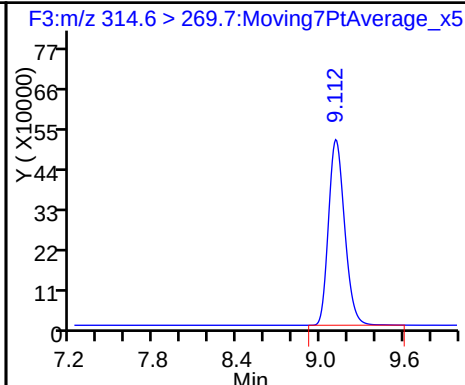
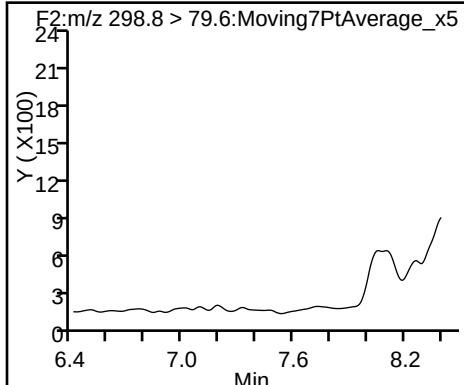
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

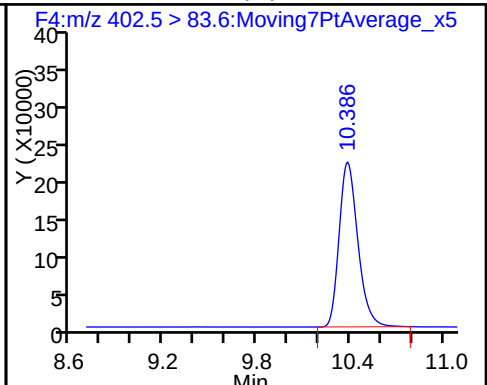
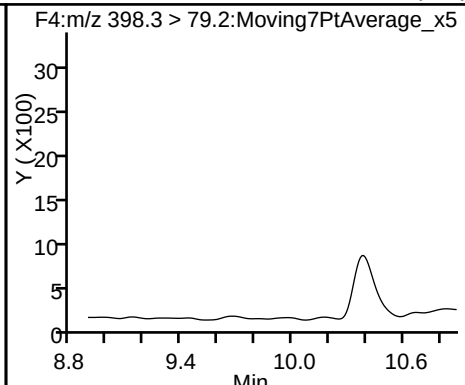
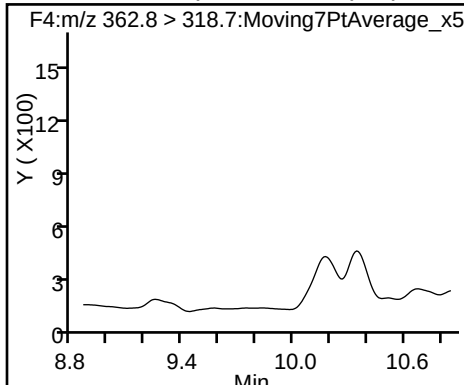
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

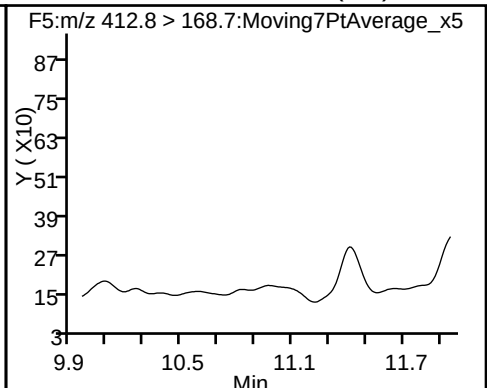
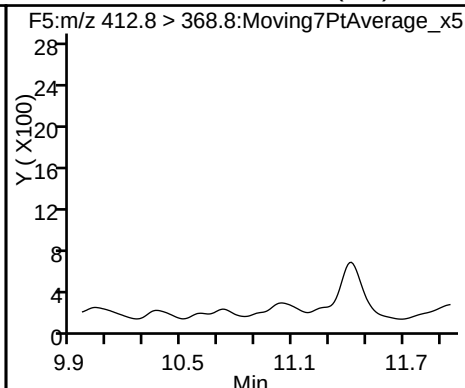
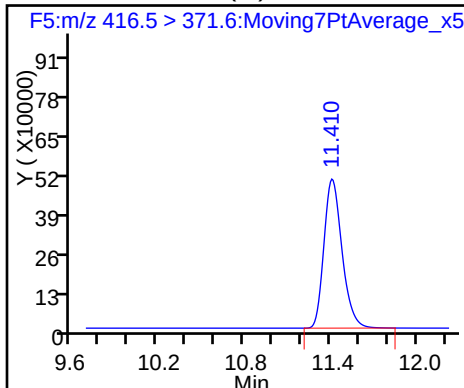
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

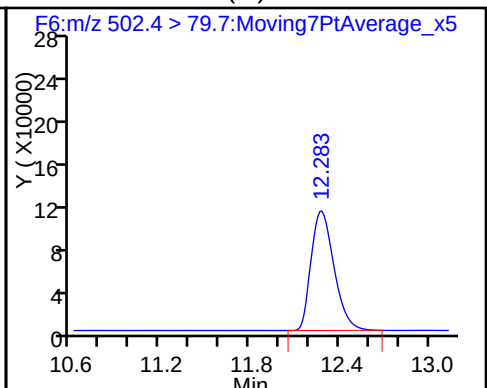
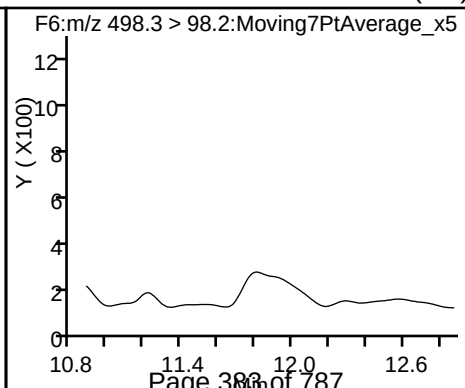
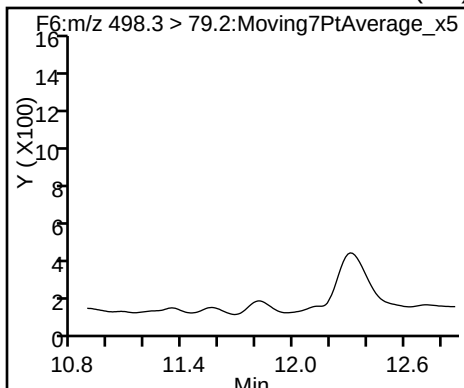
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

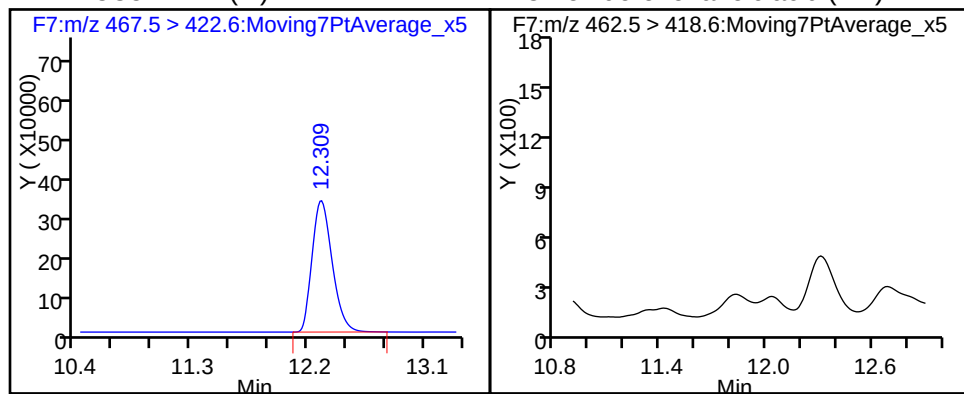
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-80FB RA Lab Sample ID: 320-17406-7 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_013.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 12:21
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 493 (mL) Date Analyzed: 02/29/2016 21:05
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.1	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	110		25-150
STL00990	13C4 PFOA	112		25-150
STL00991	13C4 PFOS	103		25-150
STL01892	13C4-PFHpA	108		25-150
STL00995	13C5 PFNA	97		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_013.d
 Lims ID: 320-17406-A-7-A Lab Sample ID: 320-17406-7
 Client ID: DW-80FB
 Sample Type: Client
 Inject. Date: 29-Feb-2016 21:05:03 ALS Bottle#: 8 Worklist Smp#: 13
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-7-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.990	8.035	-0.045		1585619	55.0		110	241039	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1804034	53.9		108	68778	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.317	9.296	0.021	1.000	1047	0.2214				
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		712152	49.0		104	56438	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.328	10.388	-0.060	1.000	1222	0.0324			0.1	
D 12 13C4 PFOA										
417.0 > 372.0	10.342	10.389	-0.047		2005041	55.8		112	147094	
D 16 13C4 PFOS										
503.0 > 80.0	11.305	11.350	-0.045		817953	49.3		103	40254	
D 17 13C5 PFNA										
468.0 > 423.0	11.328	11.368	-0.040		1500598	48.7		97.5	106998	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_013.d

Injection Date: 29-Feb-2016 21:05:03

Instrument ID: A6

Lims ID: 320-17406-A-7-A

Lab Sample ID: 320-17406-7

Client ID: DW-80FB

Operator ID: JRB

ALS Bottle#: 8

Worklist Smp#: 13

Injection Vol: 15.0 ul

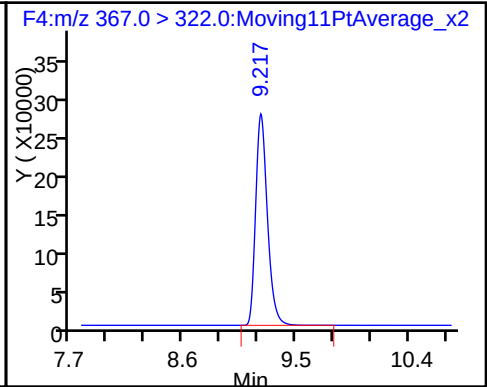
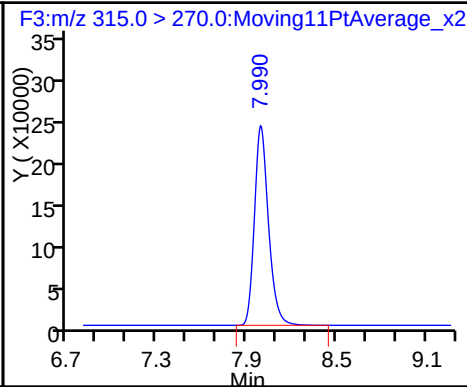
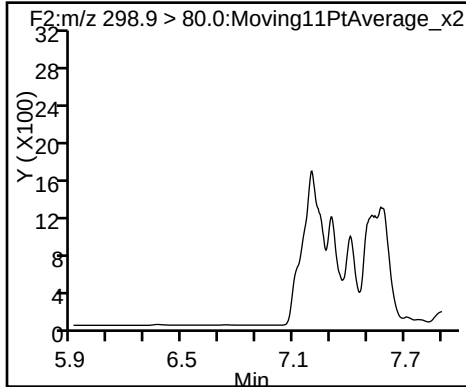
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

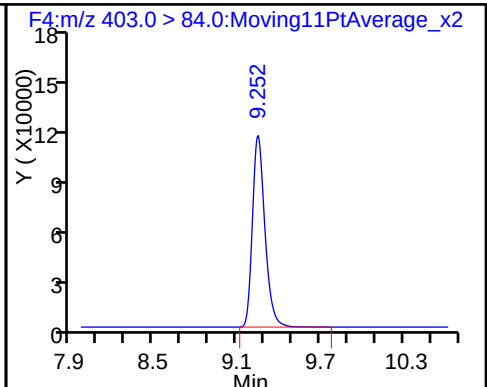
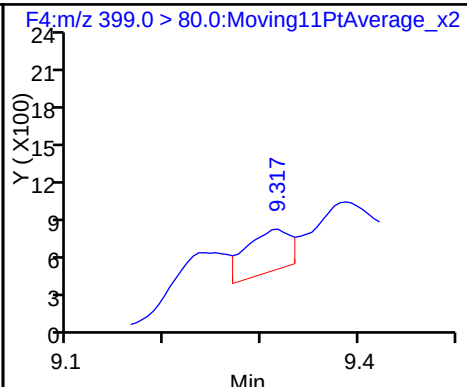
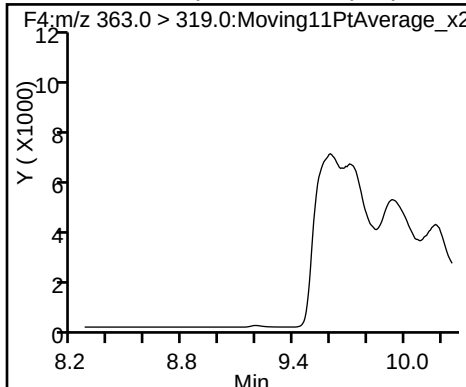
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

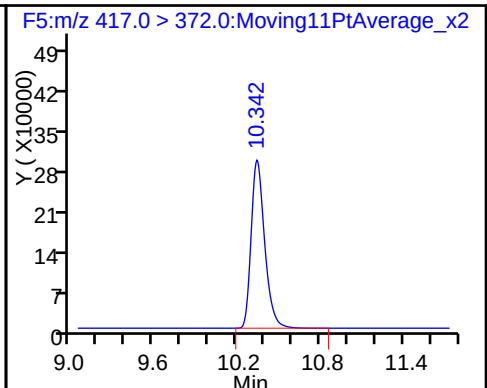
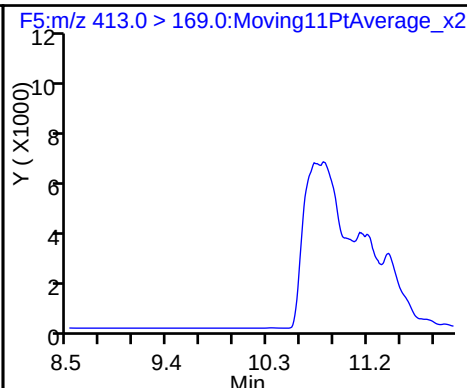
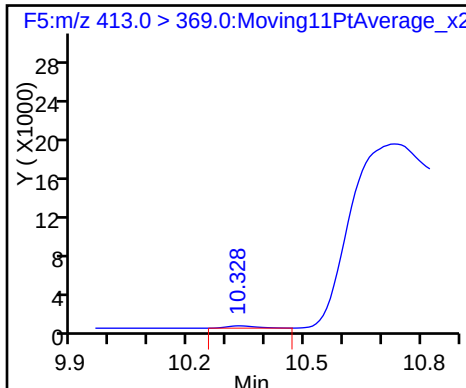
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

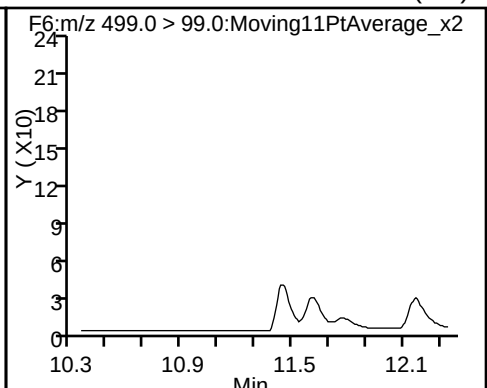
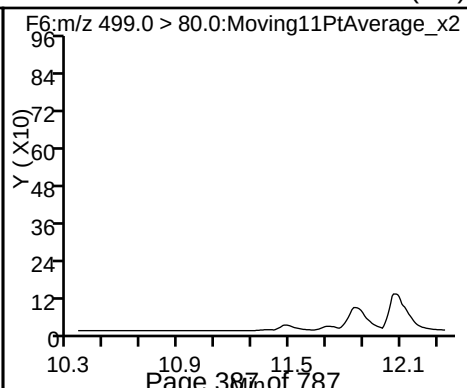
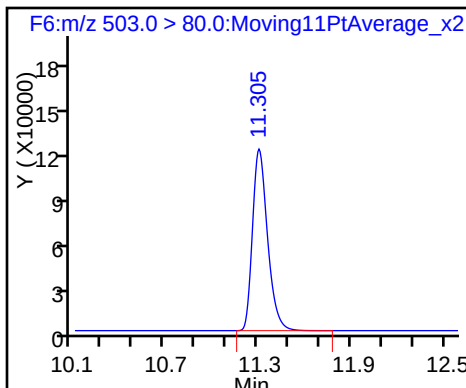
D 12 13C4 PFOA



D 16 13C4 PFOS

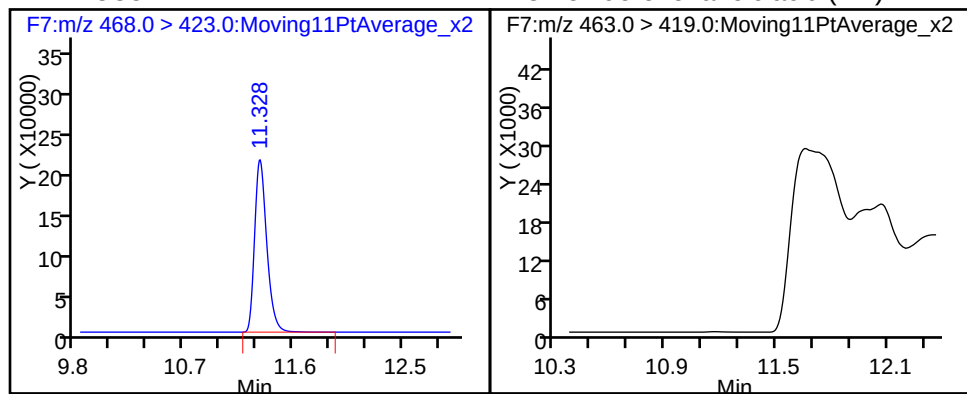
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-44</u>	Lab Sample ID: <u>320-17406-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_044.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 12:56</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>570.5 (mL)</u>	Date Analyzed: <u>02/27/2016 12:38</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57
335-67-1	Perfluorooctanoic acid (PFOA)	2.6		2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	73		25-150
STL00990	13C4 PFOA	73		25-150
STL00991	13C4 PFOS	138		25-150
STL01892	13C4-PFHpA	72		25-150
STL00995	13C5 PFNA	65		25-150
STL00994	18O2 PFHxS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_044.d
 Lims ID: 320-17406-B-8-A Lab Sample ID: 320-17406-8
 Client ID: DW-44
 Sample Type: Client
 Inject. Date: 27-Feb-2016 12:38:24 ALS Bottle#: 28 Worklist Smp#: 40
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-8-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 28-Feb-2016 13:09:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.144	8.604	0.540		2925477	36.3		72.6	6373	
D 8 13C4-PFHpA										
366.6 > 321.6	10.386	9.856	0.530		2427965	35.8		71.5	5124	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.412	9.892	0.520	1.000	5835	0.1483				
D 11 18O2 PFHxS										
402.5 > 83.6	10.412	9.892	0.520		1834540	50.6		107	4810	
D 12 13C4 PFOA										
416.5 > 371.6	11.438	10.958	0.480		2870592	36.6		73.2	7523	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.438	10.958	0.480	1.000	44873	1.49			20.8	
D 16 13C4 PFOS										
502.4 > 79.7	12.293	11.876	0.417		1077432	66.1		138	1870	
D 17 13C5 PFNA										
467.5 > 422.6	12.319	11.898	0.421		2116381	32.7		65.3	3302	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_044.d

Injection Date: 27-Feb-2016 12:38:24

Instrument ID: A4

Lims ID: 320-17406-B-8-A

Lab Sample ID: 320-17406-8

Client ID: DW-44

Operator ID: JRB

ALS Bottle#: 28

Worklist Smp#: 40

Injection Vol: 15.0 ul

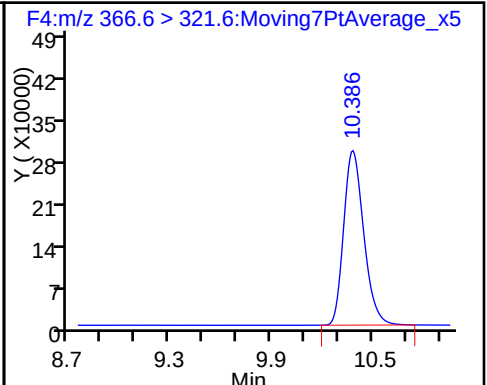
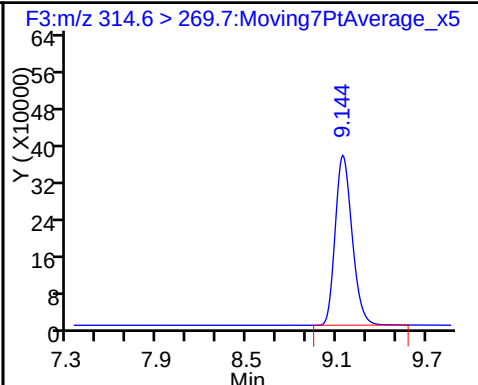
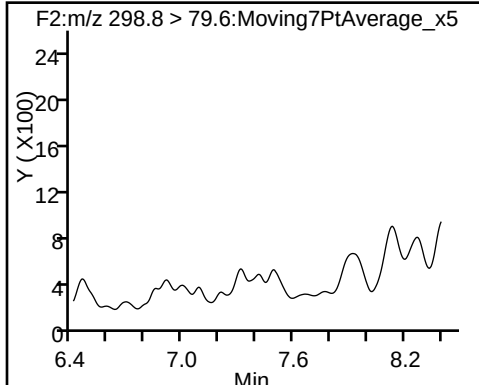
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

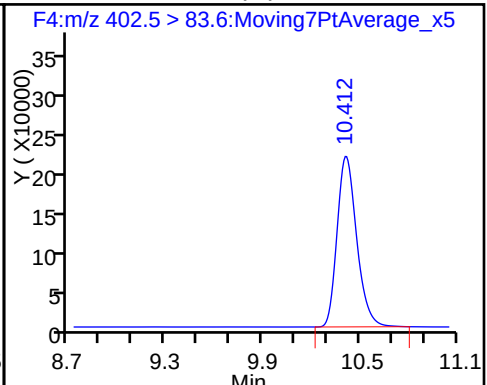
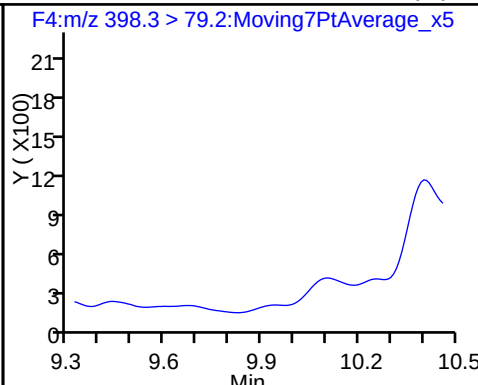
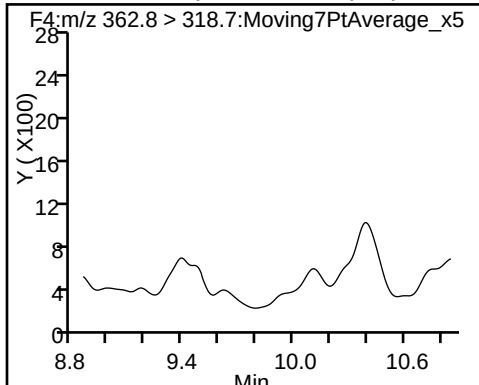
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (M)

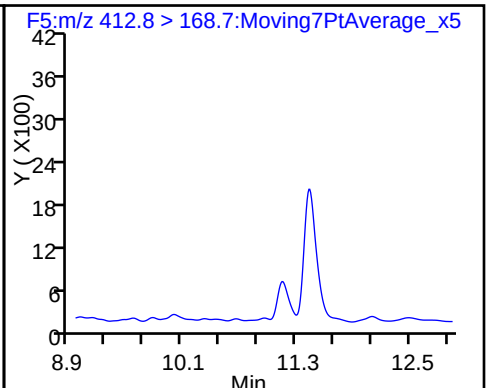
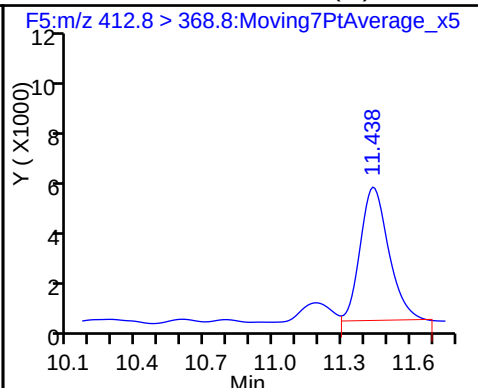
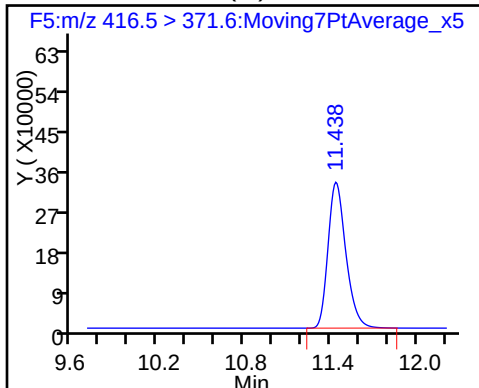
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (M)

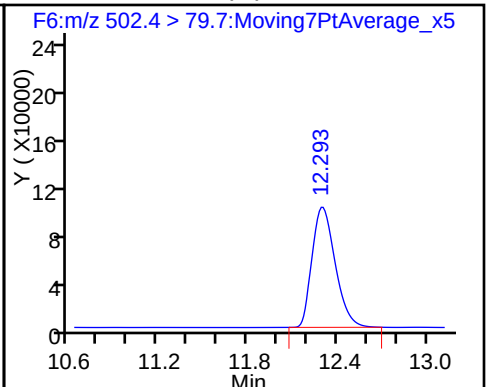
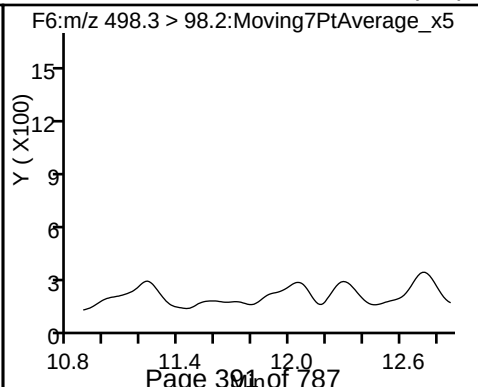
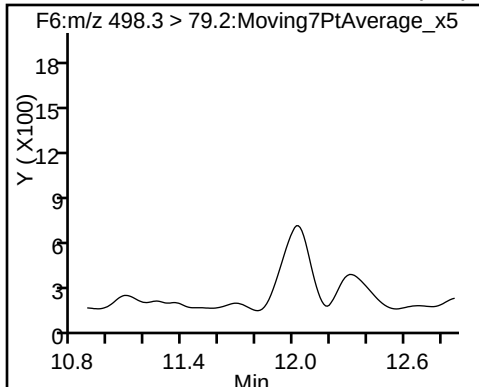
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (ND)

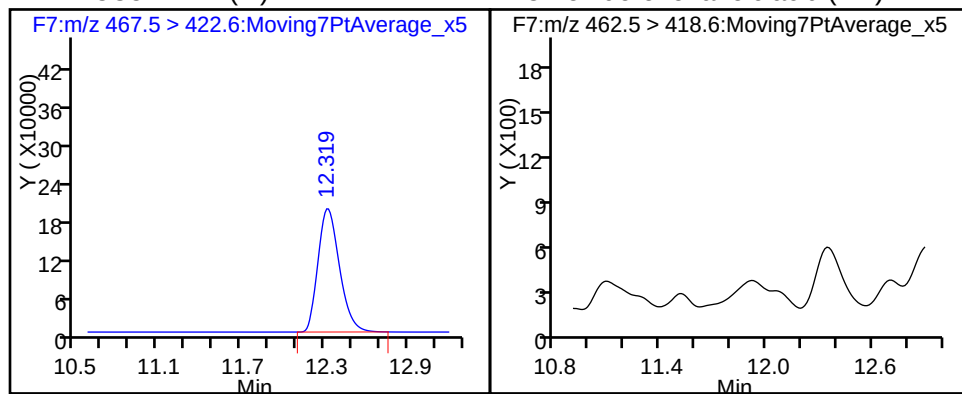
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-44 RA Lab Sample ID: 320-17406-8 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_014.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 12:56
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 570.5 (mL) Date Analyzed: 02/29/2016 21:26
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	74		25-150
STL00990	13C4 PFOA	68		25-150
STL00991	13C4 PFOS	95		25-150
STL01892	13C4-PFHpA	74		25-150
STL00995	13C5 PFNA	55		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_014.d
 Lims ID: 320-17406-B-8-A Lab Sample ID: 320-17406-8
 Client ID: DW-44
 Sample Type: Client
 Inject. Date: 29-Feb-2016 21:26:18 ALS Bottle#: 9 Worklist Smp#: 14
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-b-8-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.008	8.035	-0.027		1070389	37.2		74.3	87074	
D 8 13C4-PFHpA										
367.0 > 322.0	9.235	9.261	-0.026		1240745	37.0		74.1	40077	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.217	9.262	-0.045	1.000	5441	0.5304			0.6	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.352	9.296	0.056	1.000	16433	1.64				
D 11 18O2 PFHxS										
403.0 > 84.0	9.270	9.297	-0.027		693057	47.7		101	55122	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.356	10.388	-0.032	1.000	27583	1.20			0.9	
413.0 > 169.0	10.356	10.388	-0.032	1.000	9019		3.06(0.00-0.00)		0.8	
D 12 13C4 PFOA										
417.0 > 372.0	10.356	10.389	-0.033		1224077	34.1		68.2	90330	
D 16 13C4 PFOS										
503.0 > 80.0	11.320	11.350	-0.030		750750	45.3		94.7	21940	
D 17 13C5 PFNA										
468.0 > 423.0	11.342	11.368	-0.026		843949	27.4		54.8	120279	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_014.d

Injection Date: 29-Feb-2016 21:26:18

Instrument ID: A6

Lims ID: 320-17406-B-8-A

Lab Sample ID: 320-17406-8

Client ID: DW-44

Operator ID: JRB

ALS Bottle#: 9

Worklist Smp#: 14

Injection Vol: 15.0 ul

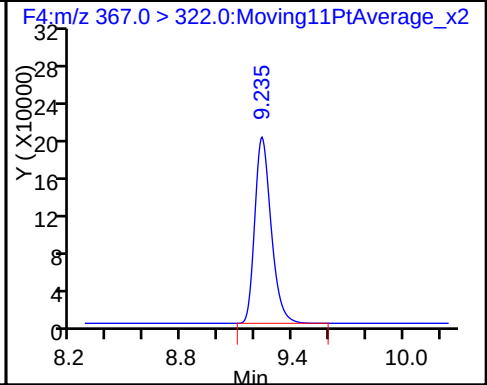
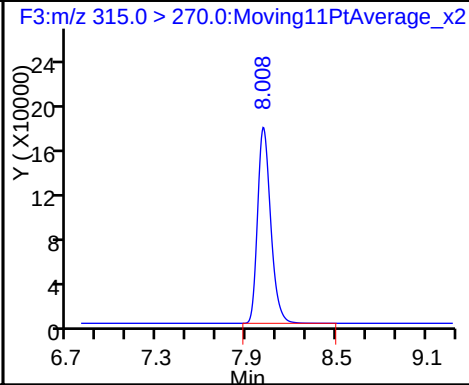
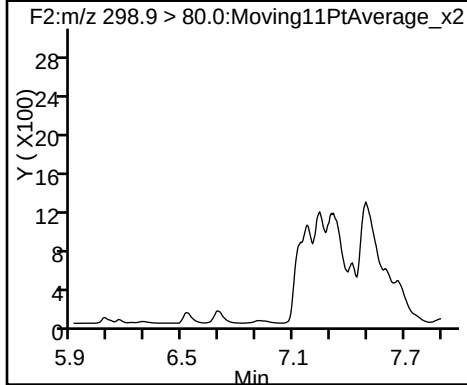
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

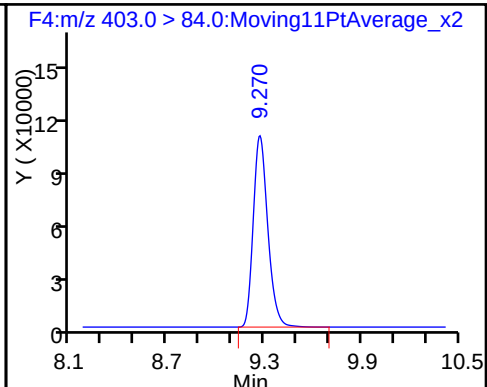
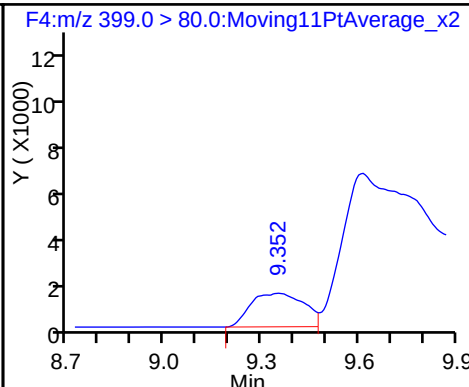
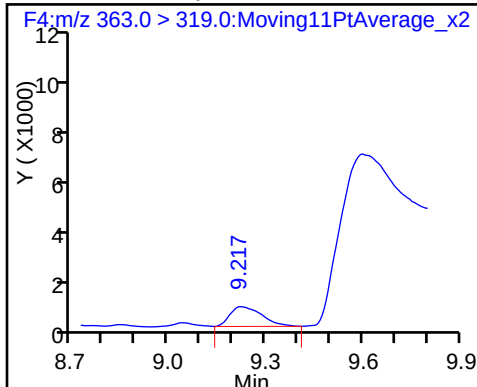
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

41 Perfluorohexanesulfonic acid

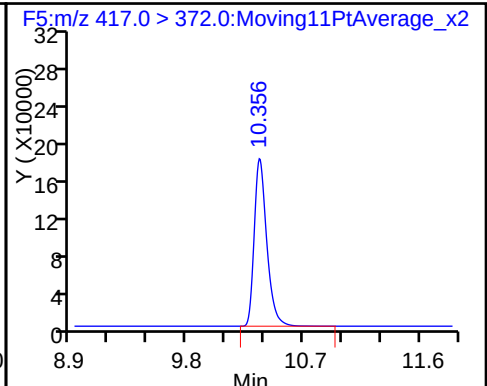
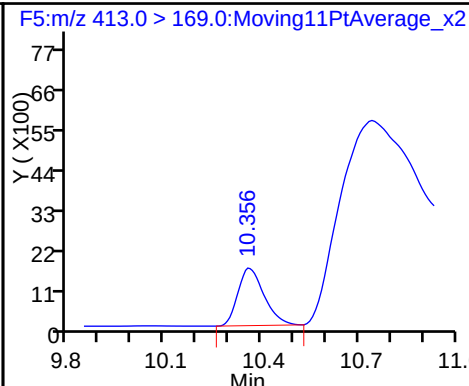
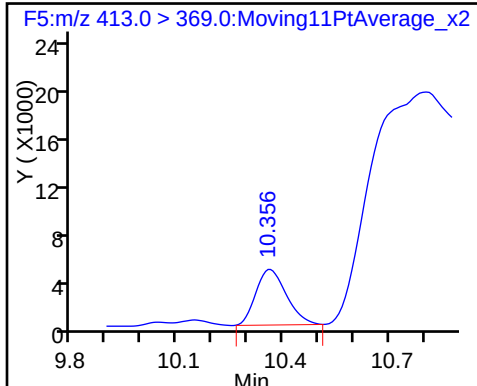
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

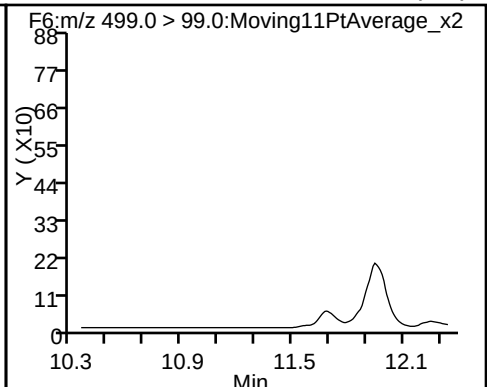
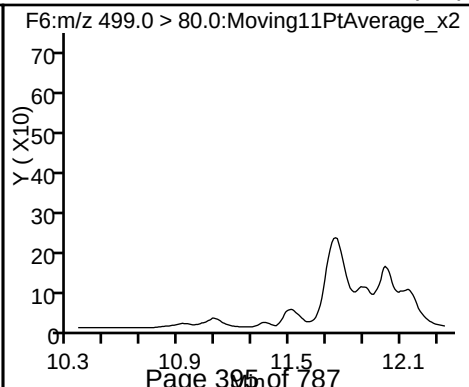
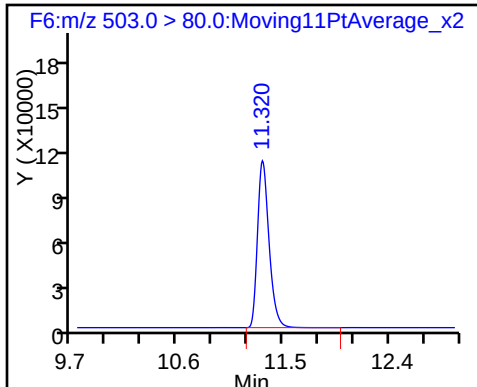
D 12 13C4 PFOA



D 16 13C4 PFOS

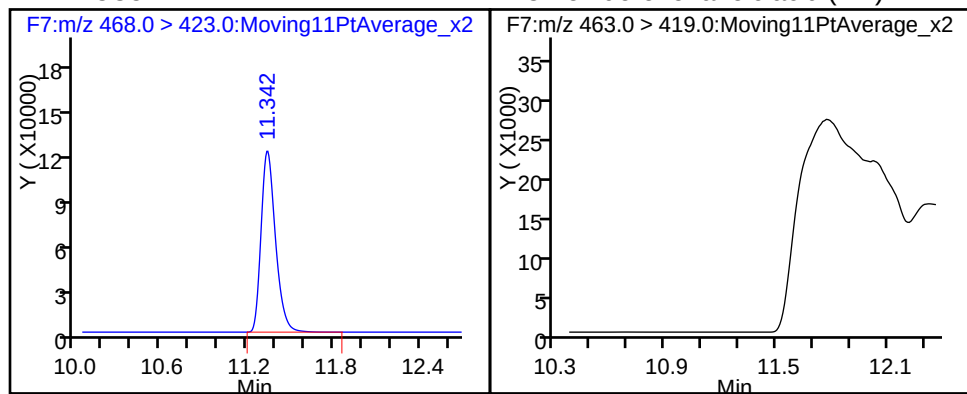
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-44FB</u>	Lab Sample ID: <u>320-17406-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_045.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 12:46</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>499.2 (mL)</u>	Date Analyzed: <u>02/27/2016 12:59</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.66
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		25-150
STL00990	13C4 PFOA	100		25-150
STL00991	13C4 PFOS	110		25-150
STL01892	13C4-PFHpA	96		25-150
STL00995	13C5 PFNA	108		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_045.d
 Lims ID: 320-17406-A-9-A Lab Sample ID: 320-17406-9
 Client ID: DW-44FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 12:59:36 ALS Bottle#: 29 Worklist Smp#: 41
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-9-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc Date: 28-Feb-2016 13:09:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.105	8.604	0.501		3666852	45.5		91.0	6859	
D 8 13C4-PFHpA										
366.6 > 321.6	10.344	9.856	0.488		3266399	48.1		96.2	5746	
D 11 18O2 PFHxS										
402.5 > 83.6	10.378	9.892	0.486		1728777	47.7		101	3990	
D 12 13C4 PFOA										
416.5 > 371.6	11.401	10.958	0.443		3928257	50.1		100	8024	
D 16 13C4 PFOS										
502.4 > 79.7	12.270	11.876	0.394		859345	52.7		110	2217	
D 17 13C5 PFNA										
467.5 > 422.6	12.284	11.898	0.386		3486580	53.8		108	4417	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_045.d

Injection Date: 27-Feb-2016 12:59:36

Instrument ID: A4

Lims ID: 320-17406-A-9-A

Lab Sample ID: 320-17406-9

Client ID: DW-44FB

Operator ID: JRB

ALS Bottle#: 29

Worklist Smp#: 41

Injection Vol: 15.0 ul

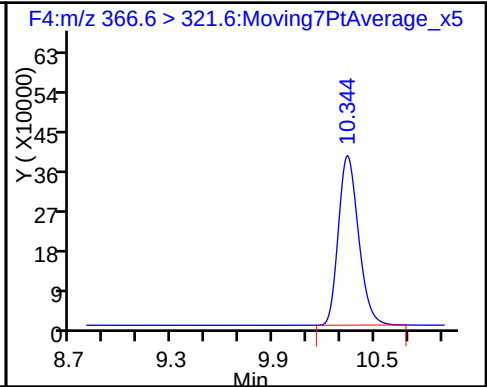
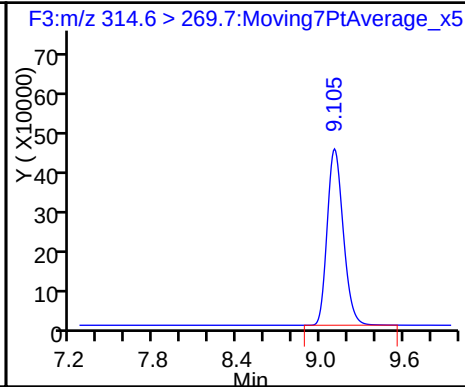
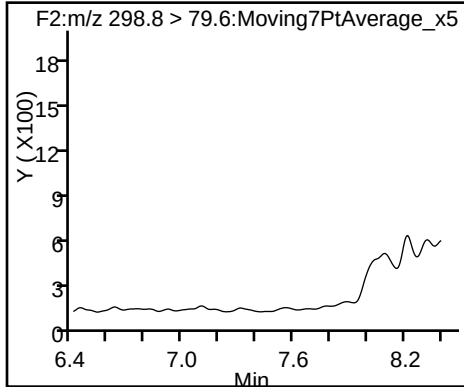
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

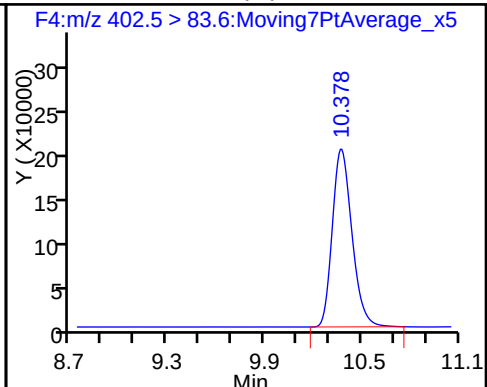
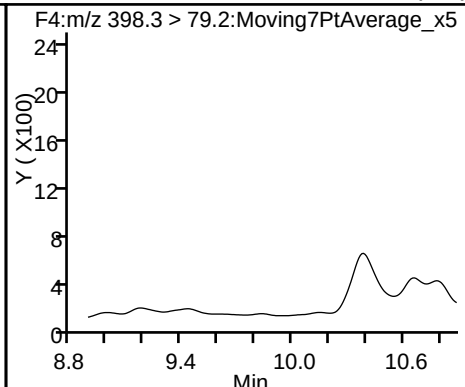
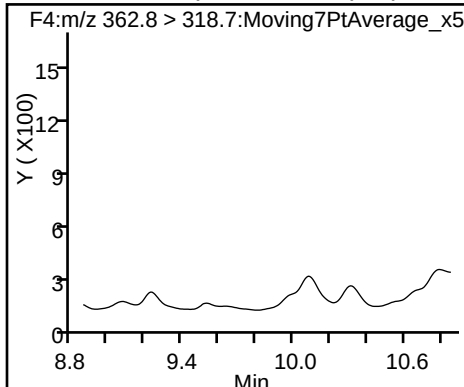
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

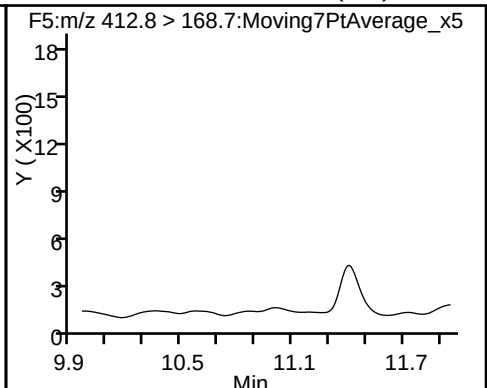
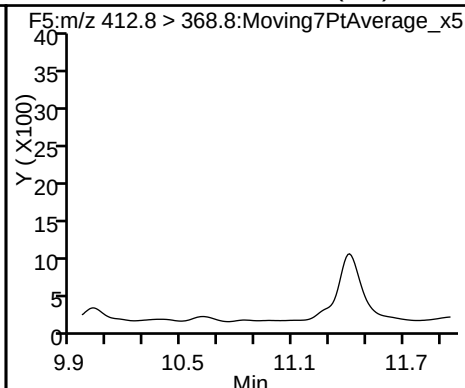
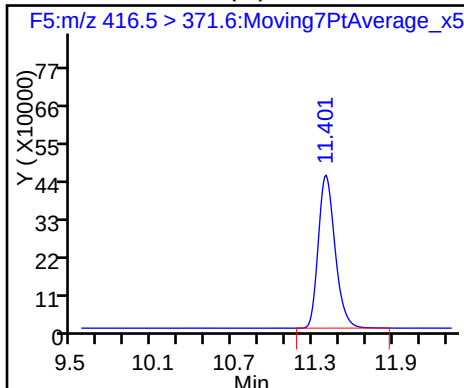
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

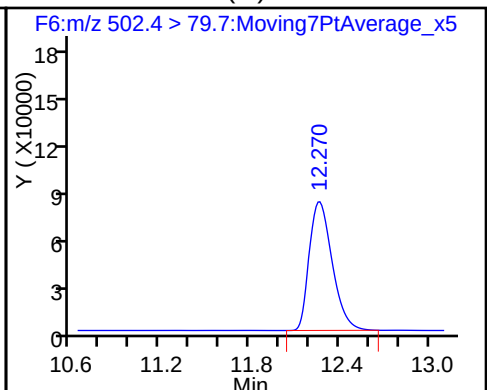
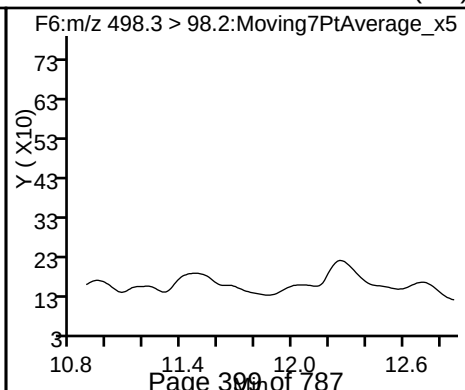
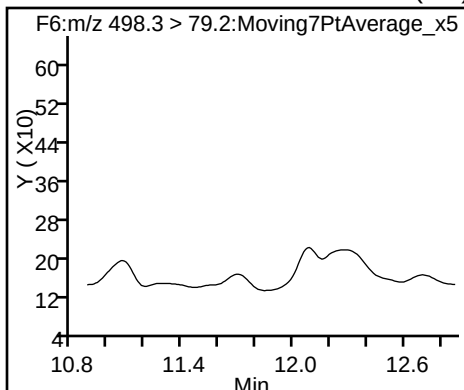
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

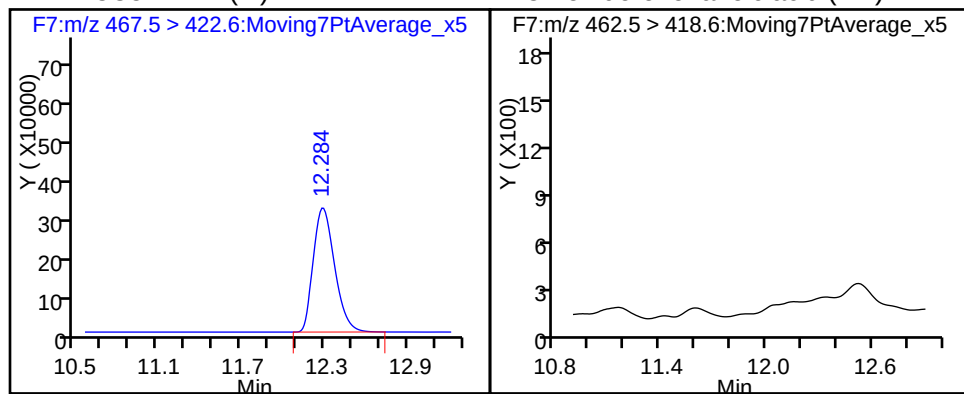
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-44FB RA Lab Sample ID: 320-17406-9 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_015.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 12:46
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 499.2 (mL) Date Analyzed: 02/29/2016 21:47
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	99		25-150
STL00990	13C4 PFOA	96		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	94		25-150
STL00995	13C5 PFNA	90		25-150
STL00994	18O2 PFHxS	88		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_015.d
 Lims ID: 320-17406-A-9-A Lab Sample ID: 320-17406-9
 Client ID: DW-44FB
 Sample Type: Client
 Inject. Date: 29-Feb-2016 21:47:30 ALS Bottle#: 10 Worklist Smp#: 15
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-9-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.002	8.035	-0.033		1432294	49.7		99.5	111490	
D 8 13C4-PFHpA										
367.0 > 322.0	9.229	9.261	-0.032		1572218	46.9		93.9	48758	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.293	9.296	-0.003	1.000	1536	0.2900				
D 11 18O2 PFHxS										
403.0 > 84.0	9.264	9.297	-0.033		603765	41.6		87.9	24241	
D 12 13C4 PFOA										
417.0 > 372.0	10.356	10.389	-0.033		1724556	48.0		96.0	125934	
D 16 13C4 PFOS										
503.0 > 80.0	11.320	11.350	-0.030		733885	44.3		92.6	53689	
D 17 13C5 PFNA										
468.0 > 423.0	11.335	11.368	-0.033		1386705	45.0		90.1	99116	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_015.d

Injection Date: 29-Feb-2016 21:47:30

Instrument ID: A6

Lims ID: 320-17406-A-9-A

Lab Sample ID: 320-17406-9

Client ID: DW-44FB

Operator ID: JRB

ALS Bottle#: 10

Worklist Smp#: 15

Injection Vol: 15.0 ul

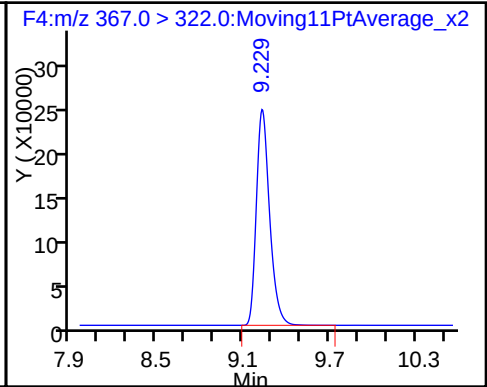
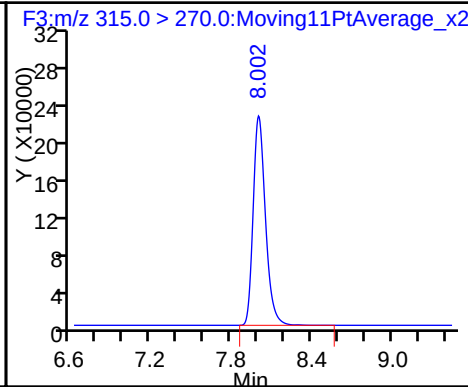
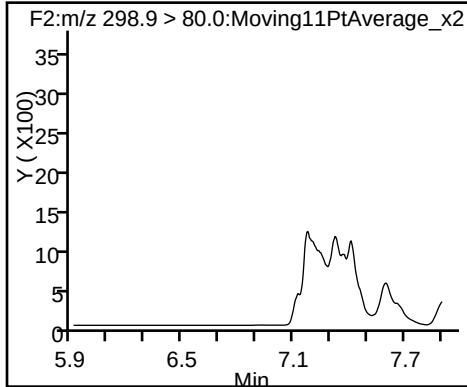
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

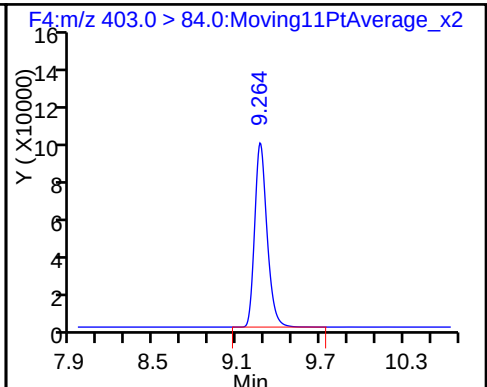
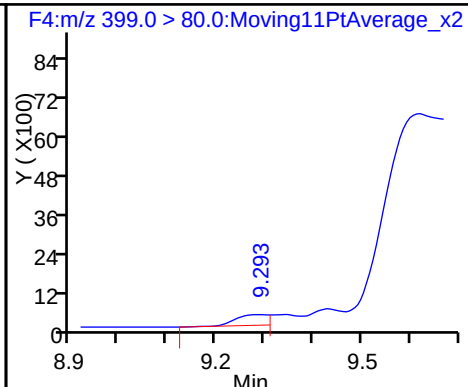
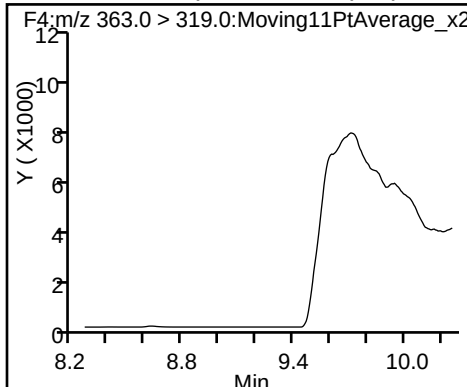
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

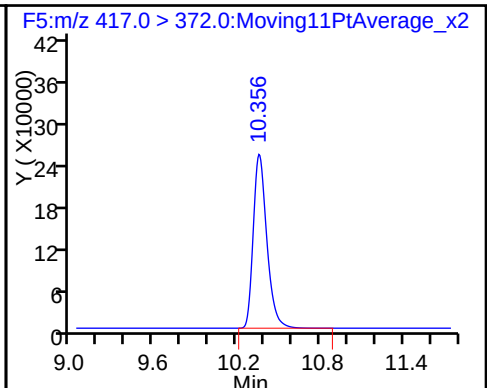
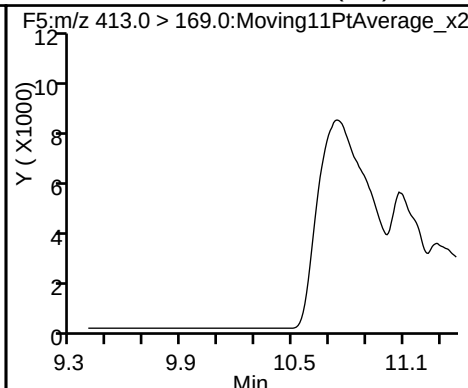
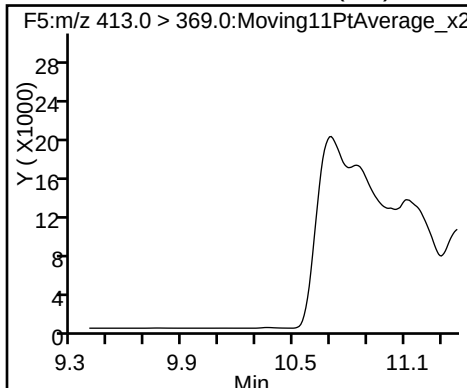
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

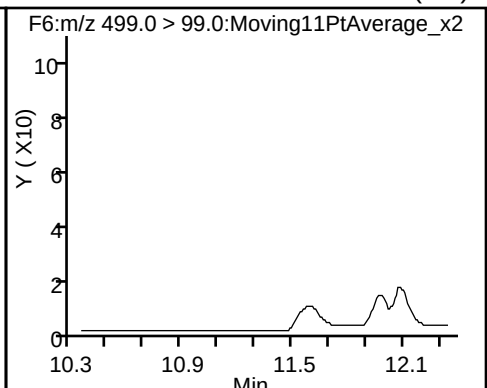
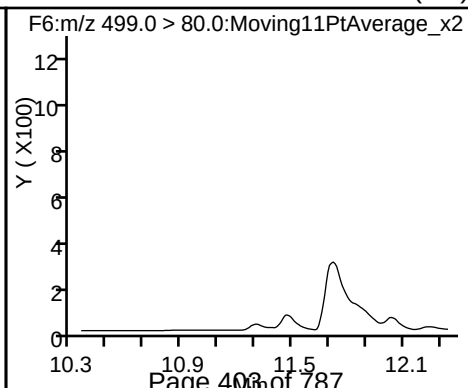
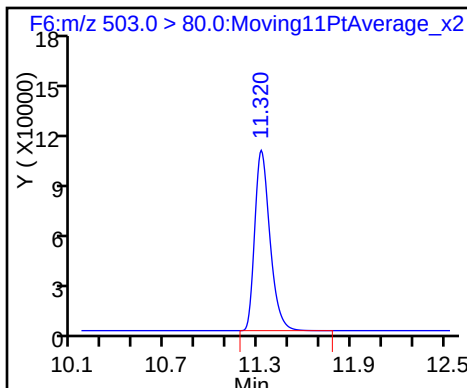
D 12 13C4 PFOA



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid (ND)

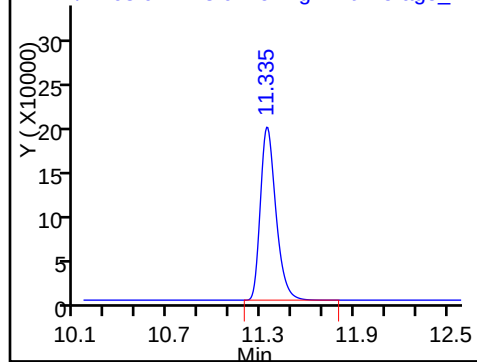
15 Perfluorooctane sulfonic acid (ND)



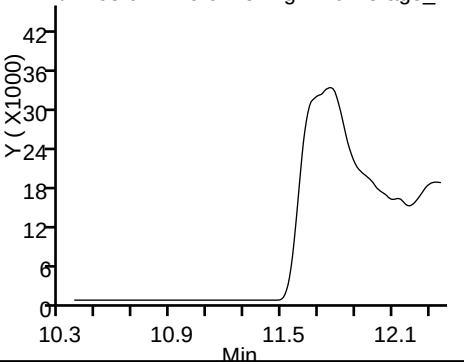
D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)

F7:m/z 468.0 > 423.0:Moving11PtAverage_x2



F7:m/z 463.0 > 419.0:Moving11PtAverage_x2



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-15</u>	Lab Sample ID: <u>320-17406-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_046.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 13:26</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>572.1 (mL)</u>	Date Analyzed: <u>02/27/2016 13:20</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.7	U	2.2	1.7	0.80
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.7	U	2.2	1.7	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7	U	2.2	1.7	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.7	U	2.2	1.7	0.57
335-67-1	Perfluorooctanoic acid (PFOA)	1.7	U	2.2	1.7	0.65

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	65		25-150
STL00990	13C4 PFOA	73		25-150
STL00991	13C4 PFOS	92		25-150
STL01892	13C4-PFHpA	64		25-150
STL00995	13C5 PFNA	72		25-150
STL00994	18O2 PFHxS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_046.d
 Lims ID: 320-17406-A-10-A Lab Sample ID: 320-17406-10
 Client ID: DW-15
 Sample Type: Client
 Inject. Date: 27-Feb-2016 13:20:47 ALS Bottle#: 30 Worklist Smp#: 42
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-10-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc Date: 28-Feb-2016 13:10:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.300	8.604	0.696		2628929	32.6		65.2	4212	
D 8 13C4-PFHpA										
366.6 > 321.6	10.543	9.856	0.687		2189820	32.2		64.5	4151	
D 11 18O2 PFHxS										
402.5 > 83.6	10.580	9.892	0.688		1498653	41.3		87.3	3196	
D 12 13C4 PFOA										
416.5 > 371.6	11.595	10.958	0.637		2856727	36.4		72.9	6493	
D 16 13C4 PFOS										
502.4 > 79.7	12.448	11.876	0.572		718987	44.1		92.3	2098	
D 17 13C5 PFNA										
467.5 > 422.6	12.474	11.898	0.576		2342658	36.2		72.3	4400	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_046.d

Injection Date: 27-Feb-2016 13:20:47

Instrument ID: A4

Lims ID: 320-17406-A-10-A

Lab Sample ID: 320-17406-10

Client ID: DW-15

Operator ID: JRB

ALS Bottle#: 30

Worklist Smp#: 42

Injection Vol: 15.0 ul

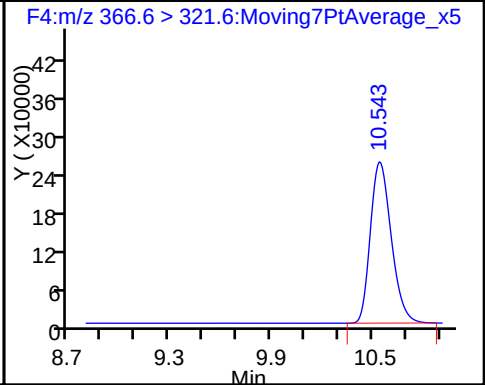
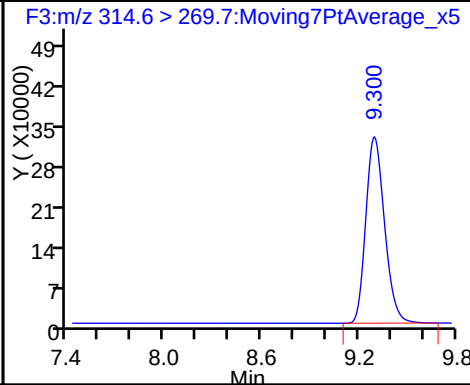
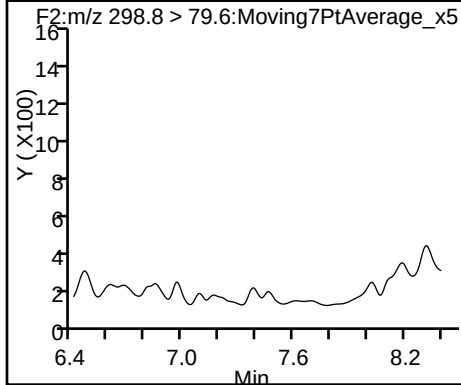
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

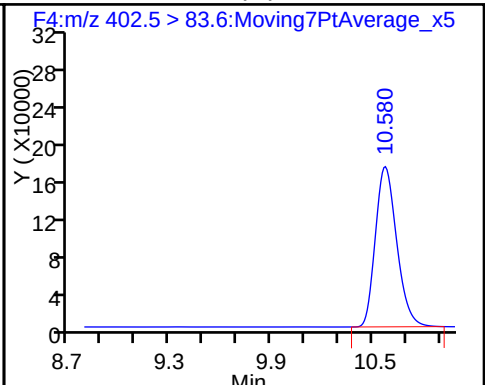
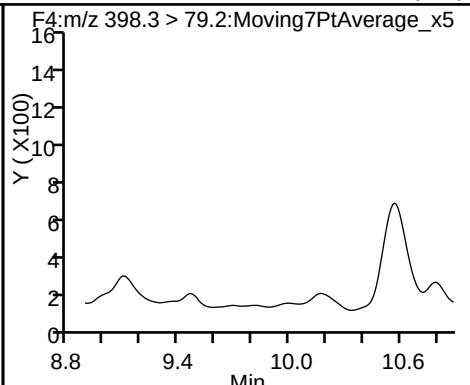
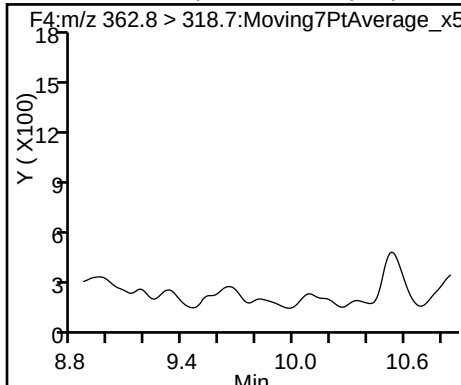
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

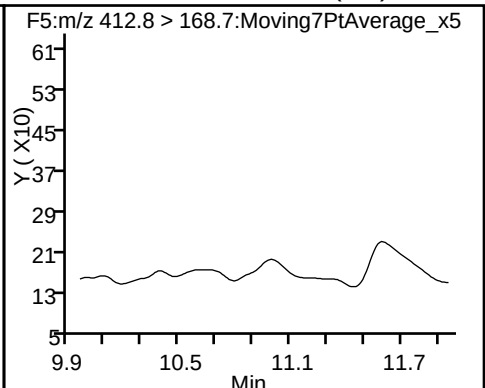
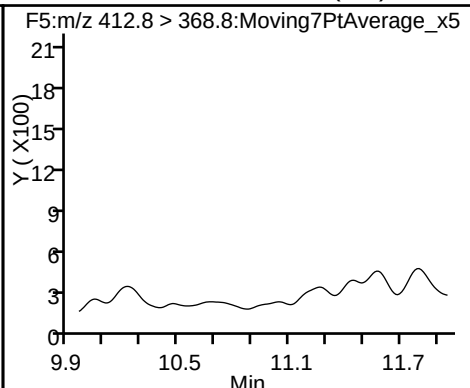
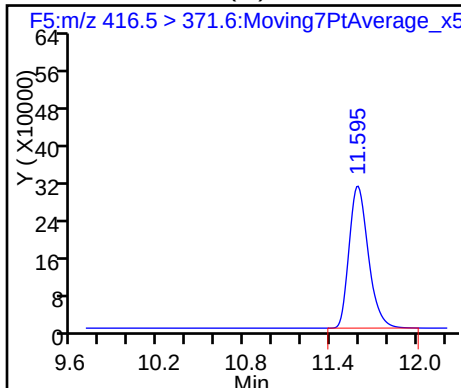
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

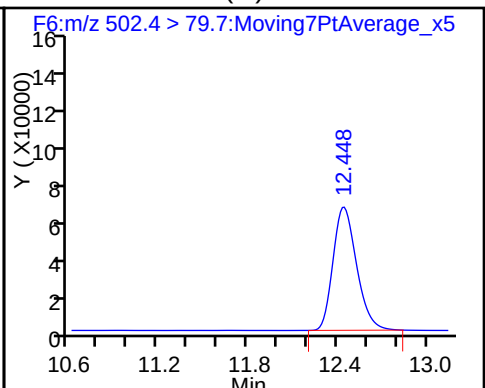
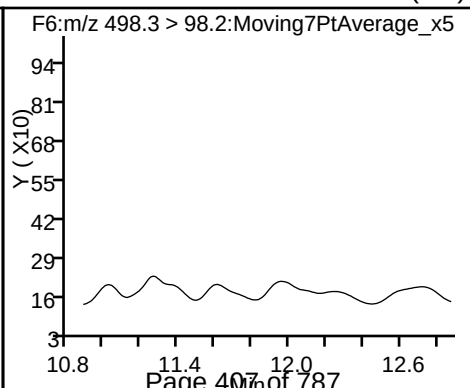
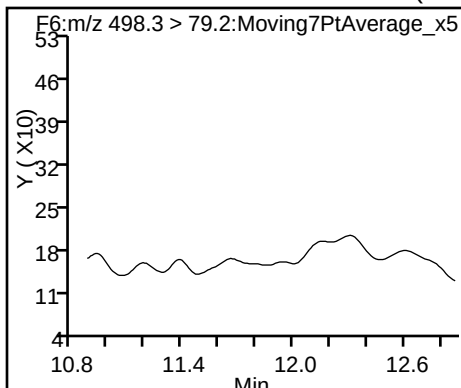
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

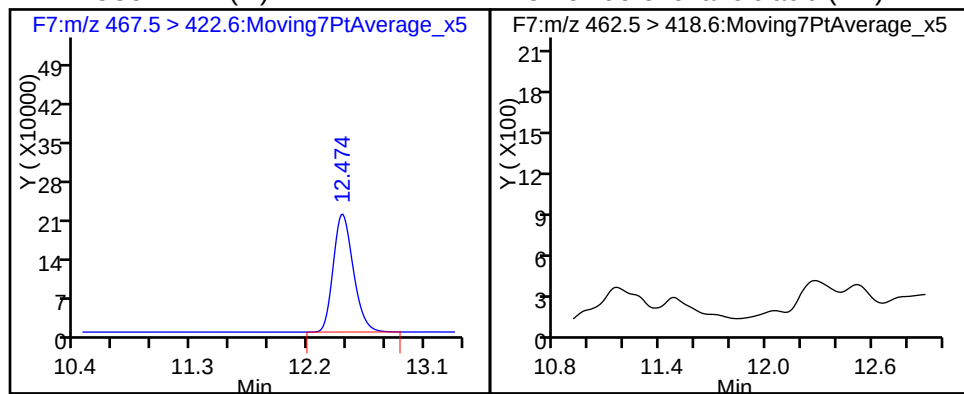
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-15 RA Lab Sample ID: 320-17406-10 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_016.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 13:26
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 572.1 (mL) Date Analyzed: 02/29/2016 22:08
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	84		25-150
STL00990	13C4 PFOA	76		25-150
STL00991	13C4 PFOS	107		25-150
STL01892	13C4-PFHpA	83		25-150
STL00995	13C5 PFNA	71		25-150
STL00994	18O2 PFHxS	103		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_016.d
 Lims ID: 320-17406-A-10-A Lab Sample ID: 320-17406-10
 Client ID: DW-15
 Sample Type: Client
 Inject. Date: 29-Feb-2016 22:08:43 ALS Bottle#: 11 Worklist Smp#: 16
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-10-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:00:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.001	8.035	-0.034		1208583	42.0		83.9	95398	
D 8 13C4-PFHpA										
367.0 > 322.0	9.229	9.261	-0.032		1385581	41.4		82.7	107715	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.358	9.296	0.062	1.000	8071	0.8551				
D 11 18O2 PFHxS										
403.0 > 84.0	9.259	9.297	-0.038		708500	48.8		103	56514	
D 12 13C4 PFOA										
417.0 > 372.0	10.357	10.389	-0.032		1368505	38.1		76.2	100186	
D 16 13C4 PFOS										
503.0 > 80.0	11.320	11.350	-0.030		845138	51.0		107	61670	
D 17 13C5 PFNA										
468.0 > 423.0	11.336	11.368	-0.032		1098815	35.7		71.4	79742	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_016.d

Injection Date: 29-Feb-2016 22:08:43

Instrument ID: A6

Lims ID: 320-17406-A-10-A

Lab Sample ID: 320-17406-10

Client ID: DW-15

Operator ID: JRB

ALS Bottle#: 11

Worklist Smp#: 16

Injection Vol: 15.0 ul

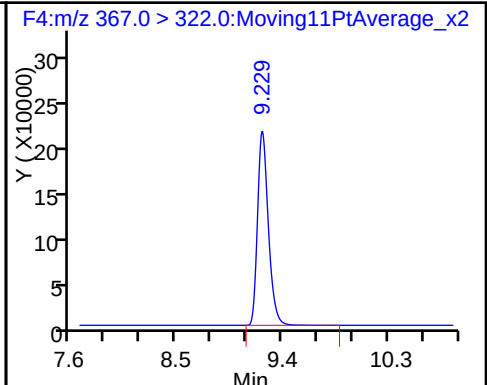
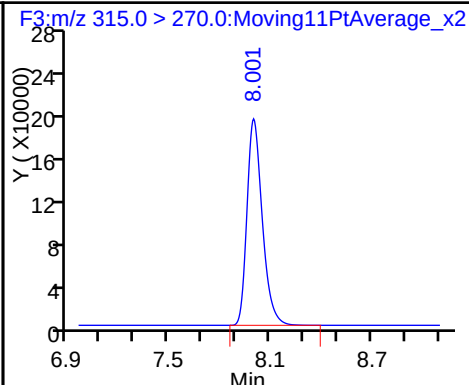
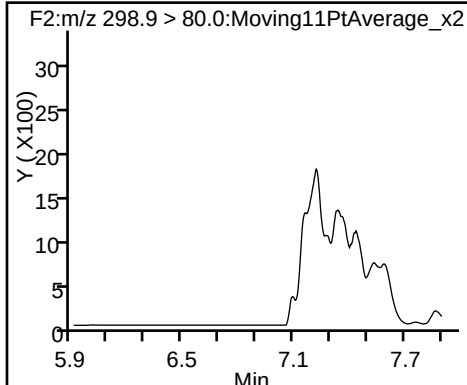
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

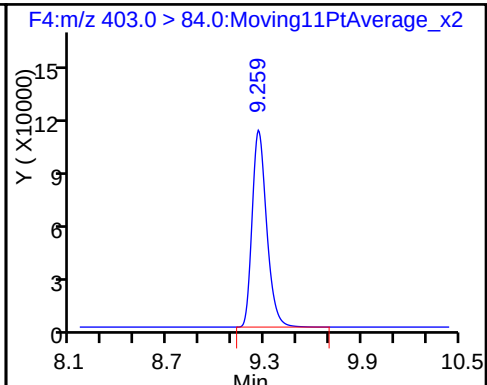
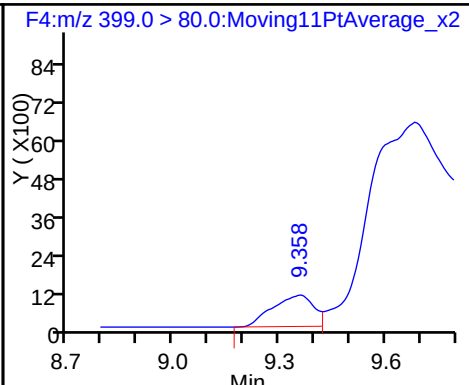
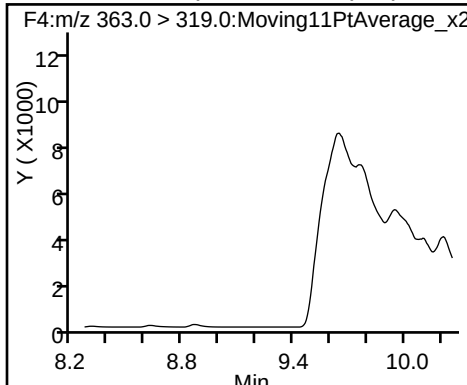
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

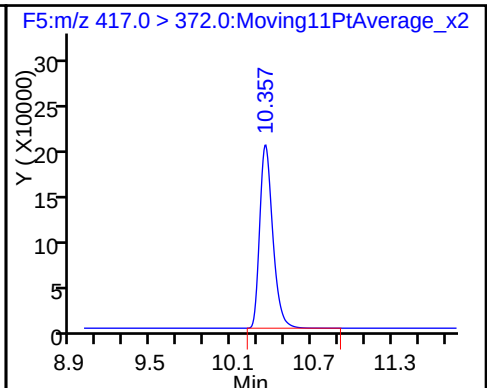
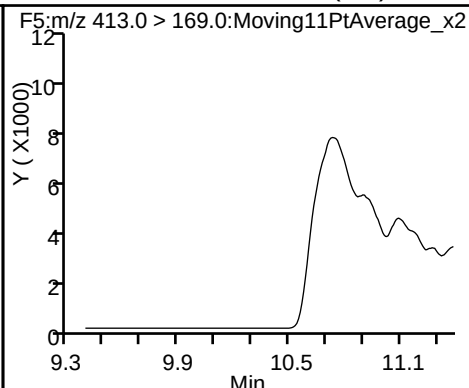
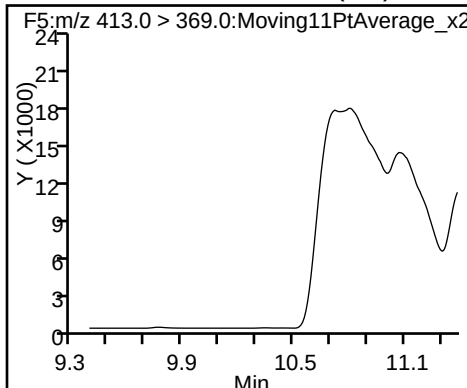
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

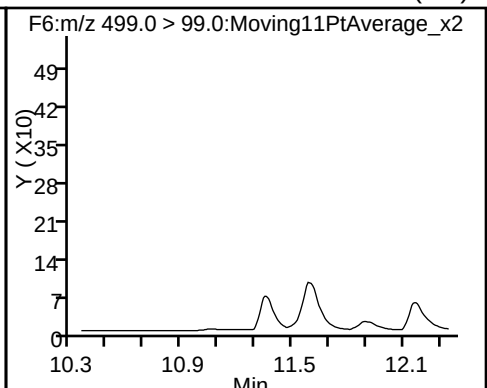
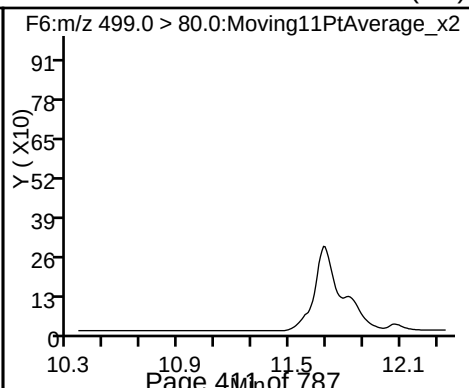
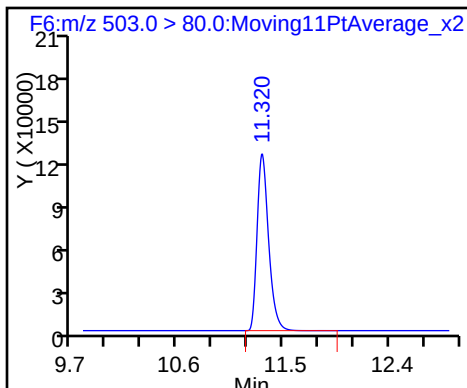
D 12 13C4 PFOA



D 16 13C4 PFOS

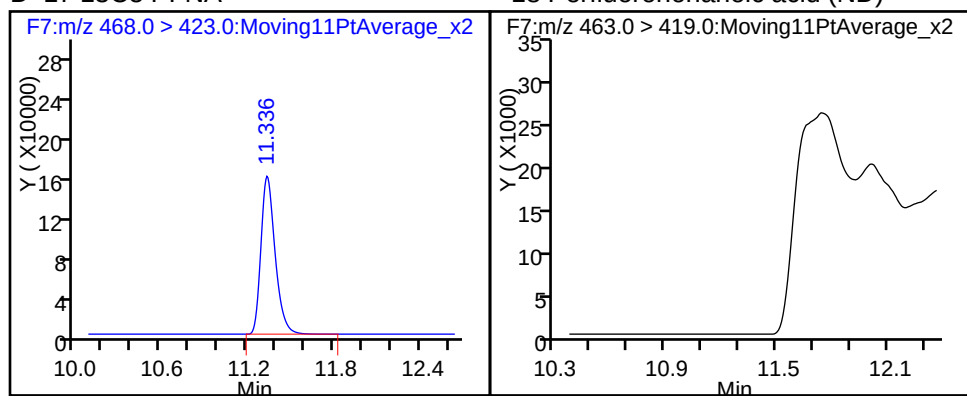
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-15FB</u>	Lab Sample ID: <u>320-17406-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_048.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 13:16</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>505.7 (mL)</u>	Date Analyzed: <u>02/27/2016 14:03</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.91
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		25-150
STL00990	13C4 PFOA	103		25-150
STL00991	13C4 PFOS	98		25-150
STL01892	13C4-PFHpA	98		25-150
STL00995	13C5 PFNA	104		25-150
STL00994	18O2 PFHxS	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_048.d
 Lims ID: 320-17406-A-11-A Lab Sample ID: 320-17406-11
 Client ID: DW-15FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 14:03:08 ALS Bottle#: 31 Worklist Smp#: 44
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-11-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	8.940	8.604	0.336		3768490	46.8		93.5	7887	
D 8 13C4-PFHpA										
366.6 > 321.6	10.258	9.856	0.402		3317742	48.9		97.7	5478	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.293	9.892	0.401	1.000	5605	0.1521				
D 11 18O2 PFHxS										
402.5 > 83.6	10.293	9.892	0.401		1719201	47.4		100	3871	
D 12 13C4 PFOA										
416.5 > 371.6	11.355	10.958	0.397		4017932	51.3		103	7271	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.383	10.958	0.425	1.000	4902	0.1161			4.0	
D 16 13C4 PFOS										
502.4 > 79.7	12.255	11.876	0.379		760843	46.7		97.6	1638	
D 17 13C5 PFNA										
467.5 > 422.6	12.269	11.898	0.371		3378242	52.1		104	6601	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_048.d

Injection Date: 27-Feb-2016 14:03:08

Instrument ID: A4

Lims ID: 320-17406-A-11-A

Lab Sample ID: 320-17406-11

Client ID: DW-15FB

Operator ID: JRB

ALS Bottle#: 31

Worklist Smp#: 44

Injection Vol: 15.0 ul

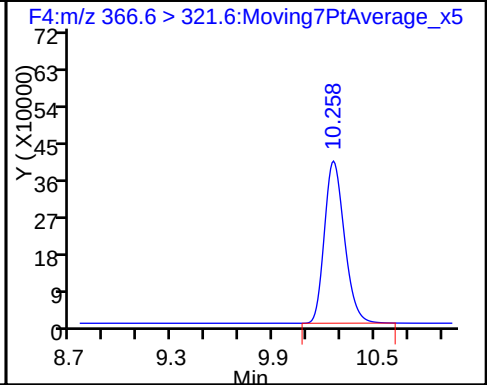
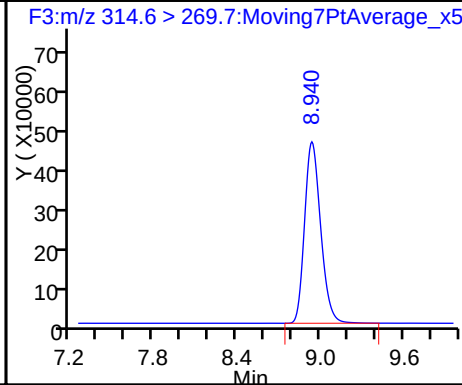
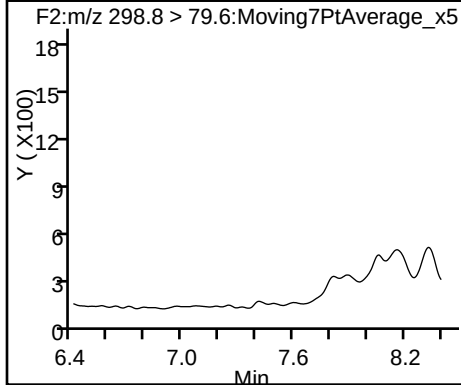
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

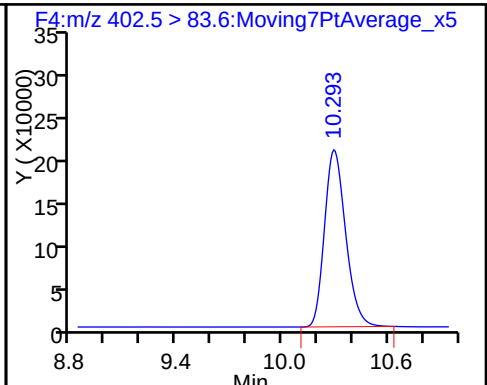
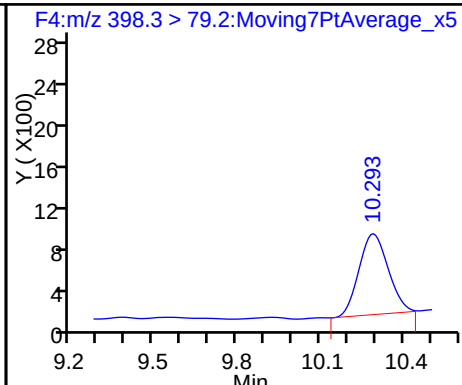
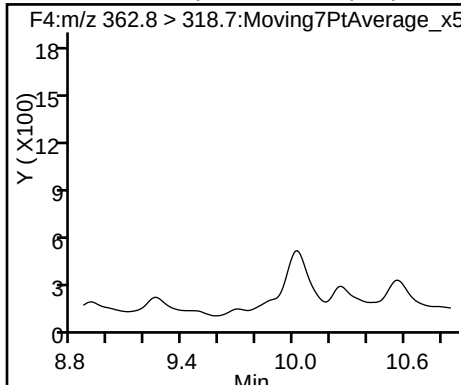
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid

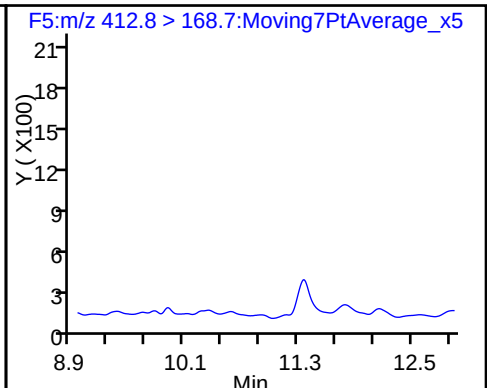
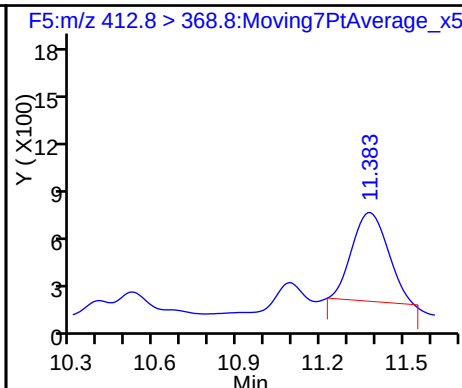
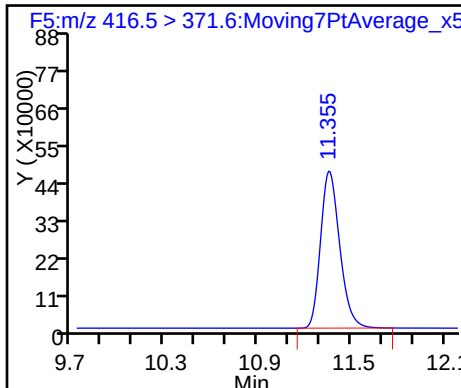
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid

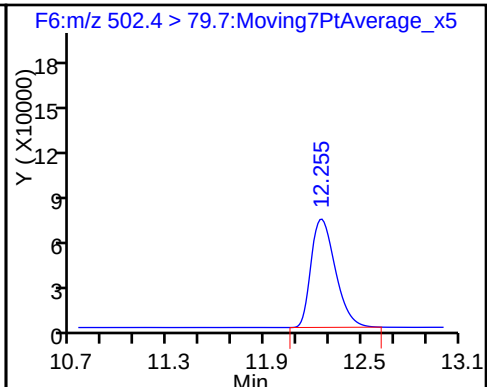
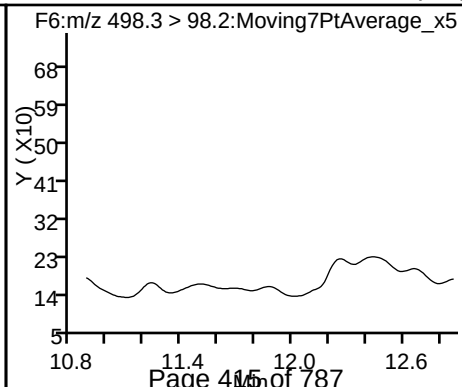
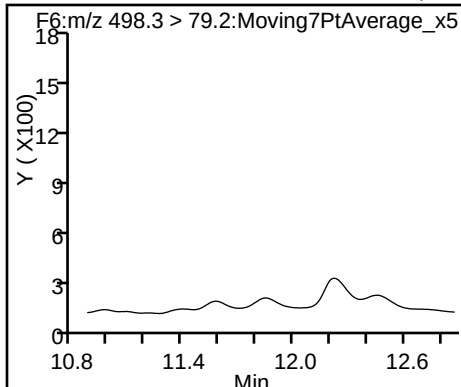
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (ND)

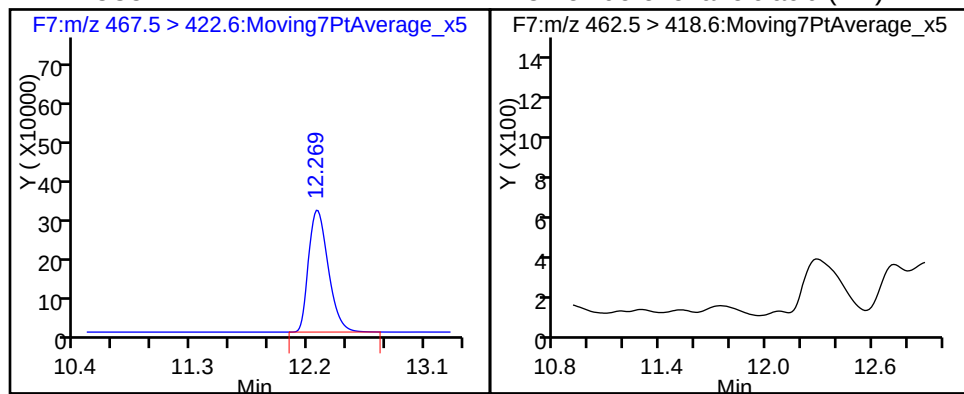
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-15FB RA Lab Sample ID: 320-17406-11 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_018.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 13:16
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 505.7(mL) Date Analyzed: 02/29/2016 22:51
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	93		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	92		25-150
STL00995	13C5 PFNA	90		25-150
STL00994	18O2 PFHxS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_018.d
 Lims ID: 320-17406-A-11-A Lab Sample ID: 320-17406-11
 Client ID: DW-15FB
 Sample Type: Client
 Inject. Date: 29-Feb-2016 22:51:12 ALS Bottle#: 12 Worklist Smp#: 18
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-11-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:04:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 6 13C2 PFHxA

315.0 > 270.0 8.007 8.035 -0.028 1361183 47.3 94.5 106460

D 8 13C4-PFHpA

367.0 > 322.0 9.229 9.261 -0.032 1545011 46.1 92.3 120777

9 Perfluoroheptanoic acid

363.0 > 319.0 9.223 9.262 -0.039 1.000 2160 0.3958 0.2

41 Perfluorohexanesulfonic acid

399.0 > 80.0 9.311 9.296 0.015 1.000 7957 0.9447

D 11 18O2 PFHxS

403.0 > 84.0 9.264 9.297 -0.033 621927 42.8 90.5 49551

13 Perfluorooctanoic acid

413.0 > 369.0 10.363 10.388 -0.025 1.000 2135 0.0676 0.0

D 12 13C4 PFOA

417.0 > 372.0 10.356 10.389 -0.033 1676874 46.7 93.4 34949

D 16 13C4 PFOS

503.0 > 80.0 11.312 11.350 -0.038 736138 44.4 92.9 53111

D 17 13C5 PFNA

468.0 > 423.0 11.335 11.368 -0.033 1382916 44.9 89.9 100253

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_018.d

Injection Date: 29-Feb-2016 22:51:12

Instrument ID: A6

Lims ID: 320-17406-A-11-A

Lab Sample ID: 320-17406-11

Client ID: DW-15FB

Operator ID: JRB

ALS Bottle#: 12

Worklist Smp#: 18

Injection Vol: 15.0 ul

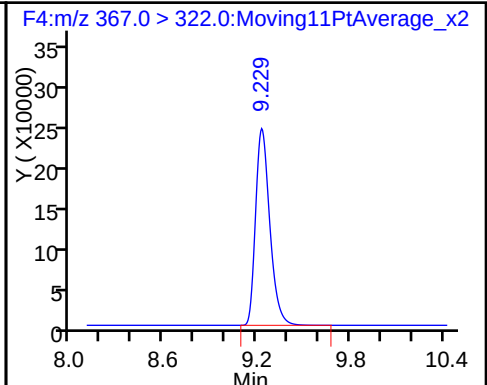
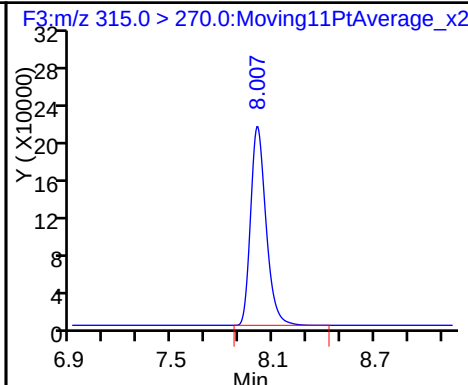
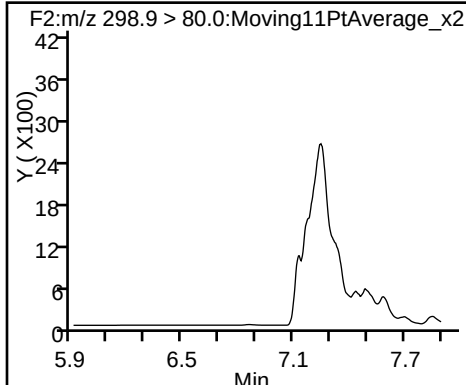
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

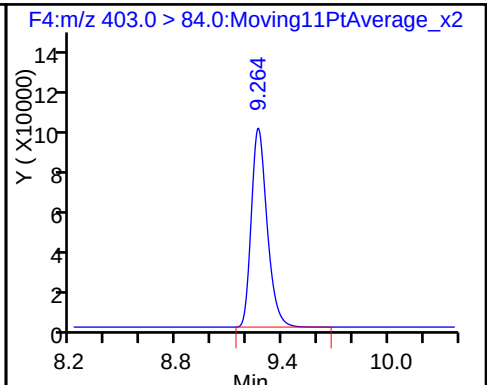
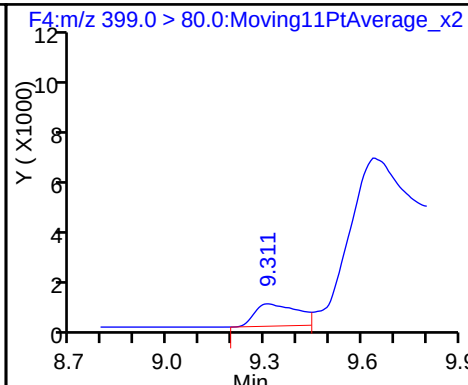
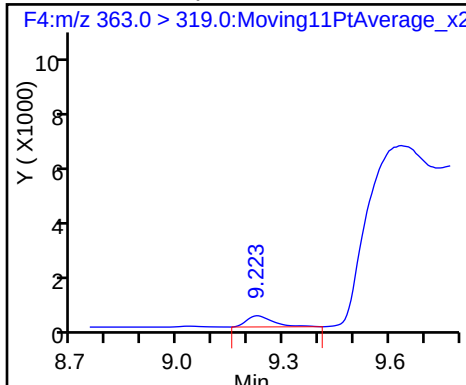
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

41 Perfluorohexanesulfonic acid

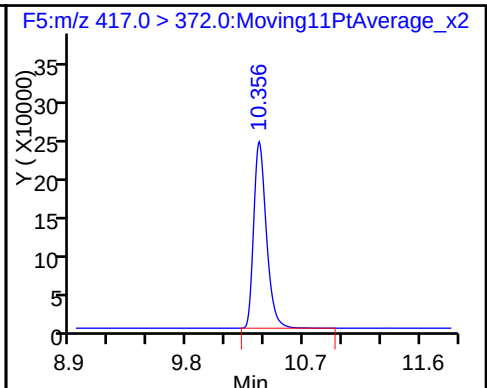
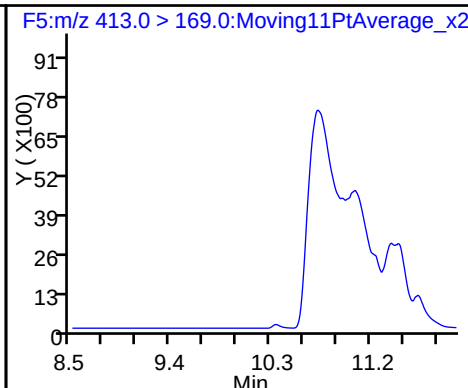
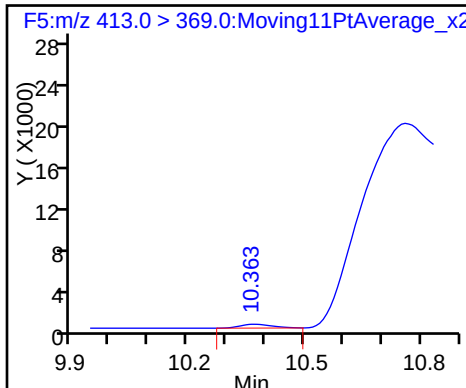
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

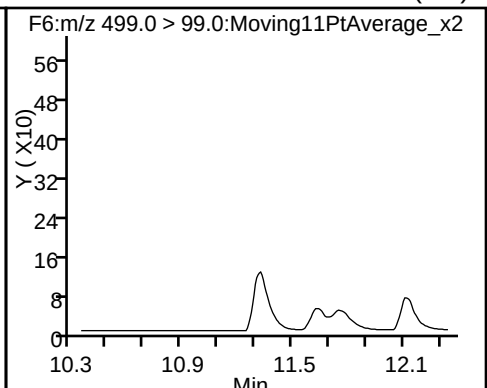
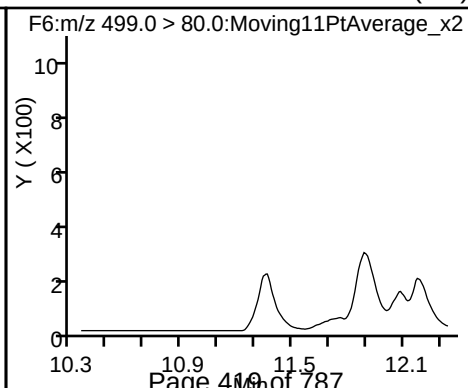
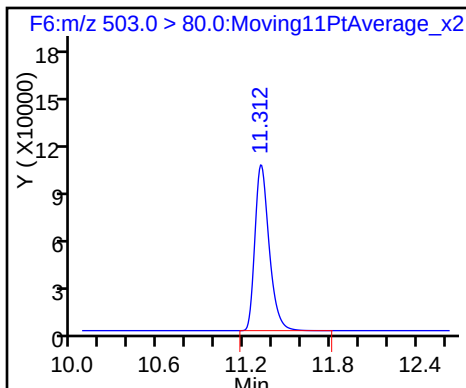
D 12 13C4 PFOA



D 16 13C4 PFOS

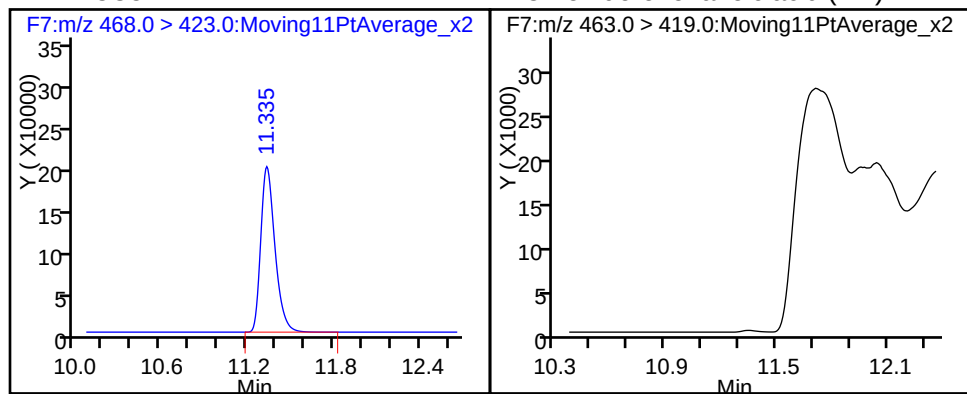
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-19</u>	Lab Sample ID: <u>320-17406-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_049.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 14:01</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>547.8 (mL)</u>	Date Analyzed: <u>02/27/2016 14:24</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.84
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.3	1.8	0.73
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.3	1.8	0.79
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.3	1.8	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.3	1.8	0.68

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	76		25-150
STL00990	13C4 PFOA	81		25-150
STL00991	13C4 PFOS	111		25-150
STL01892	13C4-PFHpA	77		25-150
STL00995	13C5 PFNA	79		25-150
STL00994	18O2 PFHxS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_049.d
 Lims ID: 320-17406-B-12-A Lab Sample ID: 320-17406-12
 Client ID: DW-19
 Sample Type: Client
 Inject. Date: 27-Feb-2016 14:24:19 ALS Bottle#: 32 Worklist Smp#: 45
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-12-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:24:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.191	8.604	0.587		3080904	38.2		76.5	6395	
D 8 13C4-PFHpA										
366.6 > 321.6	10.446	9.856	0.590		2624234	38.6		77.3	5189	
D 11 18O2 PFHxS										
402.5 > 83.6	10.480	9.892	0.588		1661960	45.8		96.9	3309	
D 12 13C4 PFOA										
416.5 > 371.6	11.503	10.958	0.545		3175120	40.5		81.0	7867	
D 16 13C4 PFOS										
502.4 > 79.7	12.359	11.876	0.483		867488	53.2		111	1764	
D 17 13C5 PFNA										
467.5 > 422.6	12.386	11.898	0.488		2562485	39.5		79.1	4795	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_049.d

Injection Date: 27-Feb-2016 14:24:19

Instrument ID: A4

Lims ID: 320-17406-B-12-A

Lab Sample ID: 320-17406-12

Client ID: DW-19

Operator ID: JRB

ALS Bottle#: 32

Worklist Smp#: 45

Injection Vol: 15.0 ul

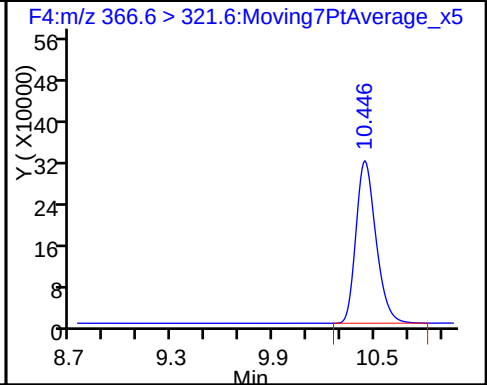
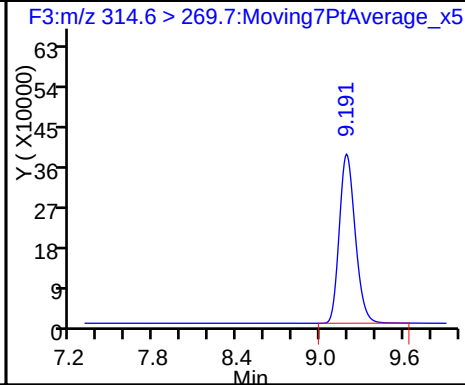
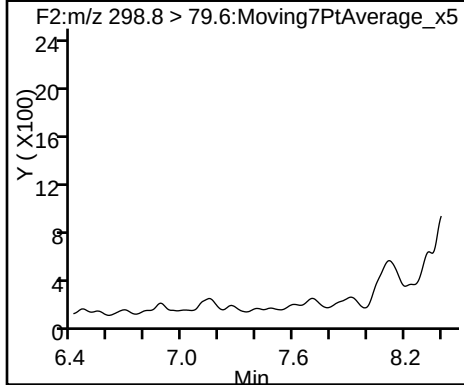
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

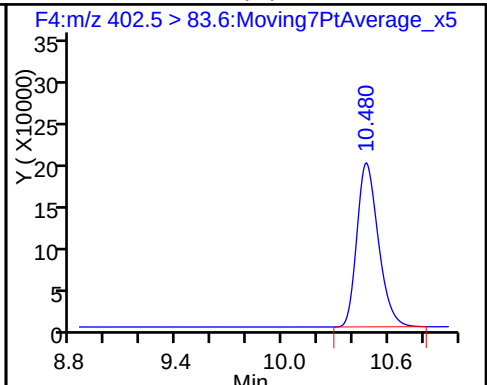
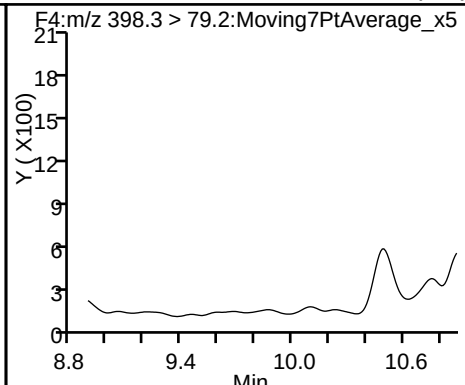
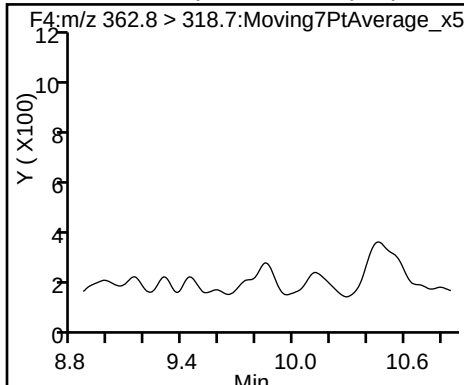
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

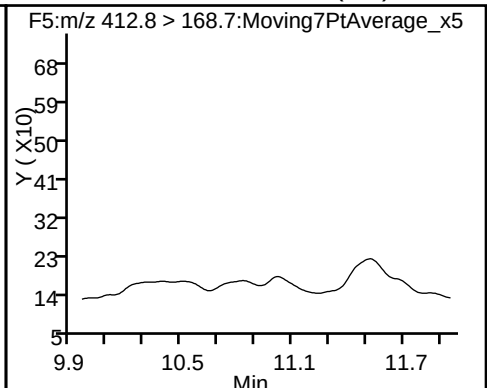
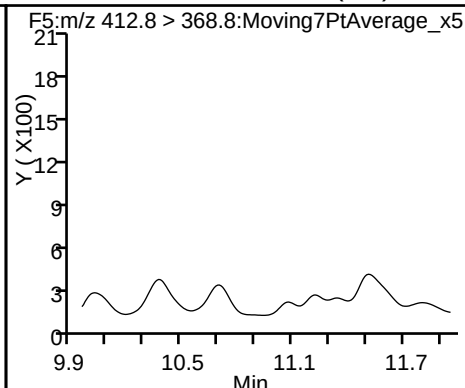
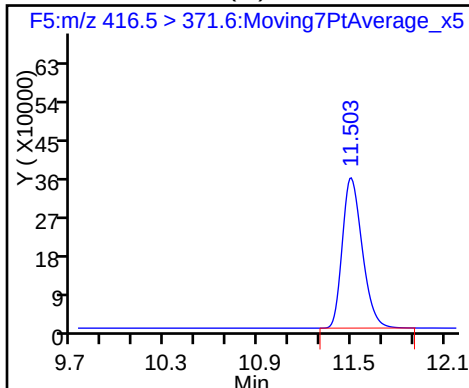
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

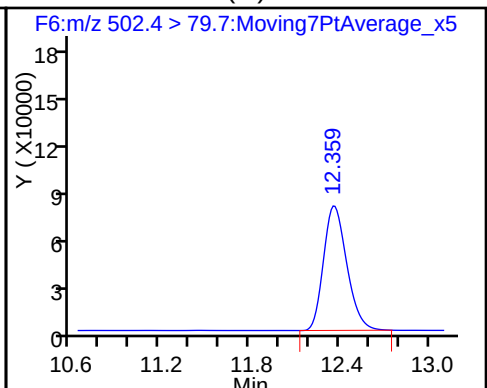
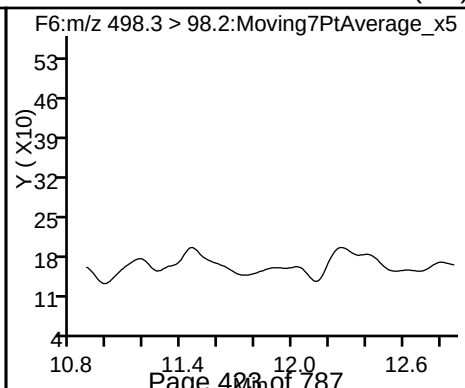
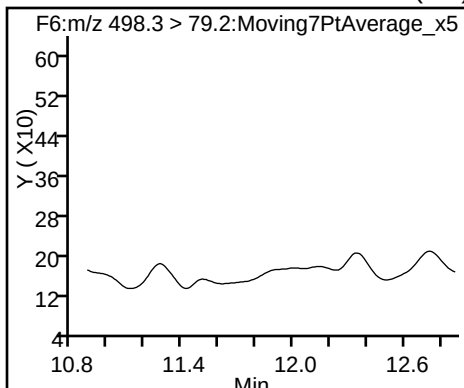
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

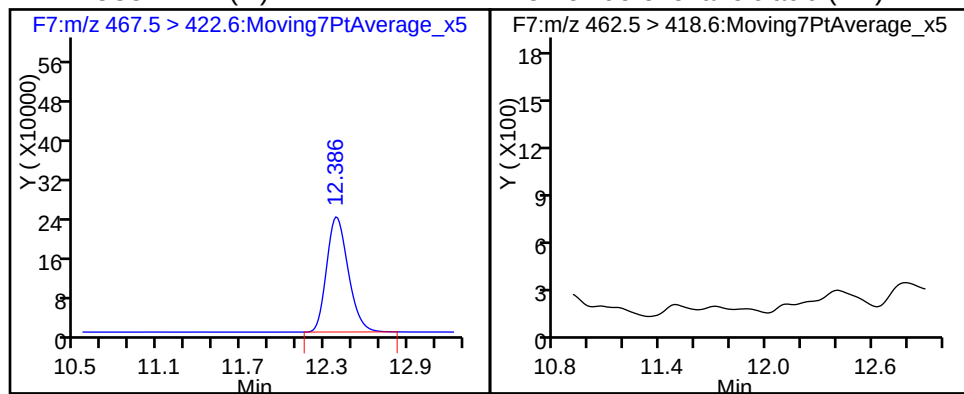
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-19 RA</u>	Lab Sample ID: <u>320-17406-12 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_019.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 14:01</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>547.8 (mL)</u>	Date Analyzed: <u>02/29/2016 23:12</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.7	2.7	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		25-150
STL00990	13C4 PFOA	76		25-150
STL00991	13C4 PFOS	95		25-150
STL01892	13C4-PFHpA	79		25-150
STL00995	13C5 PFNA	67		25-150
STL00994	18O2 PFHxS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_019.d
 Lims ID: 320-17406-B-12-A Lab Sample ID: 320-17406-12
 Client ID: DW-19
 Sample Type: Client
 Inject. Date: 29-Feb-2016 23:12:27 ALS Bottle#: 13 Worklist Smp#: 19
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-b-12-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:04:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.001	8.035	-0.034		1171036	40.7		81.3	93323	
D 8 13C4-PFHpA										
367.0 > 322.0	9.223	9.261	-0.038		1315387	39.3		78.5	26376	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.211	9.262	-0.051	1.000	1613	0.3881			0.1	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.282	9.296	-0.014	1.000	5962	0.7273				
D 11 18O2 PFHxS										
403.0 > 84.0	9.258	9.297	-0.039		634953	43.7		92.4	51777	
D 12 13C4 PFOA										
417.0 > 372.0	10.349	10.389	-0.040		1358697	37.8		75.7	29239	
D 16 13C4 PFOS										
503.0 > 80.0	11.313	11.350	-0.038		755282	45.5		95.3	56104	
D 17 13C5 PFNA										
468.0 > 423.0	11.328	11.368	-0.040		1028051	33.4		66.8	0.0	
18 Perfluorononanoic acid										
463.0 > 419.0	11.328	11.370	-0.042	1.000	1363	0.0793			0.0	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_019.d

Injection Date: 29-Feb-2016 23:12:27

Instrument ID: A6

Lims ID: 320-17406-B-12-A

Lab Sample ID: 320-17406-12

Client ID: DW-19

Operator ID: JRB

ALS Bottle#: 13

Worklist Smp#: 19

Injection Vol: 15.0 ul

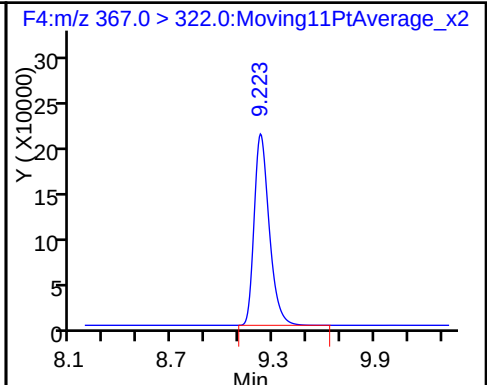
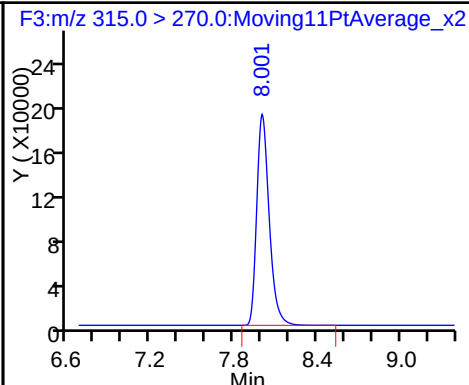
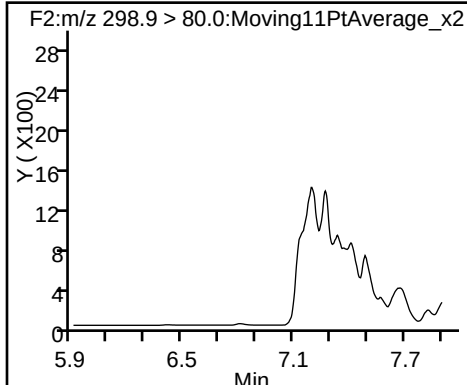
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

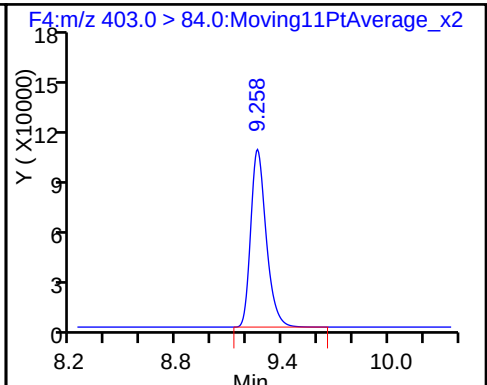
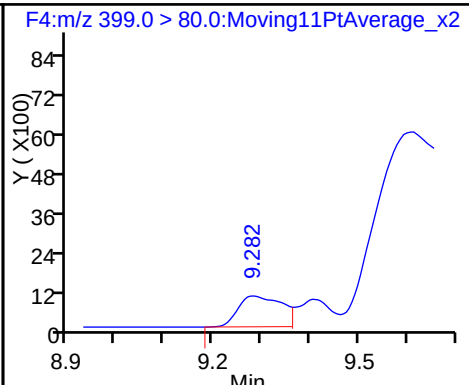
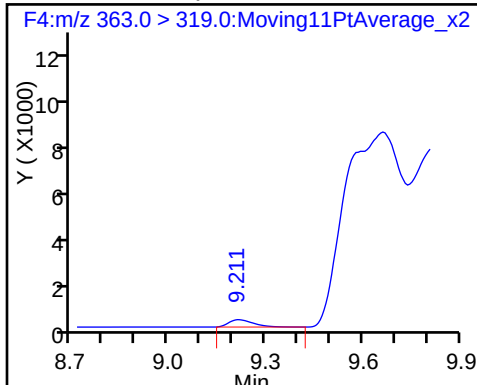
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

41 Perfluorohexanesulfonic acid

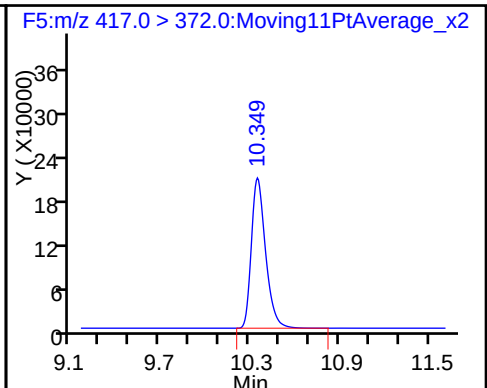
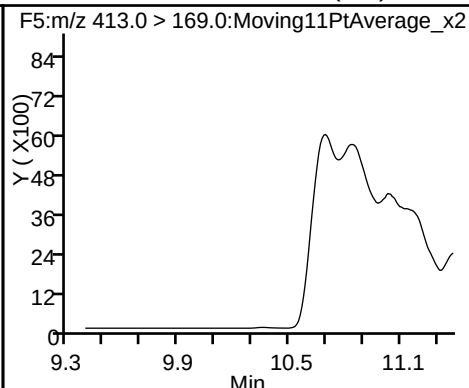
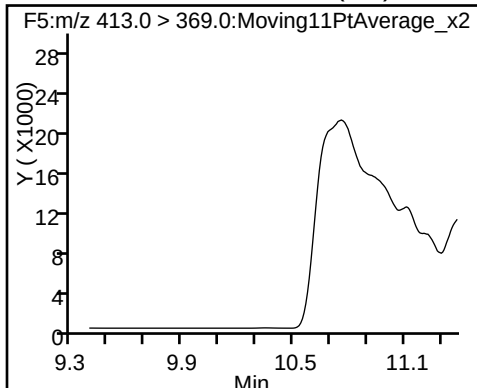
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

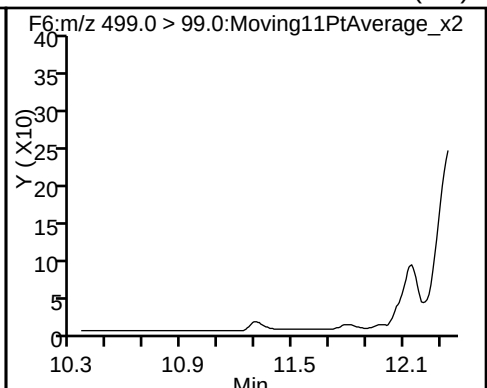
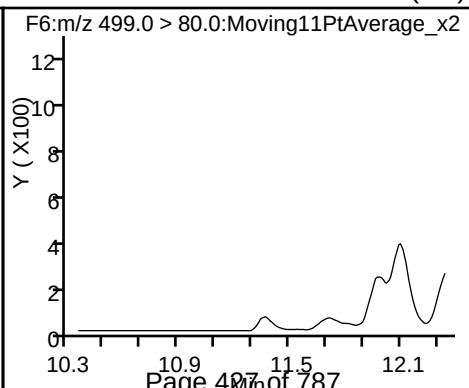
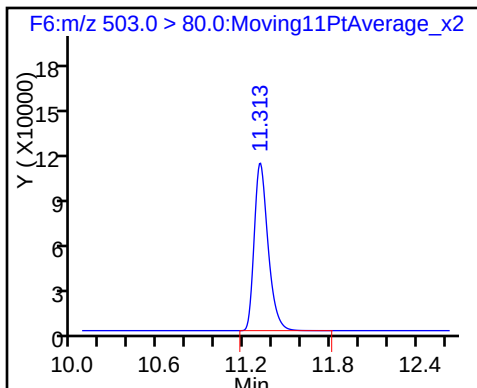
D 12 13C4 PFOA



D 16 13C4 PFOS

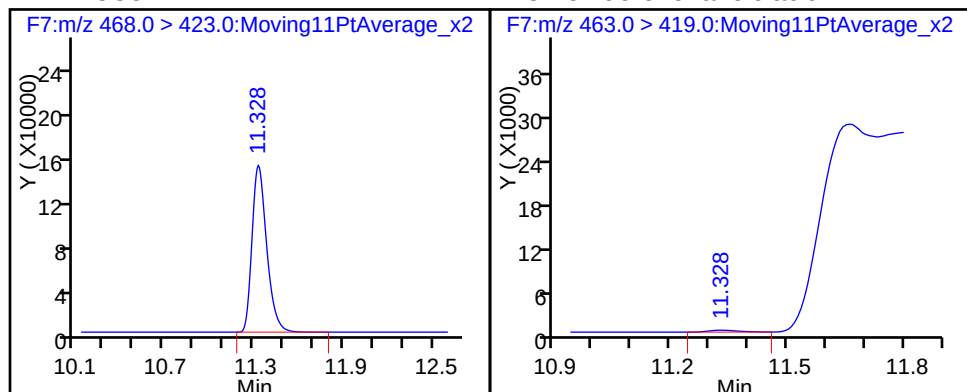
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-19FB</u>	Lab Sample ID: <u>320-17406-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_050.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 13:46</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>560.9 (mL)</u>	Date Analyzed: <u>02/27/2016 14:45</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.82
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		25-150
STL00990	13C4 PFOA	106		25-150
STL00991	13C4 PFOS	103		25-150
STL01892	13C4-PFHpA	93		25-150
STL00995	13C5 PFNA	101		25-150
STL00994	18O2 PFHxS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_050.d
 Lims ID: 320-17406-A-13-A Lab Sample ID: 320-17406-13
 Client ID: DW-19FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 14:45:31 ALS Bottle#: 33 Worklist Smp#: 46
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-13-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:25:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.128	8.604	0.524		3782646	46.9		93.9	7620	
D 8 13C4-PFHpA										
366.6 > 321.6	10.361	9.856	0.505		3147410	46.3		92.7	5433	
D 11 18O2 PFHxS										
402.5 > 83.6	10.386	9.892	0.494		1831587	50.5		107	5585	
D 12 13C4 PFOA										
416.5 > 371.6	11.410	10.958	0.452		4160365	53.1		106	9037	
D 16 13C4 PFOS										
502.4 > 79.7	12.258	11.876	0.382		805698	49.4		103	1711	
D 17 13C5 PFNA										
467.5 > 422.6	12.284	11.898	0.386		3262642	50.4		101	5232	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_050.d

Injection Date: 27-Feb-2016 14:45:31

Instrument ID: A4

Lims ID: 320-17406-A-13-A

Lab Sample ID: 320-17406-13

Client ID: DW-19FB

Operator ID: JRB

ALS Bottle#: 33

Worklist Smp#: 46

Injection Vol: 15.0 ul

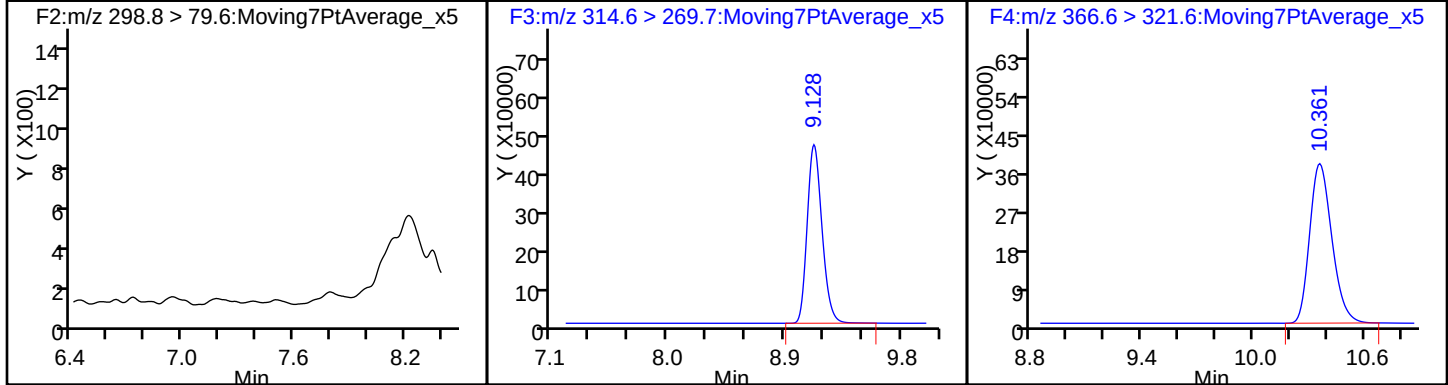
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

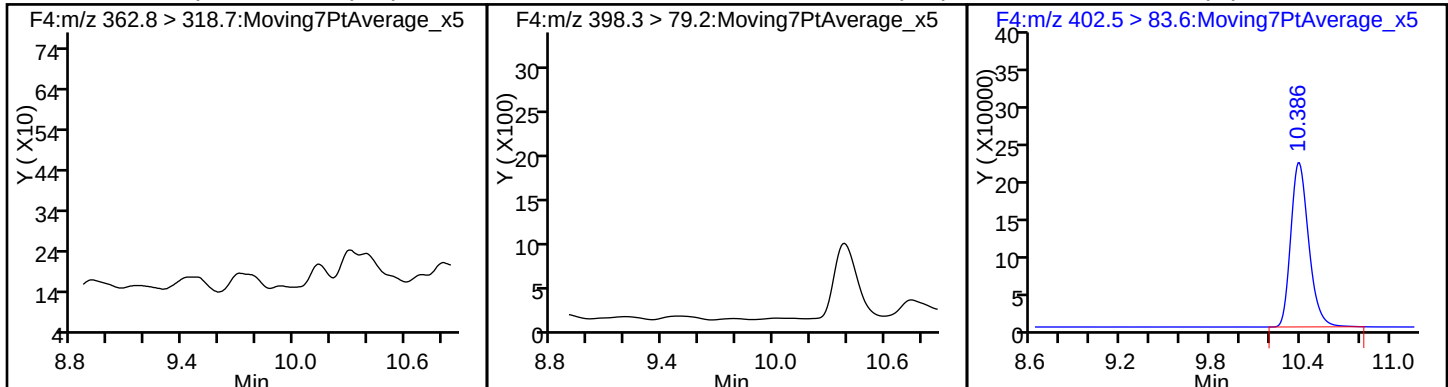
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (ND)

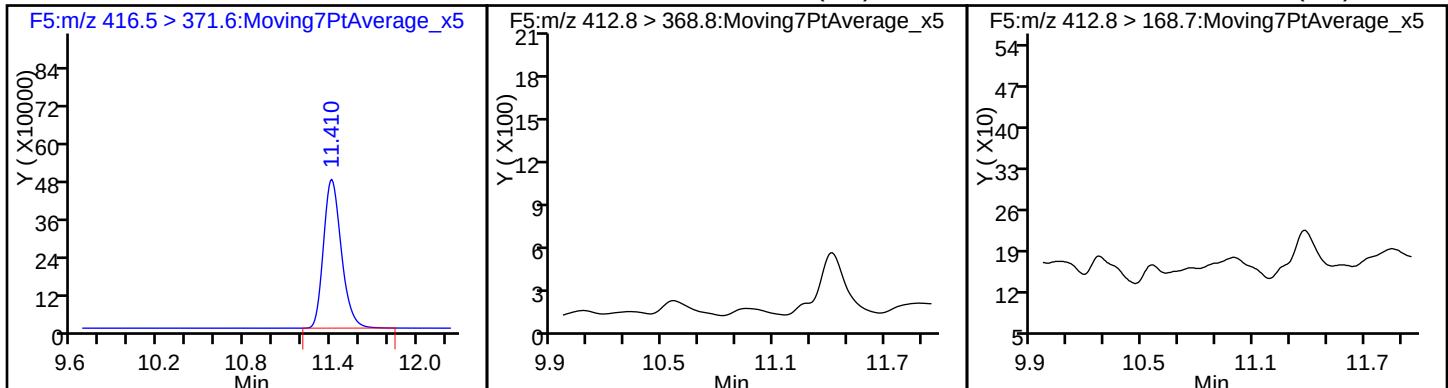
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

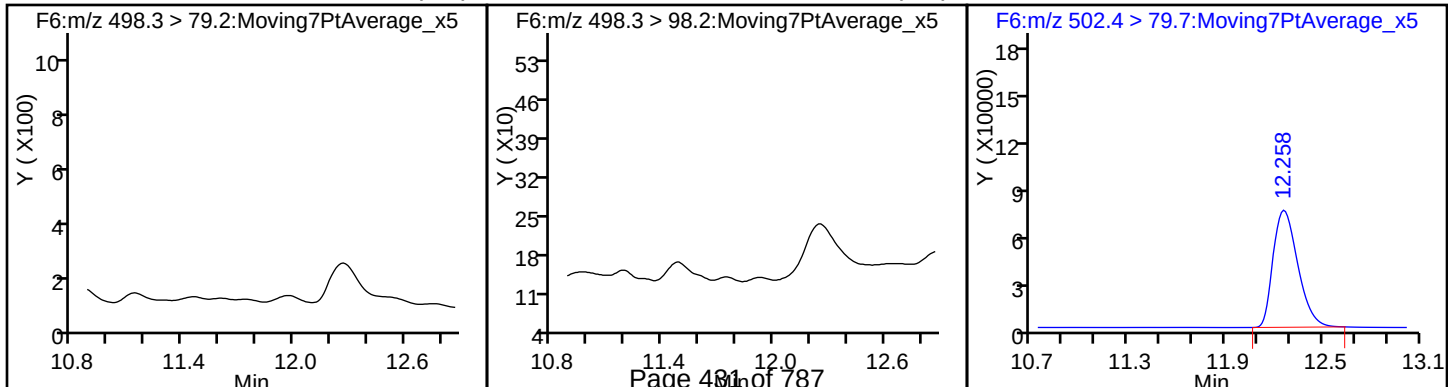
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

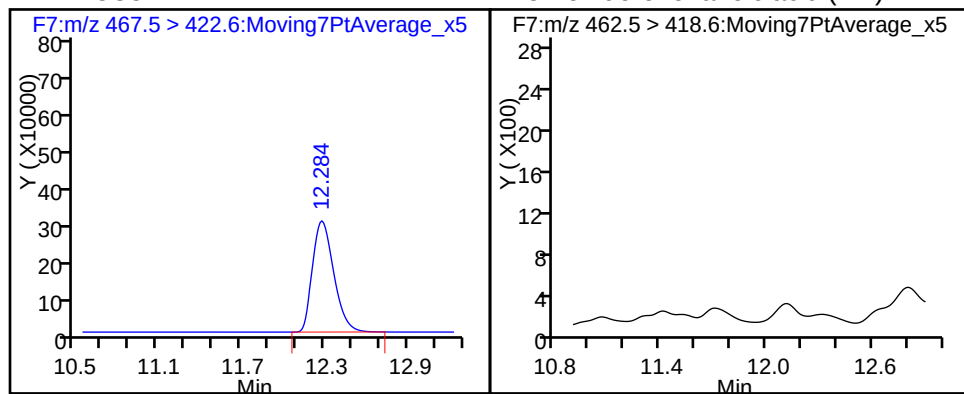
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-19FB RA Lab Sample ID: 320-17406-13 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_020.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 13:46
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 560.9 (mL) Date Analyzed: 02/29/2016 23:33
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	U	3.6	2.7	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	94		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	88		25-150
STL00994	18O2 PFHxS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_020.d
 Lims ID: 320-17406-A-13-A Lab Sample ID: 320-17406-13
 Client ID: DW-19FB
 Sample Type: Client
 Inject. Date: 29-Feb-2016 23:33:41 ALS Bottle#: 14 Worklist Smp#: 20
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-13-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:05:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	8.000	8.035	-0.035		1371090	47.6		95.2	109345	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1583010	47.3		94.5	2538	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.370	9.296	0.074	1.000	8923	1.08				
D 11 18O2 PFHxS										
403.0 > 84.0	9.253	9.297	-0.044		598062	41.2		87.0	93963	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.329	10.388	-0.059	1.000	1619	0.0507			0.0	
D 12 13C4 PFOA										
417.0 > 372.0	10.350	10.389	-0.039		1695664	47.2		94.4	122547	
D 16 13C4 PFOS										
503.0 > 80.0	11.306	11.350	-0.044		734997	44.3		92.7	53302	
D 17 13C5 PFNA										
468.0 > 423.0	11.329	11.368	-0.039		1361732	44.2		88.5	98611	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_020.d

Injection Date: 29-Feb-2016 23:33:41

Instrument ID: A6

Lims ID: 320-17406-A-13-A

Lab Sample ID: 320-17406-13

Client ID: DW-19FB

Operator ID: JRB

ALS Bottle#: 14

Worklist Smp#: 20

Injection Vol: 15.0 ul

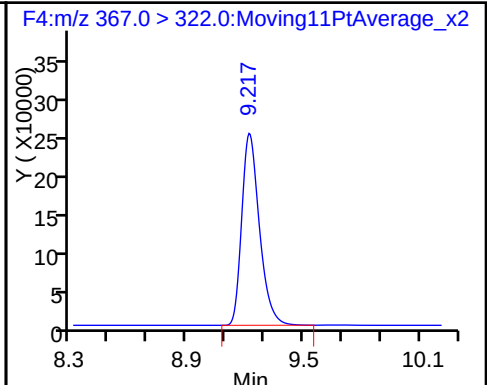
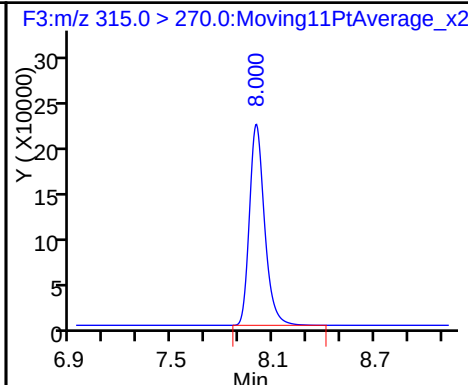
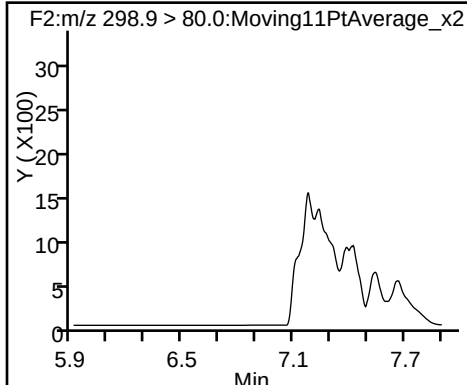
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

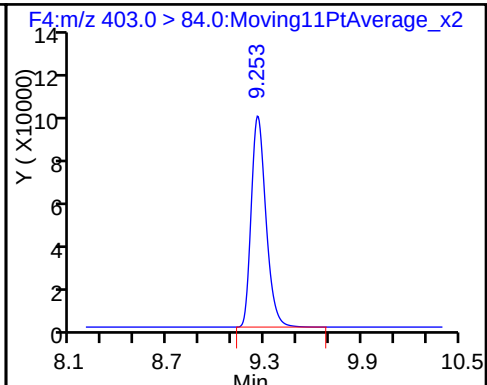
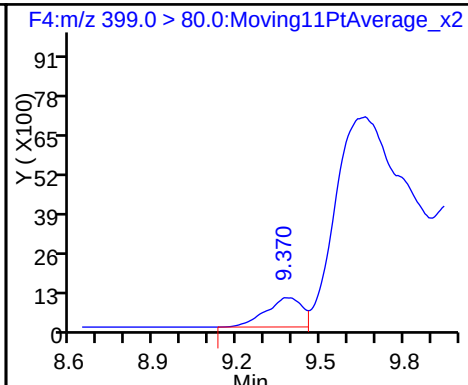
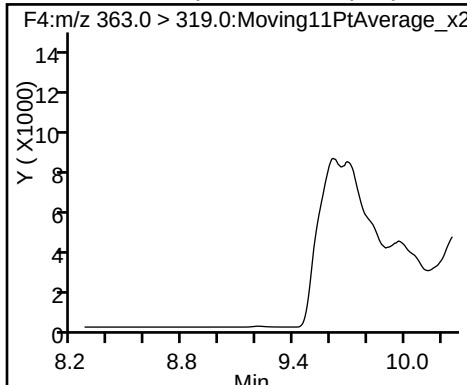
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

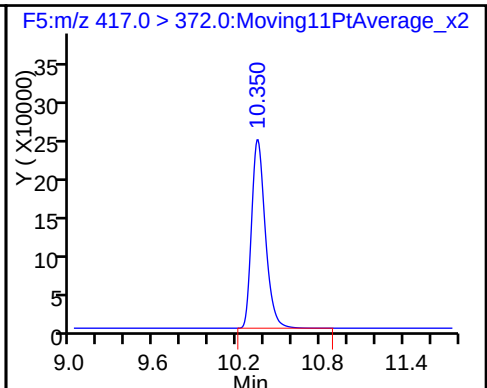
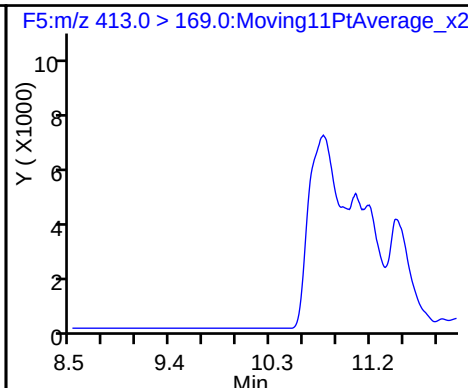
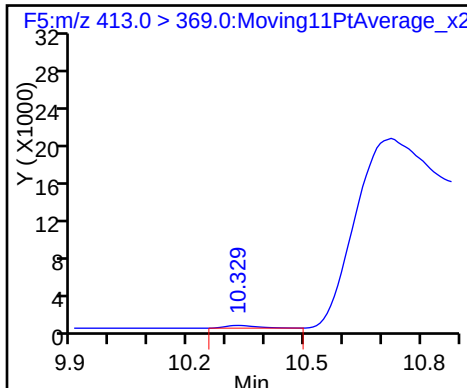
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

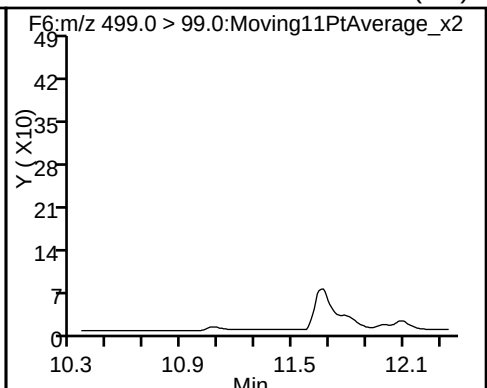
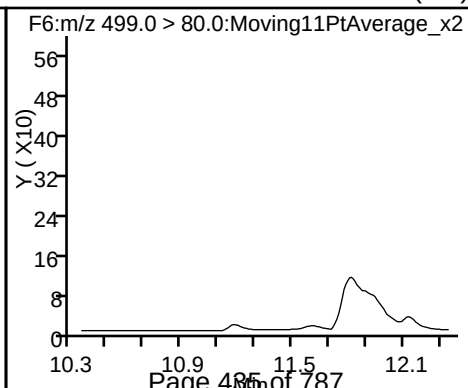
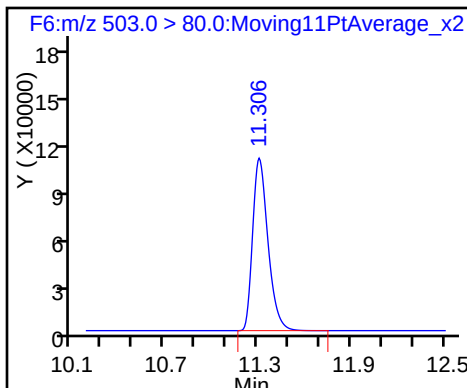
D 12 13C4 PFOA



D 16 13C4 PFOS

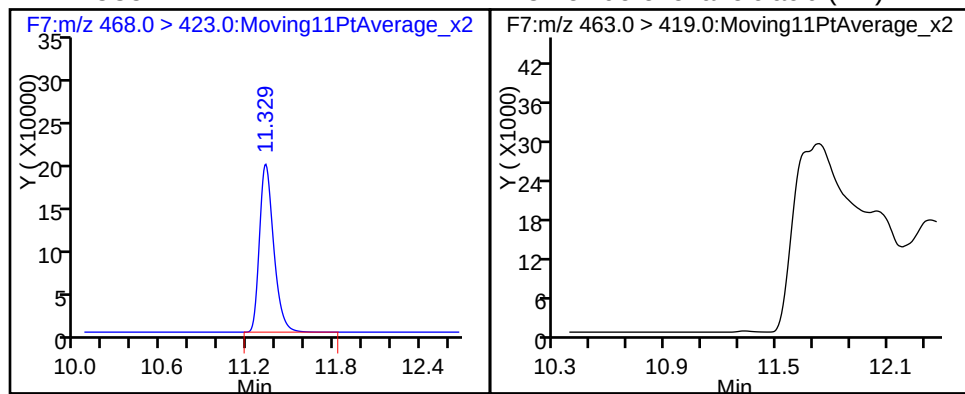
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-68</u>	Lab Sample ID: <u>320-17406-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_051.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 14:31</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>555.4 (mL)</u>	Date Analyzed: <u>02/27/2016 15:06</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.3	1.8	0.83
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1		2.3	1.8	0.72
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.7	M	2.3	1.8	0.78
375-95-1	Perfluorononanoic acid (PFNA)	2.7		2.3	1.8	0.59
335-67-1	Perfluorooctanoic acid (PFOA)	27		2.3	1.8	0.67

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	77		25-150
STL00990	13C4 PFOA	103		25-150
STL00991	13C4 PFOS	105		25-150
STL01892	13C4-PFHpA	92		25-150
STL00995	13C5 PFNA	123		25-150
STL00994	18O2 PFHxS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_051.d
 Lims ID: 320-17406-A-14-A Lab Sample ID: 320-17406-14
 Client ID: DW-68
 Sample Type: Client
 Inject. Date: 27-Feb-2016 15:06:39 ALS Bottle#: 34 Worklist Smp#: 47
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-14-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:26:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.581	7.404	0.177	1.000	3285	0.1553				
D 6 13C2 PFHxA										
314.6 > 269.7	8.972	8.604	0.368		3095461	38.4		76.8	6741	
D 8 13C4-PFHpA										
366.6 > 321.6	10.156	9.856	0.300		3108864	45.8		91.6	5987	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.156	9.859	0.297	1.000	111614	3.38			38.5	
58 Perfluorohexanesulfonic acid										M
398.3 > 79.2	10.182	9.892	0.290	1.000	92569	2.59				M
D 11 18O2 PFHxS										
402.5 > 83.6	10.182	9.892	0.290		1669108	46.0		97.3	3498	
D 12 13C4 PFOA										
416.5 > 371.6	11.180	10.958	0.222		4039840	51.5		103	7969	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.180	10.958	0.222	1.000	643603	15.2			133	
412.8 > 168.7	11.180	10.958	0.222	1.000	253830		2.54(0.00-0.00)		122	
15 Perfluorooctane sulfonic acid										M
498.3 > 79.2	12.036	11.874	0.162	1.000	731330	11.4			736	M
498.3 > 98.2	12.036	11.874	0.162	1.000	293155		2.49(0.00-0.00)		398	M
D 16 13C4 PFOS										
502.4 > 79.7	12.036	11.876	0.160		820371	50.3		105	1714	
D 17 13C5 PFNA										
467.5 > 422.6	12.057	11.898	0.159		3983910	61.5		123	11519	
18 Perfluorononanoic acid										
462.5 > 418.6	12.067	11.899	0.168	1.000	104871	1.51			59.9	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_051.d

Injection Date: 27-Feb-2016 15:06:39

Instrument ID: A4

Lims ID: 320-17406-A-14-A

Lab Sample ID: 320-17406-14

Client ID: DW-68

Operator ID: JRB

ALS Bottle#: 34

Worklist Smp#: 47

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

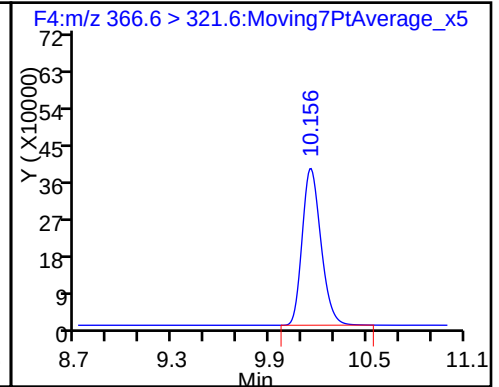
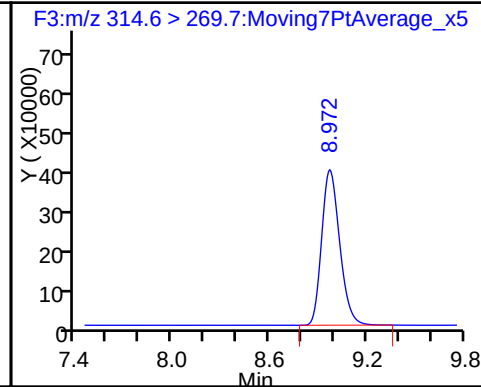
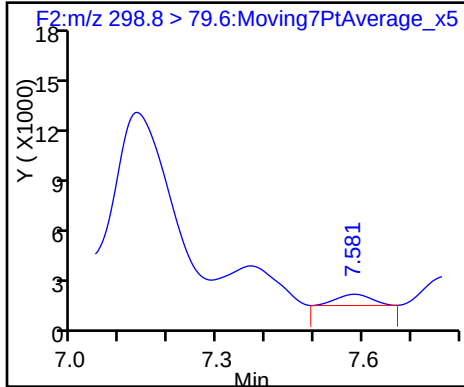
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

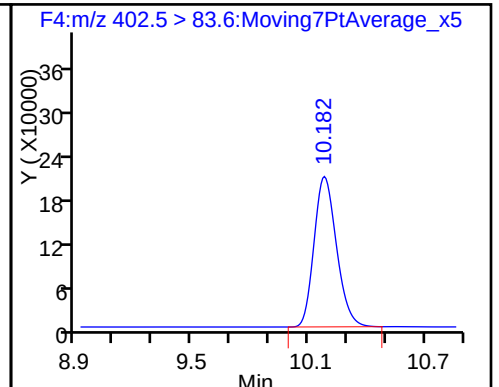
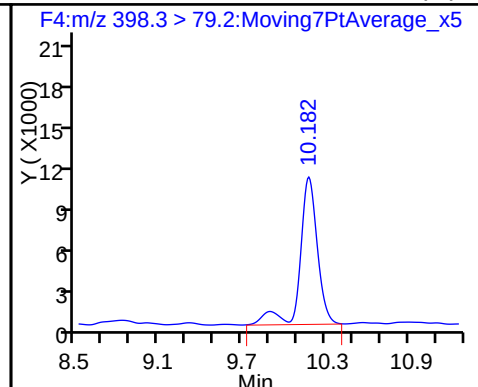
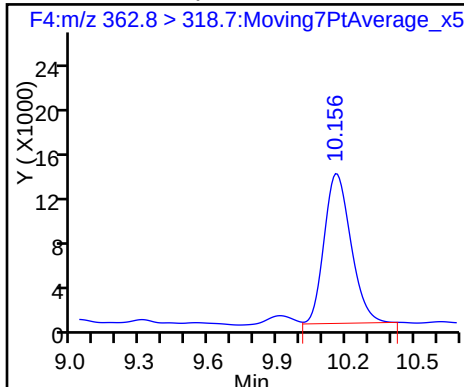
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

58 Perfluorohexanesulfonic acid (M)

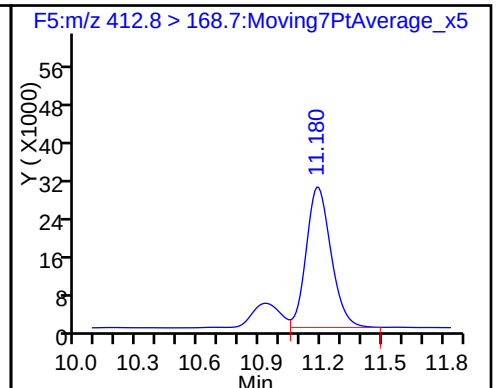
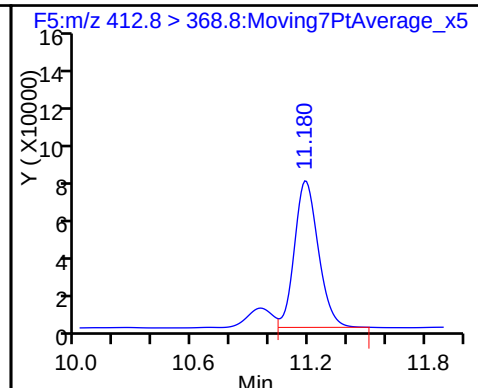
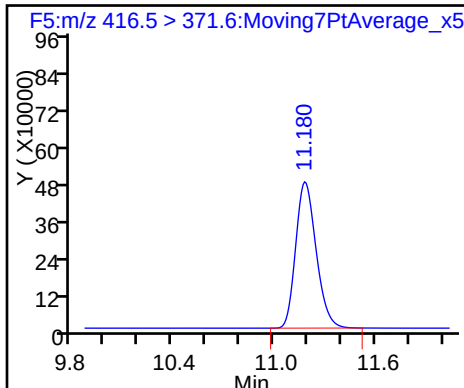
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid

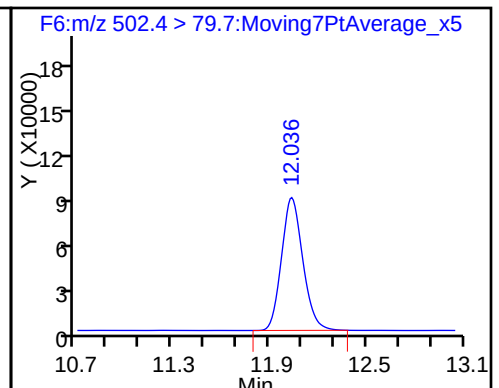
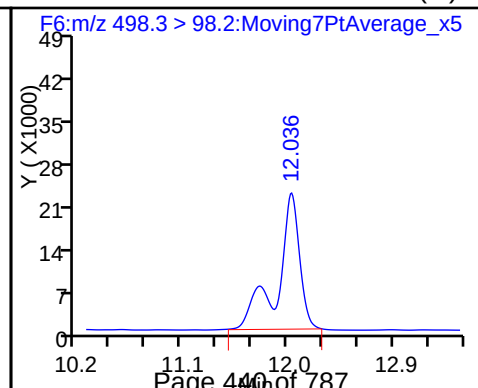
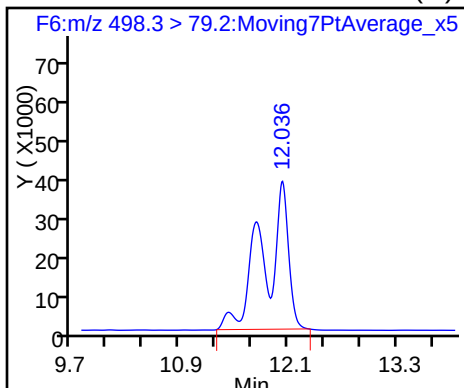
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (M)

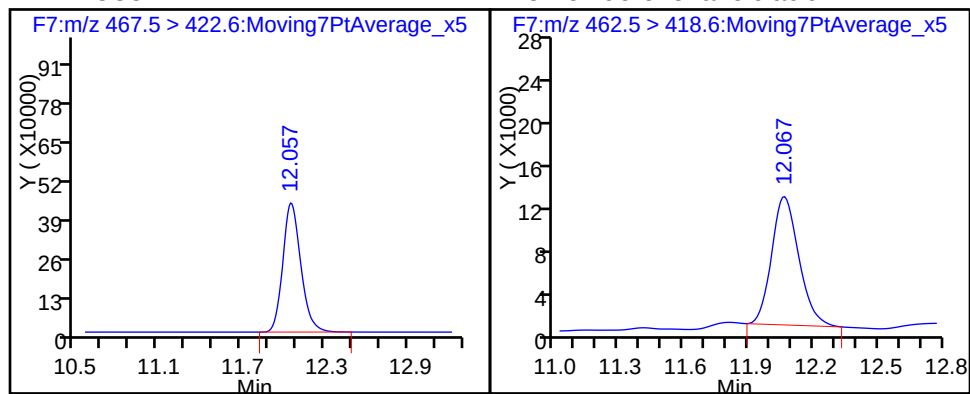
15 Perfluorooctane sulfonic acid (M)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid



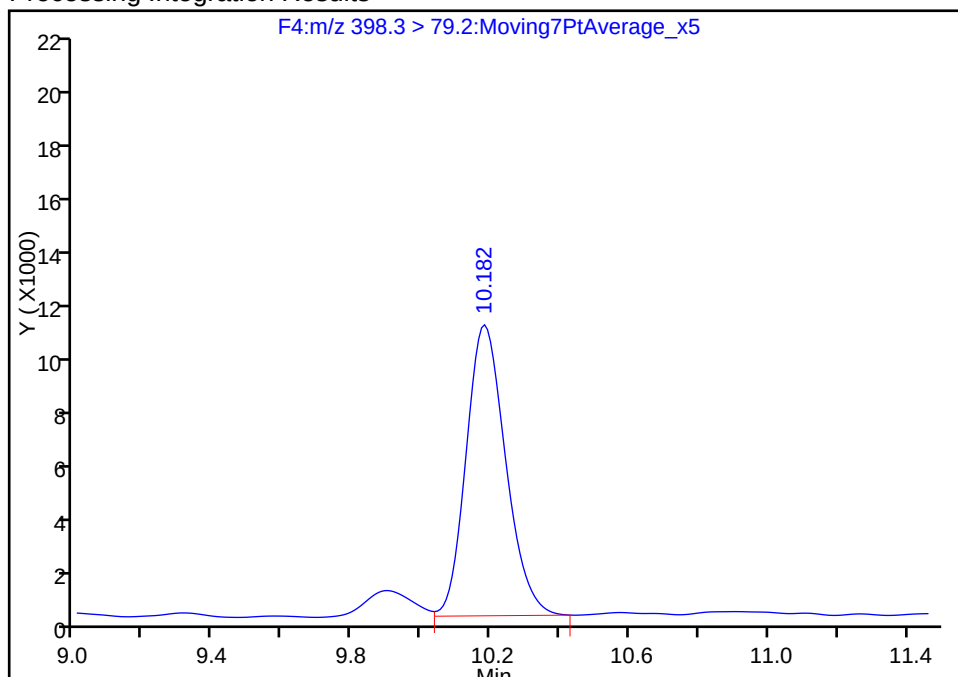
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_051.d		
Injection Date:	27-Feb-2016 15:06:39	Instrument ID:	A4
Lims ID:	320-17406-A-14-A	Lab Sample ID:	320-17406-14
Client ID:	DW-68		
Operator ID:	JRB	ALS Bottle#:	34
Injection Vol:	15.0 ul	Dil. Factor:	1.0000
Method:	PFAC_A4	Limit Group:	LC PFC_DOD ICAL
Column:		Detector	F4:MRM
		Worklist Smp#:	47

58 Perfluorohexanesulfonic acid, CAS: 355-46-4

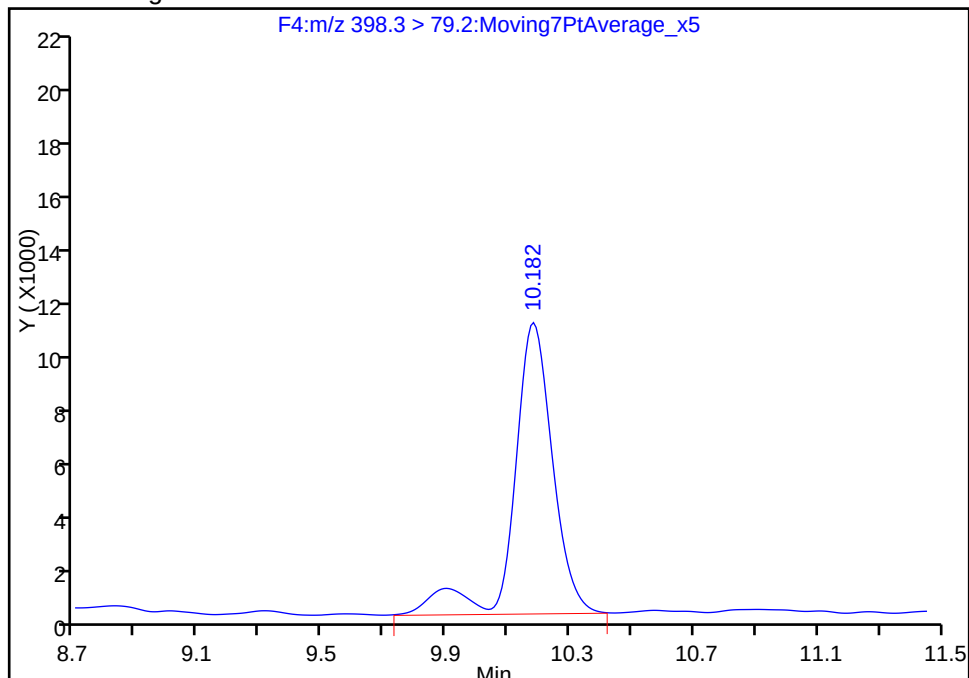
RT: 10.18
Area: 83264
Amount: 2.326681
Amount Units: ng/ml

Processing Integration Results



RT: 10.18
Area: 92569
Amount: 2.586695
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 29-Feb-2016 10:26:56
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-68 RA Lab Sample ID: 320-17406-14 RA
 Matrix: Water Lab File ID: 29FEB2016A6B_021.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 14:31
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 555.4 (mL) Date Analyzed: 02/29/2016 23:54
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	18	M	3.6	2.7	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		25-150
STL00990	13C4 PFOA	89		25-150
STL00991	13C4 PFOS	87		25-150
STL01892	13C4-PFHpA	87		25-150
STL00995	13C5 PFNA	95		25-150
STL00994	18O2 PFHxS	84		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_021.d
 Lims ID: 320-17406-A-14-A Lab Sample ID: 320-17406-14
 Client ID: DW-68
 Sample Type: Client
 Inject. Date: 29-Feb-2016 23:54:56 ALS Bottle#: 15 Worklist Smp#: 21
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-14-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 11-Mar-2016 10:34:37 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc

Date: 11-Mar-2016 10:34:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.877	6.905	-0.028	1.000	14629	1.29				
D 6 13C2 PFHxA										
315.0 > 270.0	8.002	8.035	-0.033		1131889	39.3		78.6	95221	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1458983	43.6		87.1	119179	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.217	9.262	-0.045	1.000	103599	3.53			12.3	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.252	9.296	-0.044	1.000	30645	3.52				
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		576447	39.7		83.9	46486	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.342	10.388	-0.046	1.000	486138	16.2			12.0	
413.0 > 169.0	10.342	10.388	-0.046	1.000	158850		3.06(0.00-0.00)		8.7	
D 12 13C4 PFOA										
417.0 > 372.0	10.342	10.389	-0.047		1592712	44.4		88.7	119705	
D 16 13C4 PFOS										
503.0 > 80.0	11.291	11.350	-0.059		688867	41.5		86.9	51823	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.291	11.350	-0.059	1.000	136517	9.74			278	M
499.0 > 99.0	11.298	11.350	-0.052	1.001	48338		2.82(0.00-0.00)		399	M
D 17 13C5 PFNA										
468.0 > 423.0	11.306	11.368	-0.062		1458828	47.4		94.8	109358	
18 Perfluorononanoic acid										
463.0 > 419.0	11.313	11.370	-0.057	1.000	28198	1.16			0.7	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_021.d

Injection Date: 29-Feb-2016 23:54:56

Instrument ID: A6

Lims ID: 320-17406-A-14-A

Lab Sample ID: 320-17406-14

Client ID: DW-68

Operator ID: JRB

ALS Bottle#: 15

Worklist Smp#: 21

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

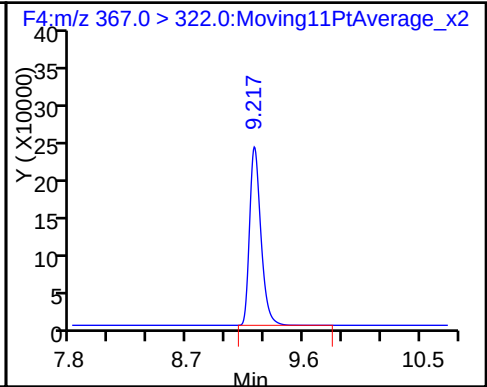
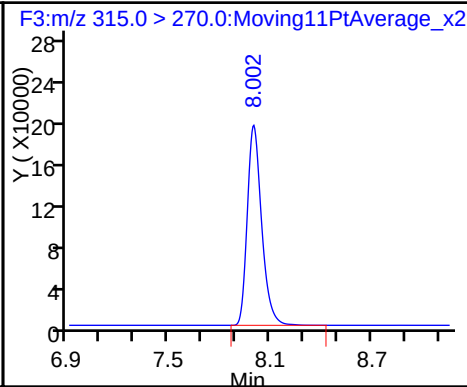
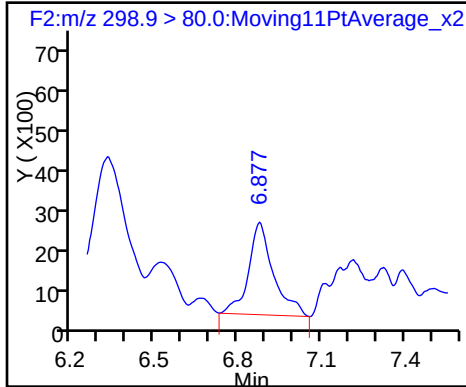
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

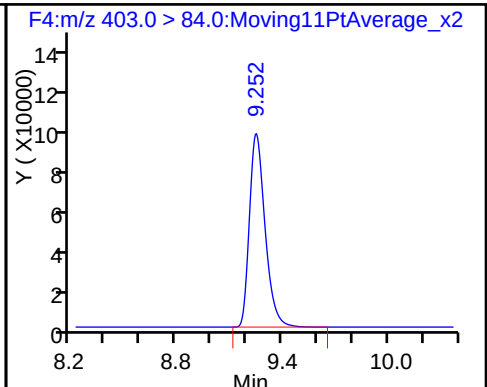
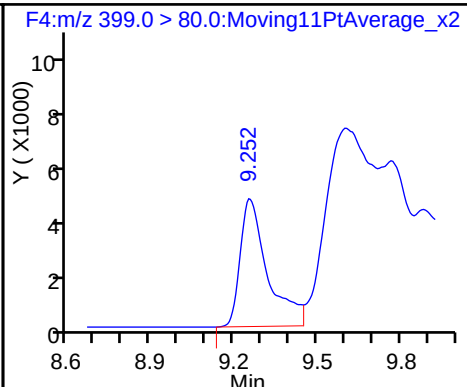
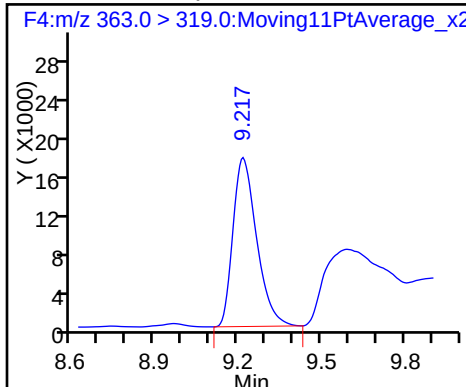
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

41 Perfluorohexanesulfonic acid

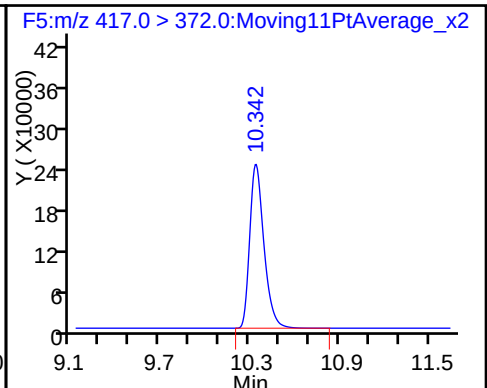
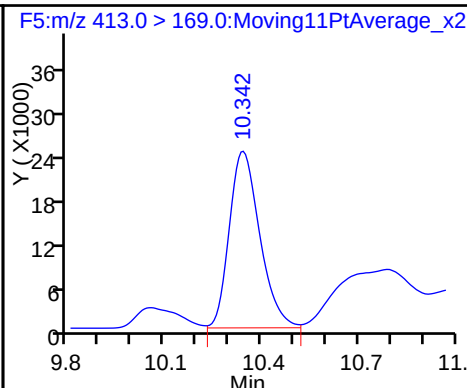
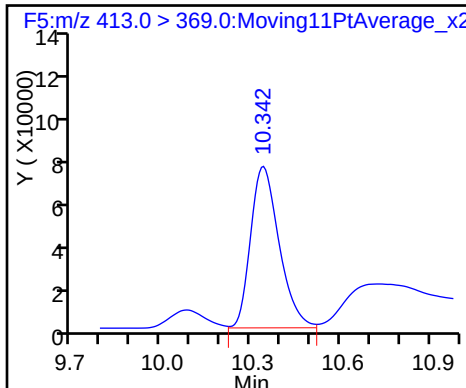
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

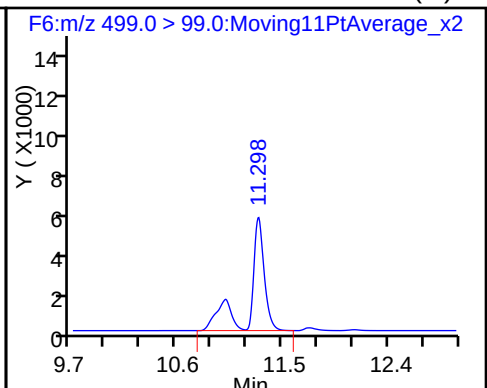
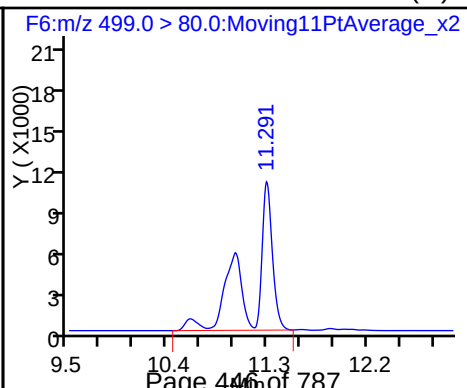
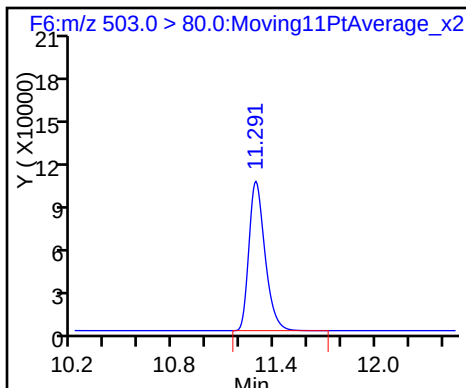
D 12 13C4 PFOA



D 16 13C4 PFOS

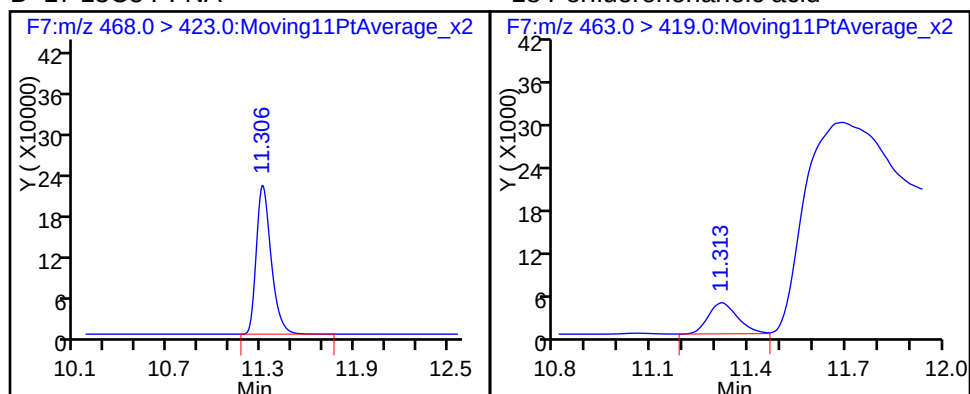
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA

18 Perfluorononanoic acid



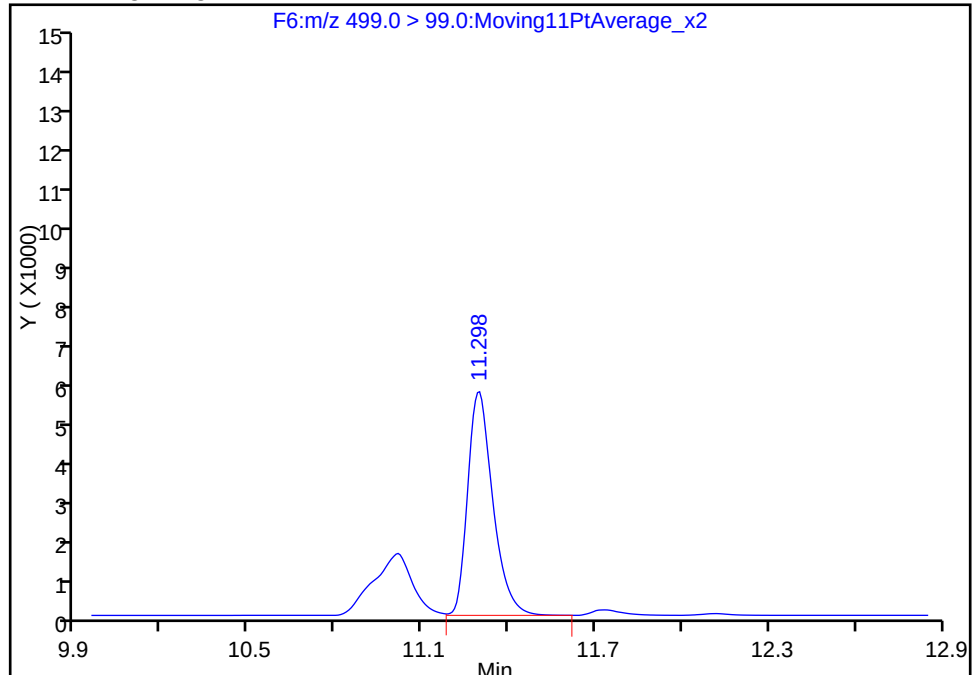
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_021.d
Injection Date: 29-Feb-2016 23:54:56 Instrument ID: A6
Lims ID: 320-17406-A-14-A Lab Sample ID: 320-17406-14
Client ID: DW-68
Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

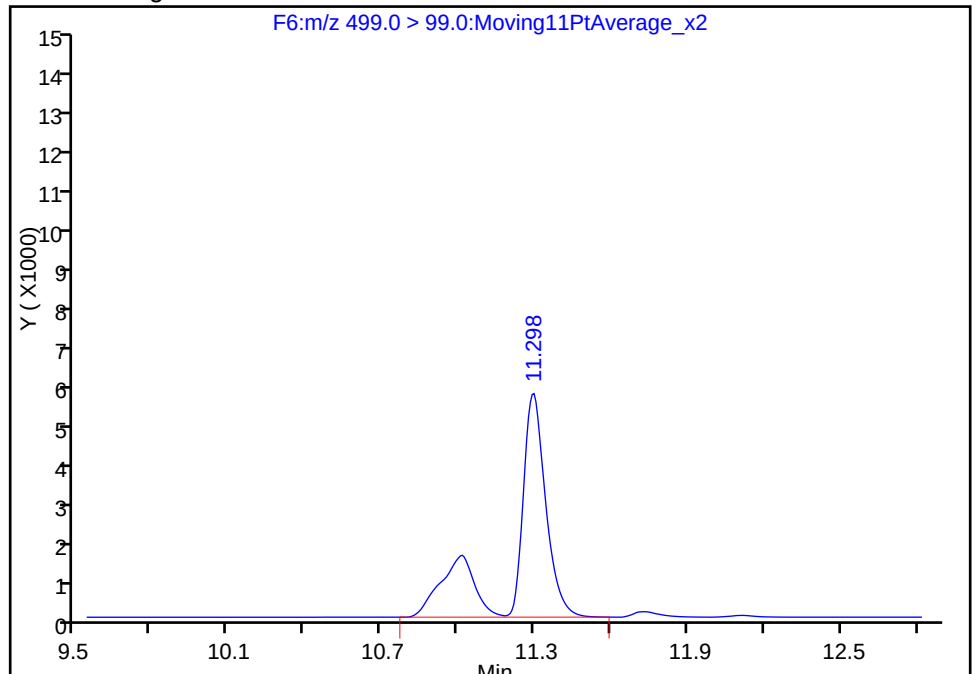
RT: 11.30
Area: 33913
Amount: 5.088528
Amount Units: ng/ml

Processing Integration Results



RT: 11.30
Area: 48338
Amount: 9.739685
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 01-Mar-2016 09:06:00
Audit Action: Manually Integrated
Audit Reason: Isomers

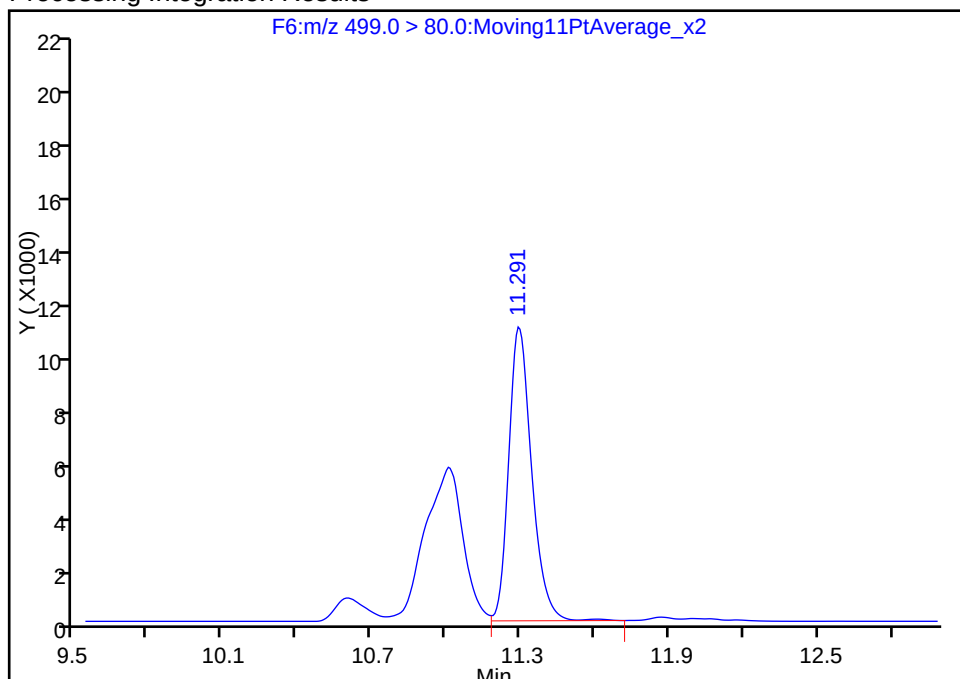
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_021.d
Injection Date: 29-Feb-2016 23:54:56 Instrument ID: A6
Lims ID: 320-17406-A-14-A Lab Sample ID: 320-17406-14
Client ID: DW-68
Operator ID: JRB ALS Bottle#: 15 Worklist Smp#: 21
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

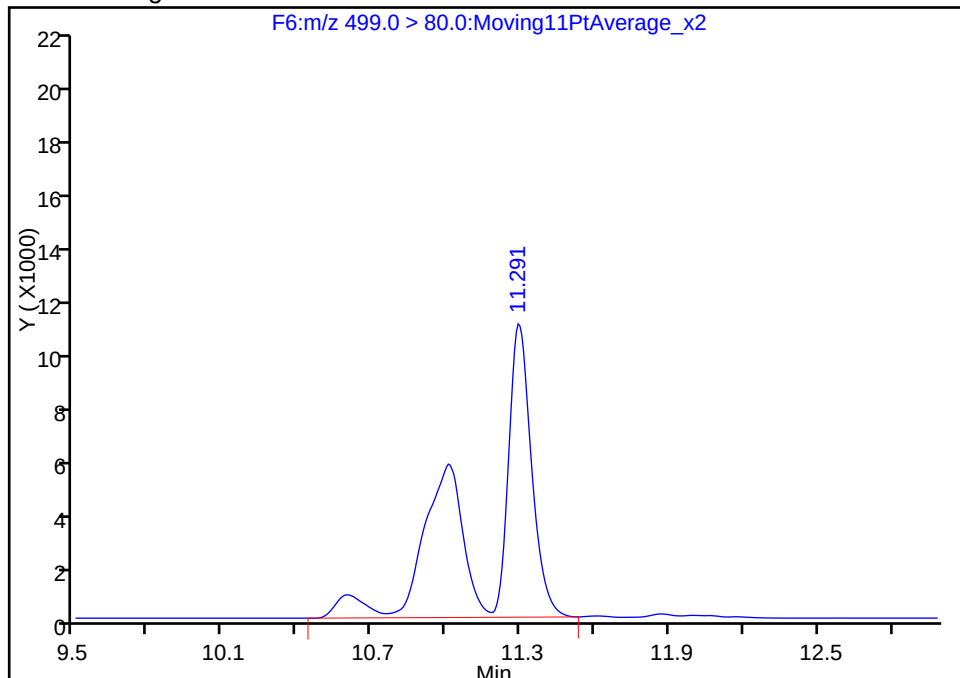
RT: 11.29
Area: 69955
Amount: 5.088528
Amount Units: ng/ml

Processing Integration Results



RT: 11.29
Area: 136517
Amount: 9.739685
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Mar-2016 10:34:37

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-68FB</u>	Lab Sample ID: <u>320-17406-15</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_052.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 14:16</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>566.5 (mL)</u>	Date Analyzed: <u>02/27/2016 15:27</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.77
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		25-150
STL00990	13C4 PFOA	108		25-150
STL00991	13C4 PFOS	116		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	107		25-150
STL00994	18O2 PFHxS	102		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_052.d
 Lims ID: 320-17406-A-15-A Lab Sample ID: 320-17406-15
 Client ID: DW-68FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 15:27:50 ALS Bottle#: 35 Worklist Smp#: 48
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-15-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:27:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.830	7.404	0.426	1.000	3843	0.1739				
D 6 13C2 PFHxA										
314.6 > 269.7	8.808	8.604	0.204		3729056	46.3		92.5	7605	
D 8 13C4-PFHpA										
366.6 > 321.6	10.097	9.856	0.241		3213652	47.3		94.6	4745	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.139	9.892	0.247	1.000	4974	0.1330				
D 11 18O2 PFHxS										
402.5 > 83.6	10.131	9.892	0.239		1744128	48.1		102	4127	
D 12 13C4 PFOA										
416.5 > 371.6	11.171	10.958	0.213		4224581	53.9		108	6276	
D 16 13C4 PFOS										
502.4 > 79.7	12.066	11.876	0.190		902585	55.4		116	2612	
D 17 13C5 PFNA										
467.5 > 422.6	12.087	11.898	0.189		3476762	53.7		107	7967	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_052.d

Injection Date: 27-Feb-2016 15:27:50

Instrument ID: A4

Lims ID: 320-17406-A-15-A

Lab Sample ID: 320-17406-15

Client ID: DW-68FB

Operator ID: JRB

ALS Bottle#: 35

Worklist Smp#: 48

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

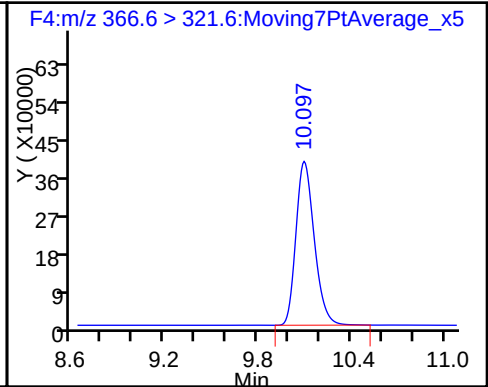
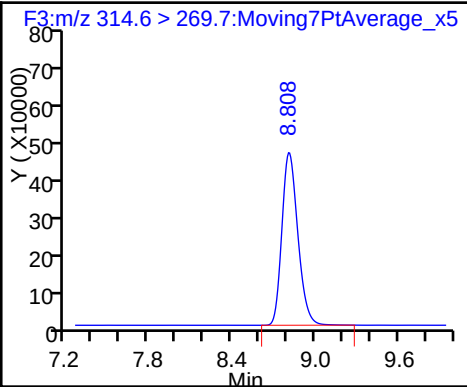
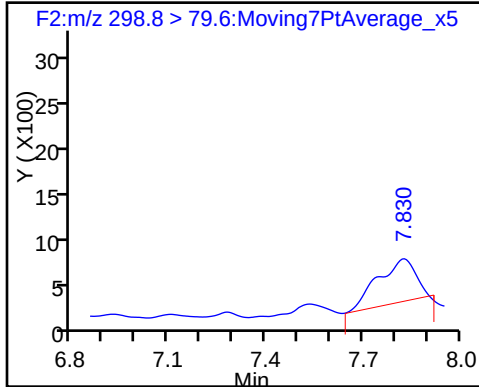
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

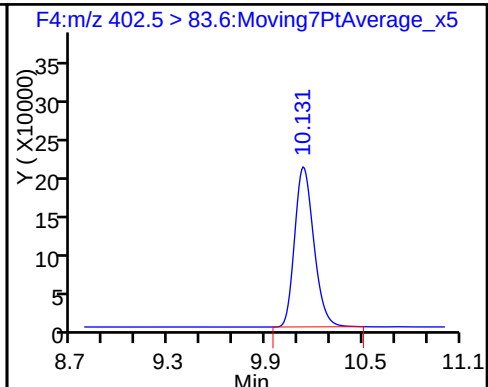
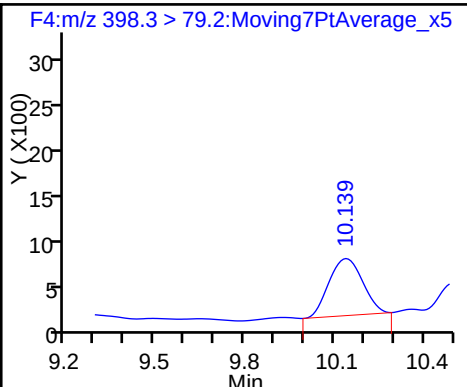
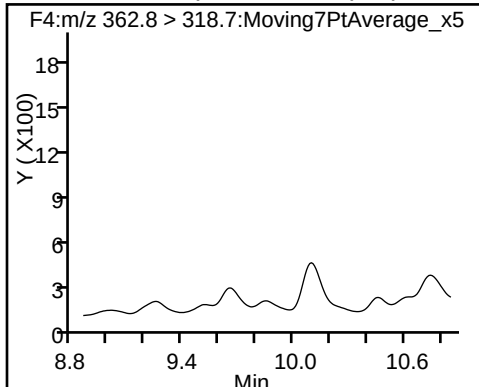
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid

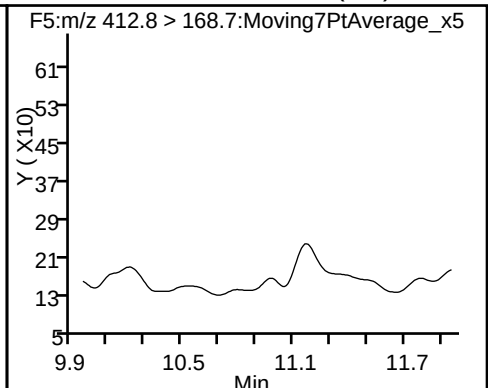
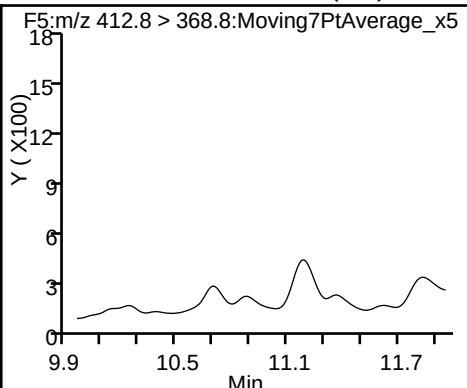
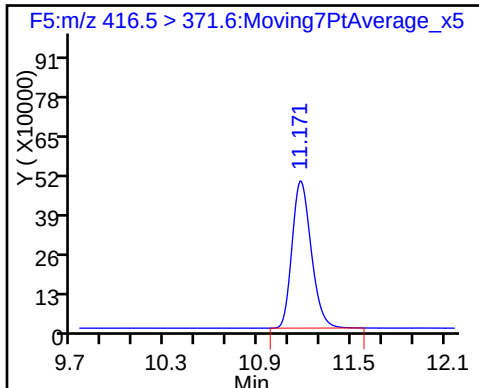
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

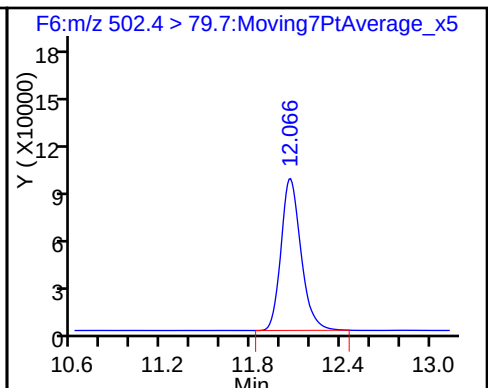
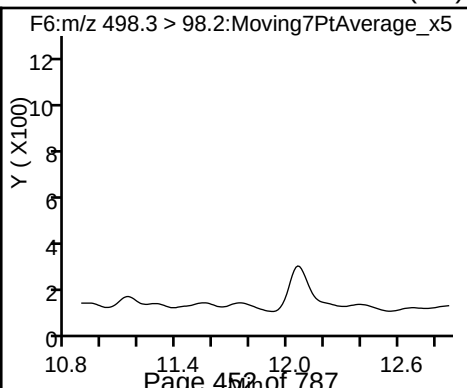
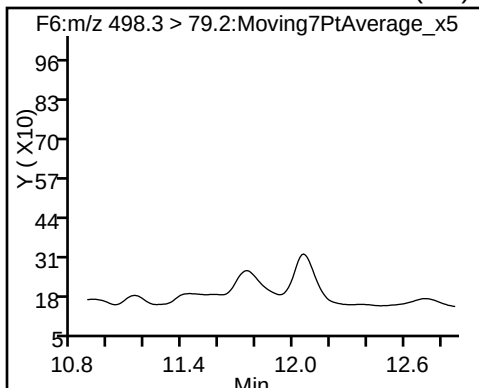
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

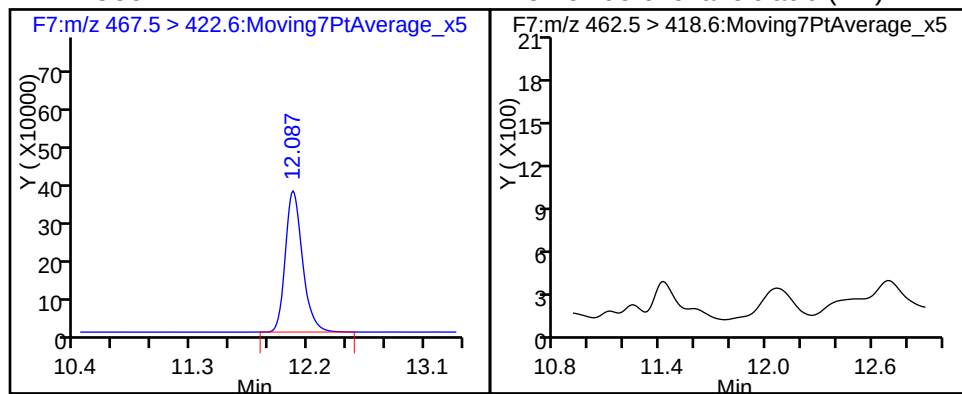
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-68FB RA</u>	Lab Sample ID: <u>320-17406-15 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_022.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 14:16</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>566.5 (mL)</u>	Date Analyzed: <u>03/01/2016 00:16</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	105		25-150
STL00990	13C4 PFOA	103		25-150
STL00991	13C4 PFOS	106		25-150
STL01892	13C4-PFHpA	102		25-150
STL00995	13C5 PFNA	101		25-150
STL00994	18O2 PFHxS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_022.d
 Lims ID: 320-17406-A-15-A Lab Sample ID: 320-17406-15
 Client ID: DW-68FB
 Sample Type: Client
 Inject. Date: 01-Mar-2016 00:16:09 ALS Bottle#: 16 Worklist Smp#: 22
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-15-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:06:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.996	8.035	-0.039		1511488	52.5		105	23446	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1710888	51.1		102	29896	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.328	9.296	0.032	1.000	15112	1.54				
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		683327	47.0		99.5	15224	
D 12 13C4 PFOA										
417.0 > 372.0	10.342	10.389	-0.047		1851908	51.6		103	38961	
D 16 13C4 PFOS										
503.0 > 80.0	11.305	11.350	-0.045		841343	50.7		106	30659	
D 17 13C5 PFNA										
468.0 > 423.0	11.321	11.368	-0.047		1560547	50.7		101	28229	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_022.d

Injection Date: 01-Mar-2016 00:16:09

Instrument ID: A6

Lims ID: 320-17406-A-15-A

Lab Sample ID: 320-17406-15

Client ID: DW-68FB

Operator ID: JRB

ALS Bottle#: 16

Worklist Smp#: 22

Injection Vol: 15.0 ul

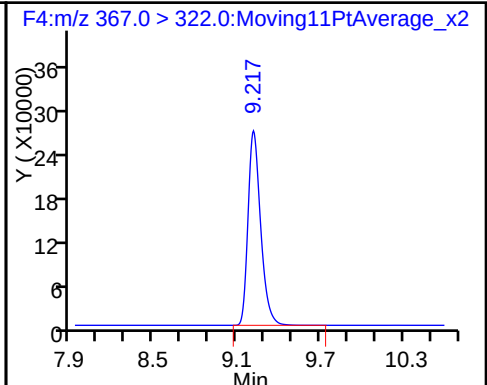
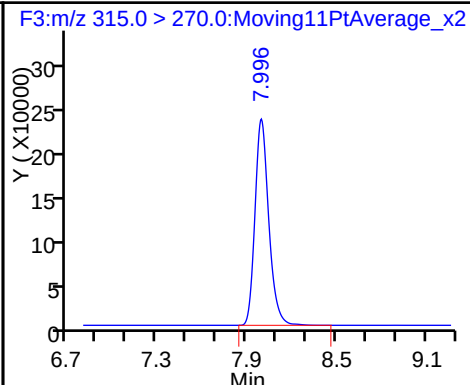
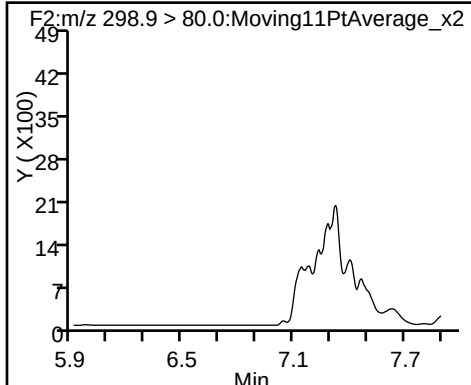
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

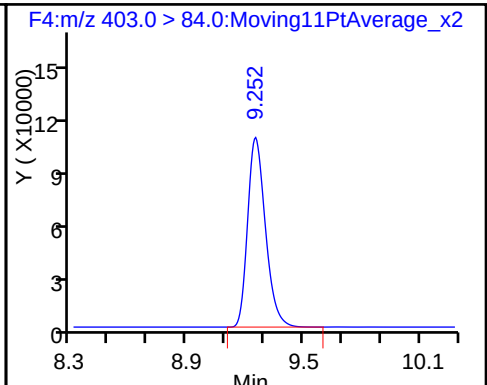
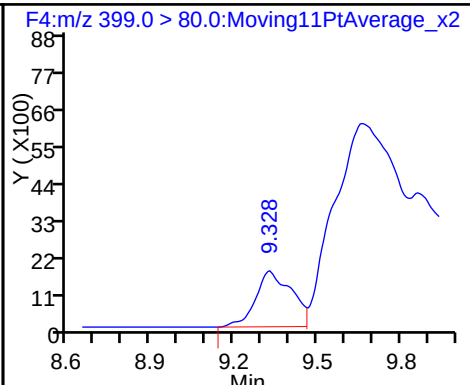
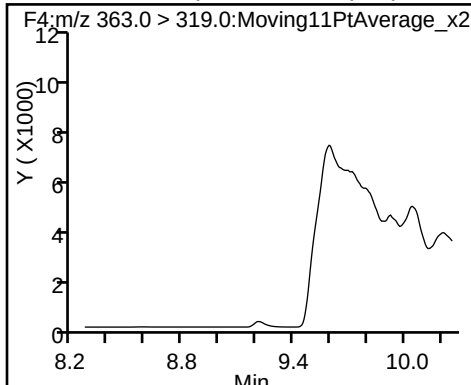
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

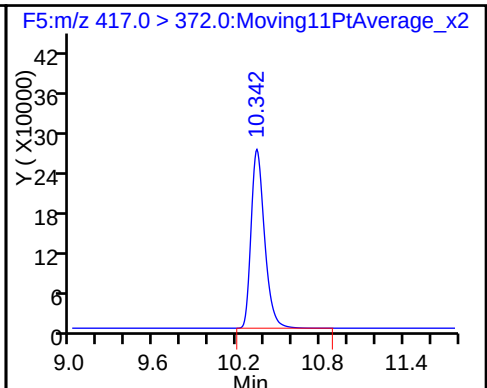
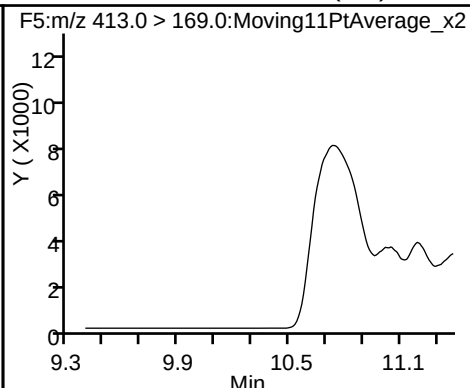
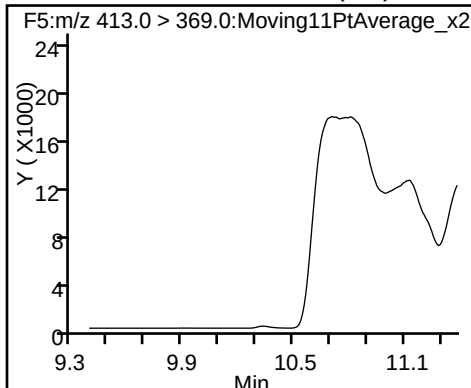
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

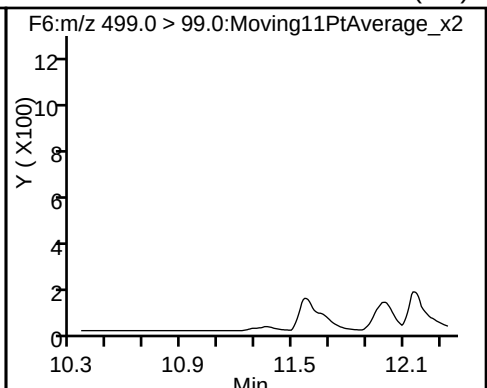
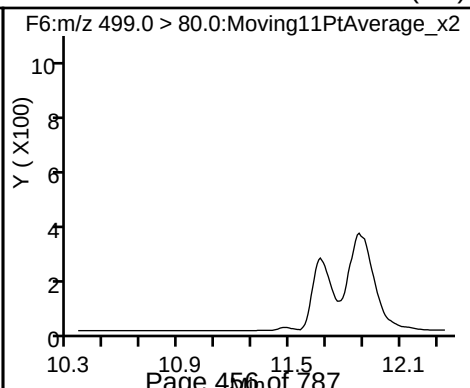
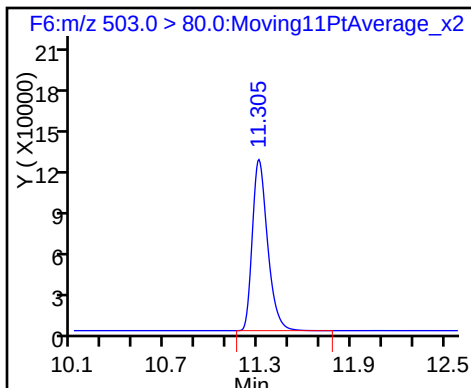
D 12 13C4 PFOA



D 16 13C4 PFOS

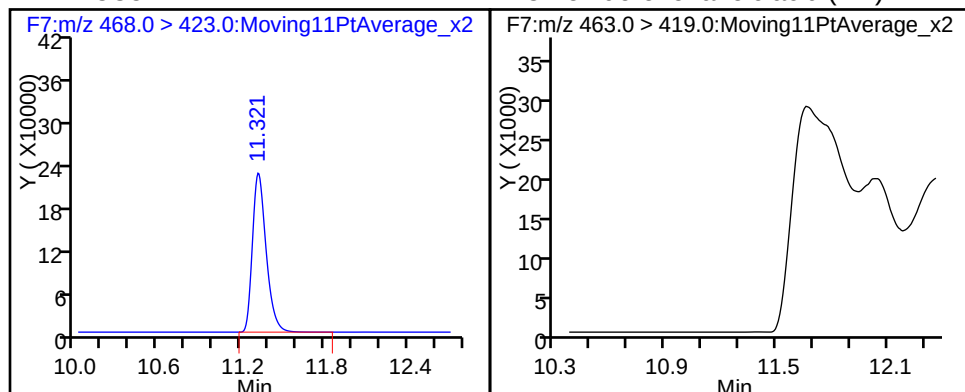
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-55</u>	Lab Sample ID: <u>320-17406-16</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_023.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 15:51</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>536(mL)</u>	Date Analyzed: <u>03/01/2016 00:37</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.3	1.9	0.86
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	1.9	0.75
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.1	J	2.3	1.9	0.81
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.3	1.9	0.70

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	81		25-150
STL00990	13C4 PFOA	80		25-150
STL00991	13C4 PFOS	93		25-150
STL01892	13C4-PFHxA	84		25-150
STL00995	13C5 PFNA	82		25-150
STL00994	18O2 PFHxS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_023.d
 Lims ID: 320-17406-A-16-A Lab Sample ID: 320-17406-16
 Client ID: DW-55
 Sample Type: Client
 Inject. Date: 01-Mar-2016 00:37:25 ALS Bottle#: 17 Worklist Smp#: 23
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-16-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:06:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	8.035	-0.044		1170927	40.7		81.3	94620	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1411993	42.2		84.3	115273	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.316	9.296	0.020	1.000	4427	0.5710				
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		637670	43.9		92.8	51361	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.356	10.388	-0.032	1.000	1284	0.0474			0.0	
D 12 13C4 PFOA										
417.0 > 372.0	10.342	10.389	-0.047		1436762	40.0		80.0	106621	
D 16 13C4 PFOS										
503.0 > 80.0	11.305	11.350	-0.045		734711	44.3		92.7	55271	
D 17 13C5 PFNA										
468.0 > 423.0	11.328	11.368	-0.040		1265776	41.1		82.2	61683	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_023.d

Injection Date: 01-Mar-2016 00:37:25

Instrument ID: A6

Lims ID: 320-17406-A-16-A

Lab Sample ID: 320-17406-16

Client ID: DW-55

Operator ID: JRB

ALS Bottle#: 17

Worklist Smp#: 23

Injection Vol: 15.0 ul

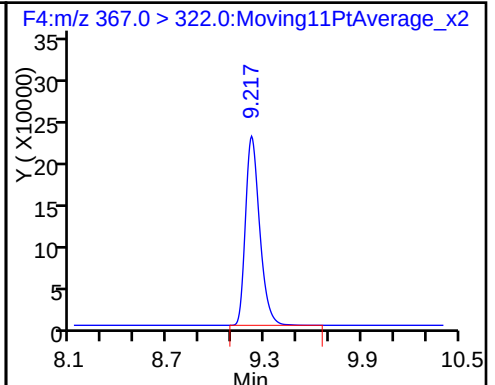
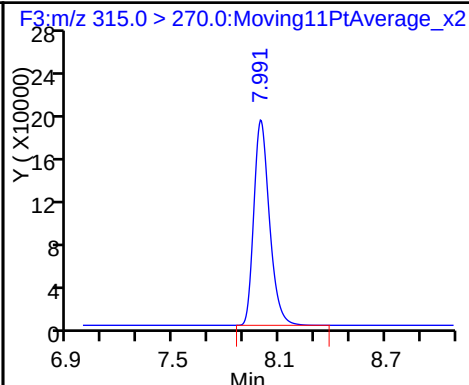
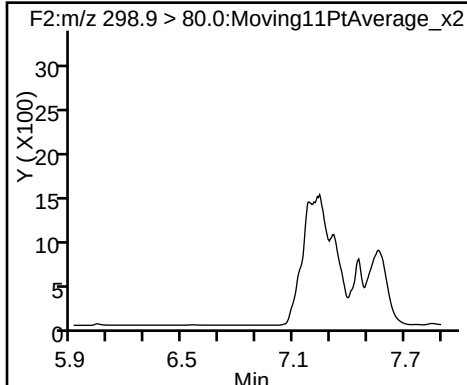
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

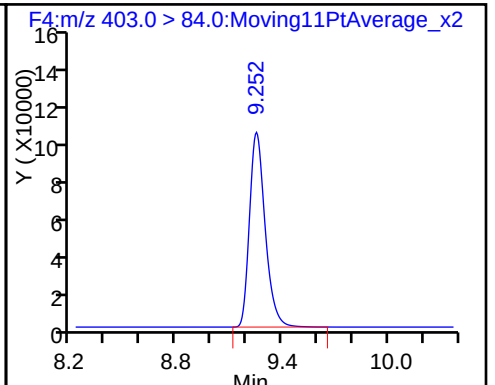
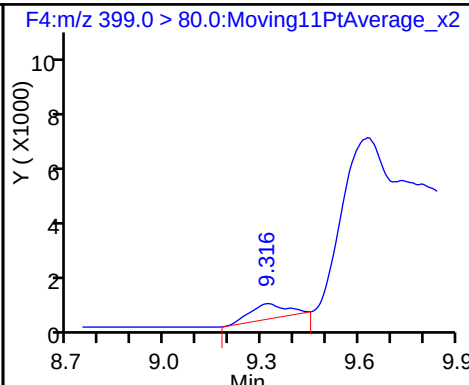
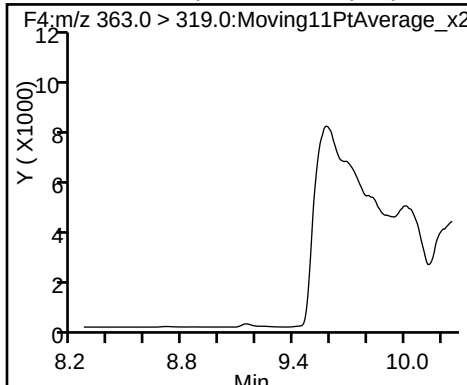
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

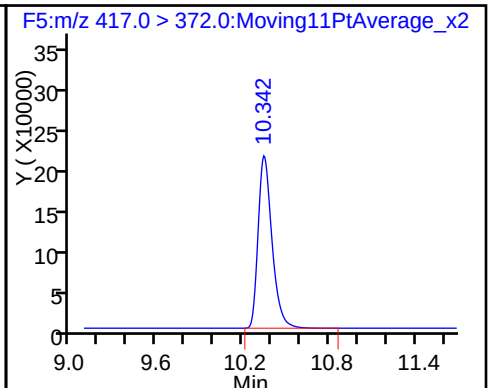
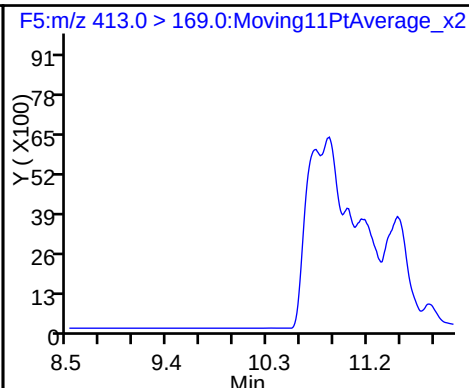
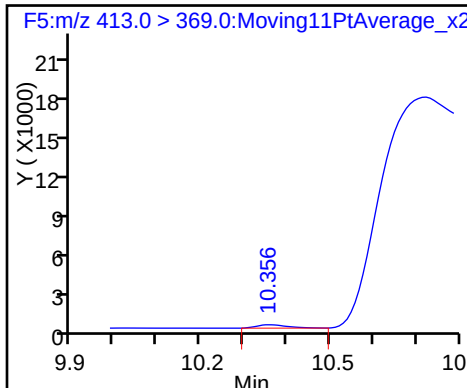
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

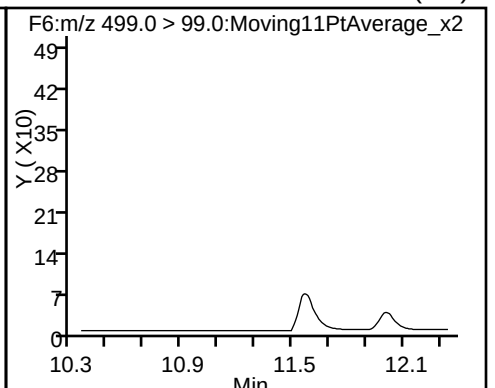
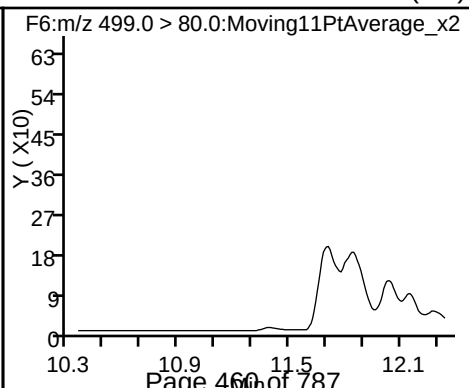
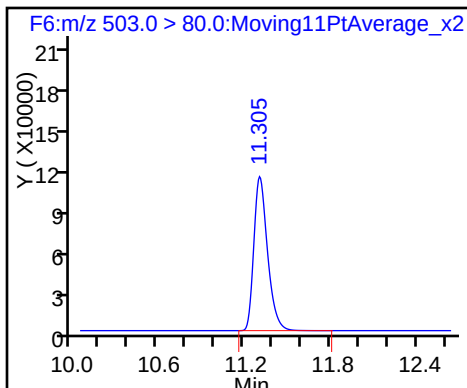
D 12 13C4 PFOA



D 16 13C4 PFOS

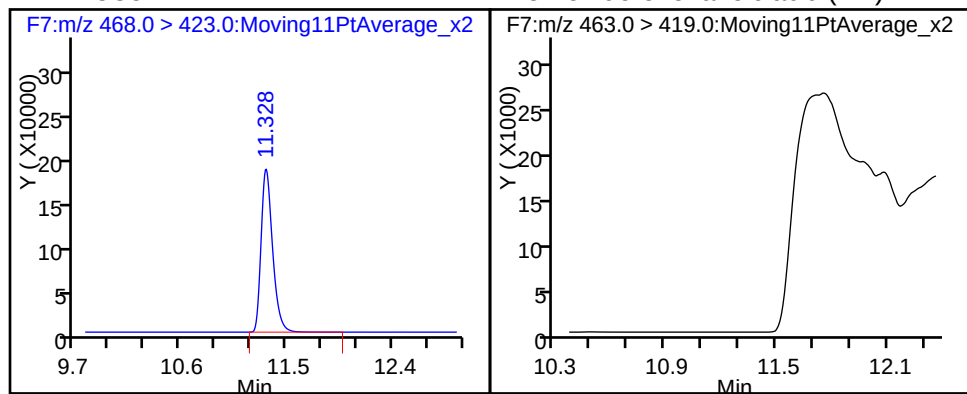
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-55FB</u>	Lab Sample ID: <u>320-17406-17</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_054.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 15:41</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>567(mL)</u>	Date Analyzed: <u>02/27/2016 16:10</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.81
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.71
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.77
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.58
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		25-150
STL00990	13C4 PFOA	103		25-150
STL00991	13C4 PFOS	112		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	101		25-150
STL00994	18O2 PFHxS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_054.d
 Lims ID: 320-17406-A-17-A Lab Sample ID: 320-17406-17
 Client ID: DW-55FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 16:10:11 ALS Bottle#: 37 Worklist Smp#: 50
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-17-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:28:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	8.979	8.604	0.375		3620796	44.9		89.9	6730	
D 8 13C4-PFHpA										
366.6 > 321.6	10.224	9.856	0.368		3242259	47.7		95.5	4862	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.241	9.892	0.349	1.000	4549	0.1325				
D 11 18O2 PFHxS										
402.5 > 83.6	10.250	9.892	0.358		1600855	44.1		93.3	3473	
D 12 13C4 PFOA										
416.5 > 371.6	11.291	10.958	0.333		4053593	51.7		103	7887	
D 16 13C4 PFOS										
502.4 > 79.7	12.174	11.876	0.298		876520	53.8		112	2750	
D 17 13C5 PFNA										
467.5 > 422.6	12.195	11.898	0.297		3282266	50.7		101	8114	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_054.d

Injection Date: 27-Feb-2016 16:10:11

Instrument ID: A4

Lims ID: 320-17406-A-17-A

Lab Sample ID: 320-17406-17

Client ID: DW-55FB

Operator ID: JRB

ALS Bottle#: 37

Worklist Smp#: 50

Injection Vol: 15.0 ul

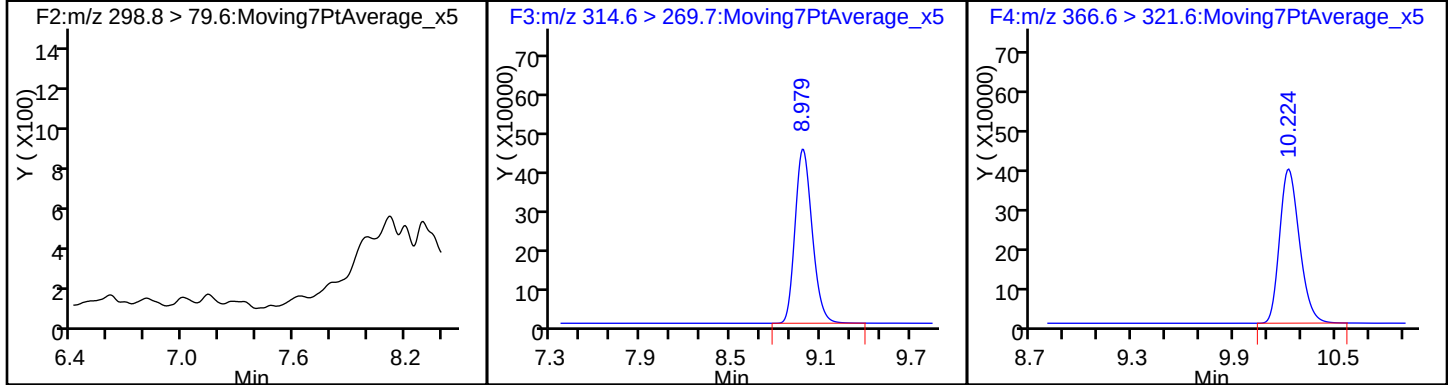
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

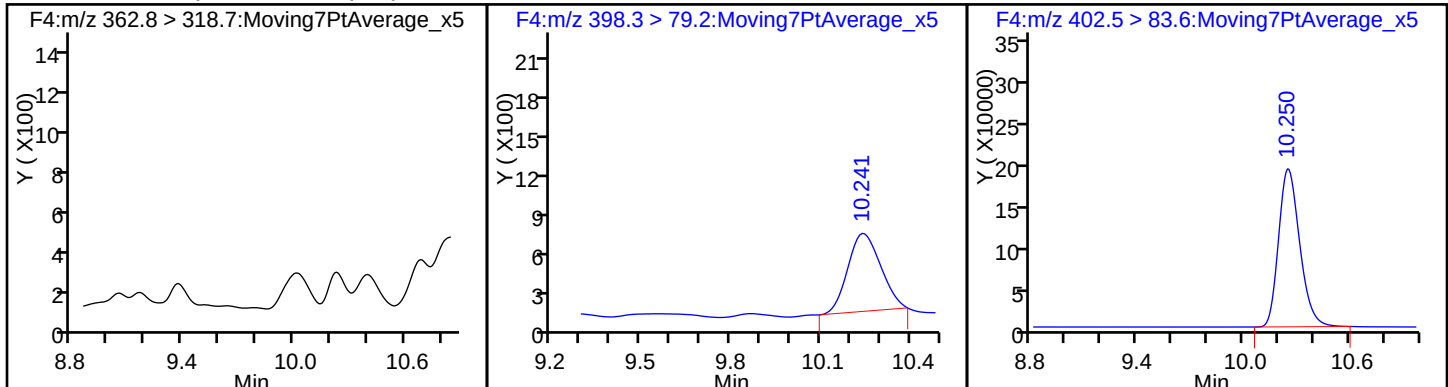
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid

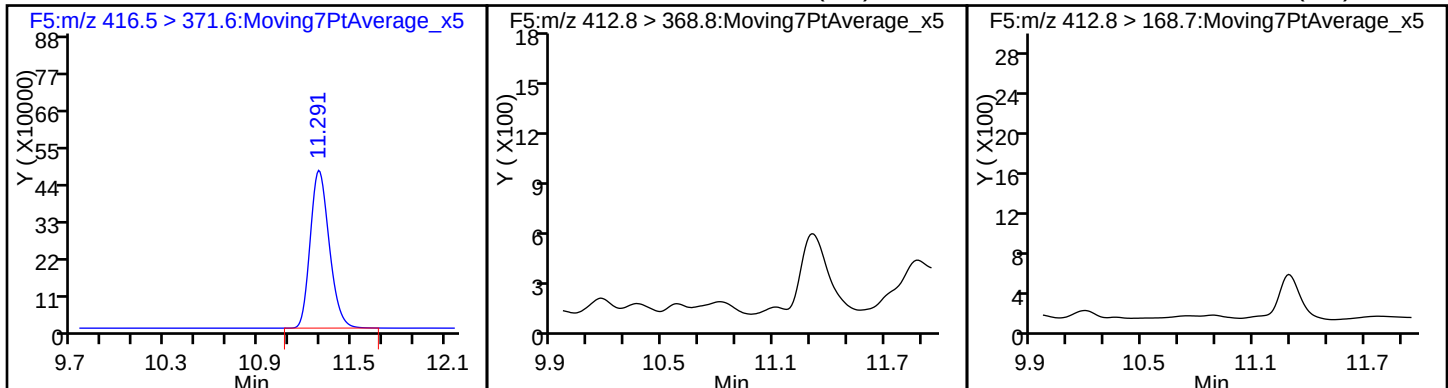
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

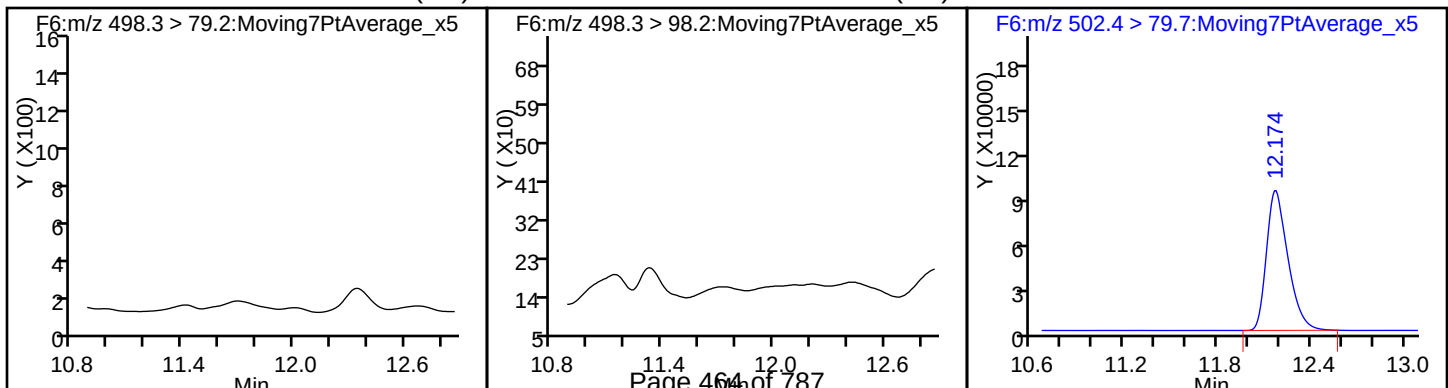
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

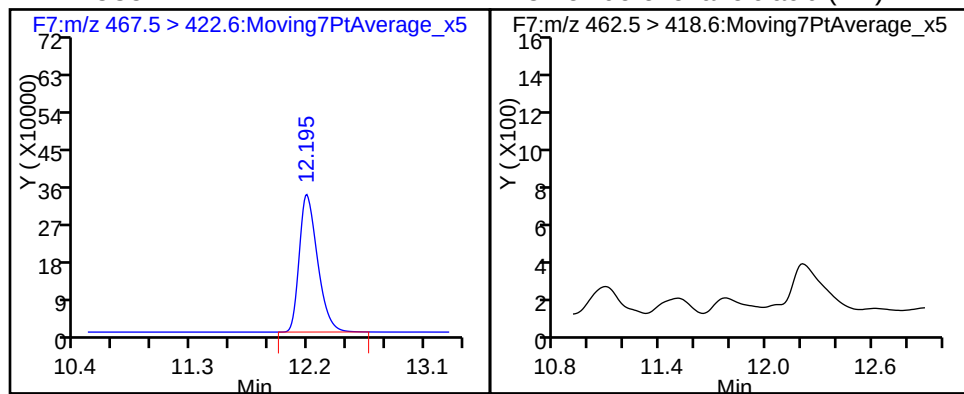
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-55FB RA</u>	Lab Sample ID: <u>320-17406-17 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_024.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 15:41</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>567(mL)</u>	Date Analyzed: <u>03/01/2016 00:58</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		25-150
STL00990	13C4 PFOA	105		25-150
STL00991	13C4 PFOS	102		25-150
STL01892	13C4-PFHpA	106		25-150
STL00995	13C5 PFNA	95		25-150
STL00994	18O2 PFHxS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_024.d
 Lims ID: 320-17406-A-17-A Lab Sample ID: 320-17406-17
 Client ID: DW-55FB
 Sample Type: Client
 Inject. Date: 01-Mar-2016 00:58:38 ALS Bottle#: 18 Worklist Smp#: 24
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-17-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:07:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.997	8.035	-0.038		1527528	53.0		106	58754	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1779670	53.1		106	69403	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.322	9.296	0.026	1.000	6599	0.7486				
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		678672	46.7		98.8	105999	
D 12 13C4 PFOA										
417.0 > 372.0	10.342	10.389	-0.047		1888849	52.6		105	139387	
D 16 13C4 PFOS										
503.0 > 80.0	11.305	11.350	-0.045		810081	48.8		102	16978	
D 17 13C5 PFNA										
468.0 > 423.0	11.328	11.368	-0.040		1457635	47.4		94.7	105079	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_024.d

Injection Date: 01-Mar-2016 00:58:38

Instrument ID: A6

Lims ID: 320-17406-A-17-A

Lab Sample ID: 320-17406-17

Client ID: DW-55FB

Operator ID: JRB

ALS Bottle#: 18

Worklist Smp#: 24

Injection Vol: 15.0 ul

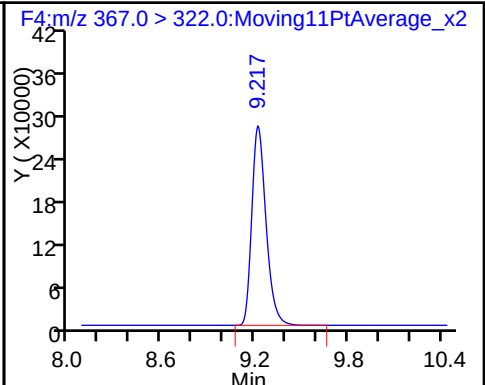
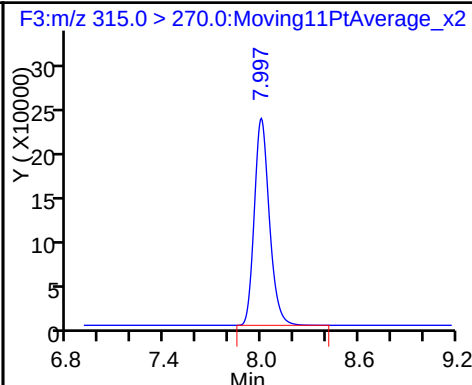
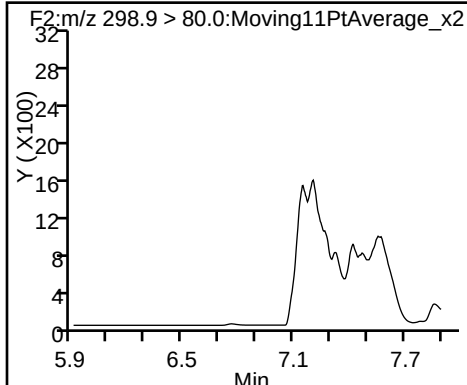
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

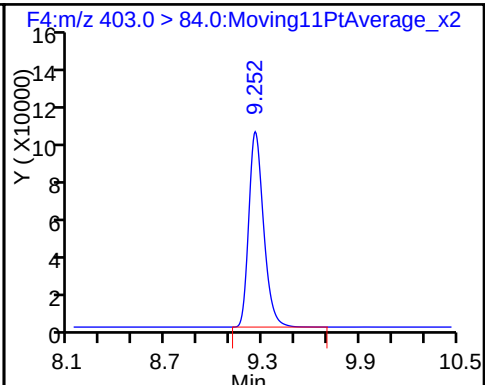
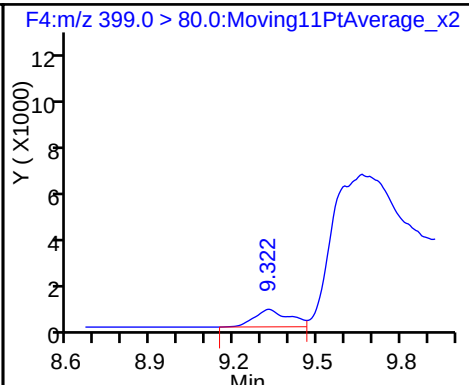
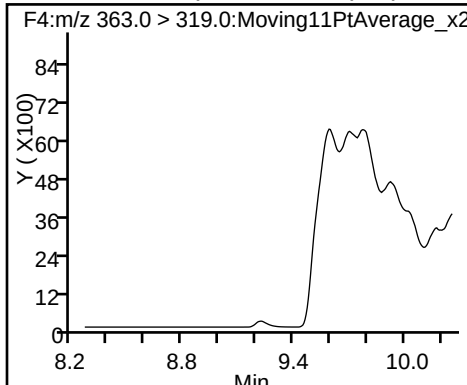
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

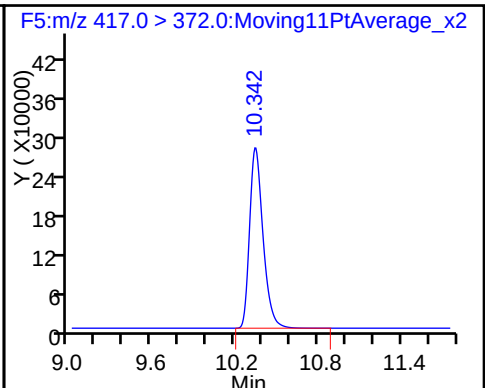
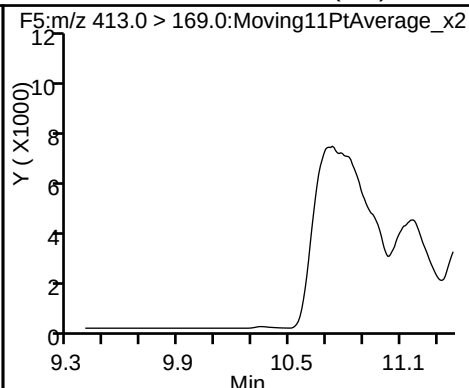
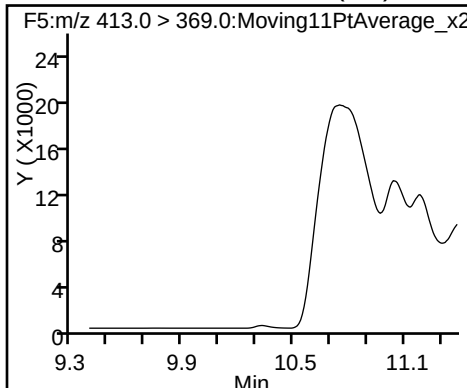
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

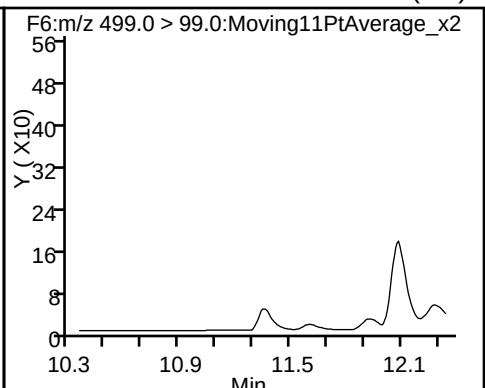
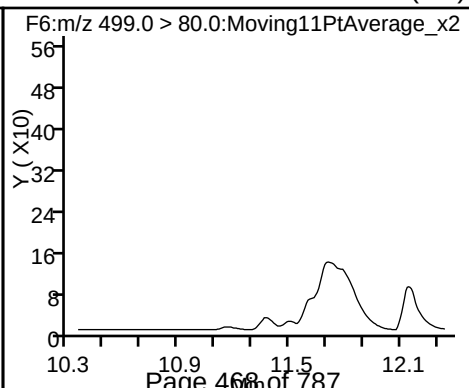
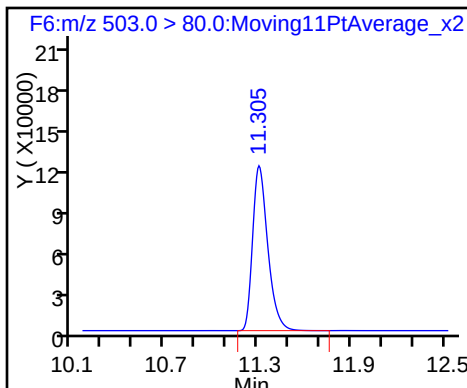
D 12 13C4 PFOA



D 16 13C4 PFOS

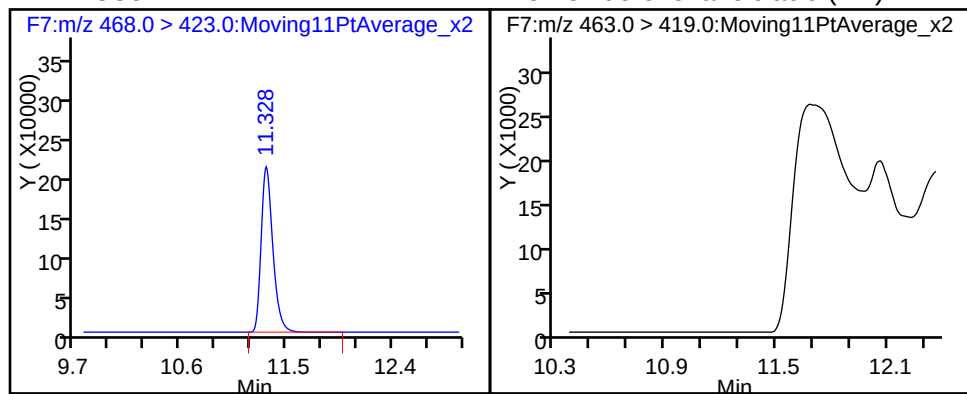
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: DW-95 Lab Sample ID: 320-17406-18
 Matrix: Water Lab File ID: 26FEB2016A4A_055.d
 Analysis Method: WS-LC-0025 Date Collected: 02/22/2016 16:36
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 513.2 (mL) Date Analyzed: 02/27/2016 16:31
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	J	2.4	1.9	0.89
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.9		2.4	1.9	0.78
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.2	M	2.4	1.9	0.85
375-95-1	Perfluorononanoic acid (PFNA)	1.5	J	2.4	1.9	0.64
335-67-1	Perfluorooctanoic acid (PFOA)	42	M	2.4	1.9	0.73

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	50		25-150
STL00990	13C4 PFOA	46		25-150
STL00991	13C4 PFOS	88		25-150
STL01892	13C4-PFHpA	50		25-150
STL00995	13C5 PFNA	40		25-150
STL00994	18O2 PFHxS	85		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_055.d
 Lims ID: 320-17406-A-18-A Lab Sample ID: 320-17406-18
 Client ID: DW-95
 Sample Type: Client
 Inject. Date: 27-Feb-2016 16:31:22 ALS Bottle#: 38 Worklist Smp#: 51
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-18-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:30:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.659	7.404	0.255	1.000	18071	0.9748				
D 6 13C2 PFHxA										
314.6 > 269.7	8.901	8.604	0.297		2000115	24.8		49.6	6094	
D 8 13C4-PFHpA										
366.6 > 321.6	10.148	9.856	0.292		1690951	24.9		49.8	4485	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.148	9.859	0.289	1.000	91164	5.06			40.8	
58 Perfluorohexanesulfonic acid										M
398.3 > 79.2	10.182	9.892	0.290	1.000	83494	2.66				M
D 11 18O2 PFHxS										
402.5 > 83.6	10.182	9.892	0.290		1462700	40.3		85.2	2811	
D 12 13C4 PFOA										
416.5 > 371.6	11.226	10.958	0.268		1811400	23.1		46.2	4187	
13 Perfluorooctanoic acid										M
412.8 > 368.8	11.217	10.958	0.259	1.000	408358	21.5			184	M
15 Perfluorooctane sulfonic acid										M
498.3 > 79.2	12.105	11.874	0.231	1.000	841414	15.8			690	M
498.3 > 98.2	12.105	11.874	0.231	1.000	355352		2.37(0.00-0.00)		429	M
D 16 13C4 PFOS										
502.4 > 79.7	12.115	11.876	0.239		682154	41.8		87.5	1183	
D 17 13C5 PFNA										
467.5 > 422.6	12.136	11.898	0.238		1294025	20.0		39.9	4975	
18 Perfluorononanoic acid										
462.5 > 418.6	12.136	11.899	0.237	1.000	14010	0.7811			10.3	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_055.d

Injection Date: 27-Feb-2016 16:31:22

Instrument ID: A4

Lims ID: 320-17406-A-18-A

Lab Sample ID: 320-17406-18

Client ID: DW-95

Operator ID: JRB

ALS Bottle#: 38

Worklist Smp#: 51

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

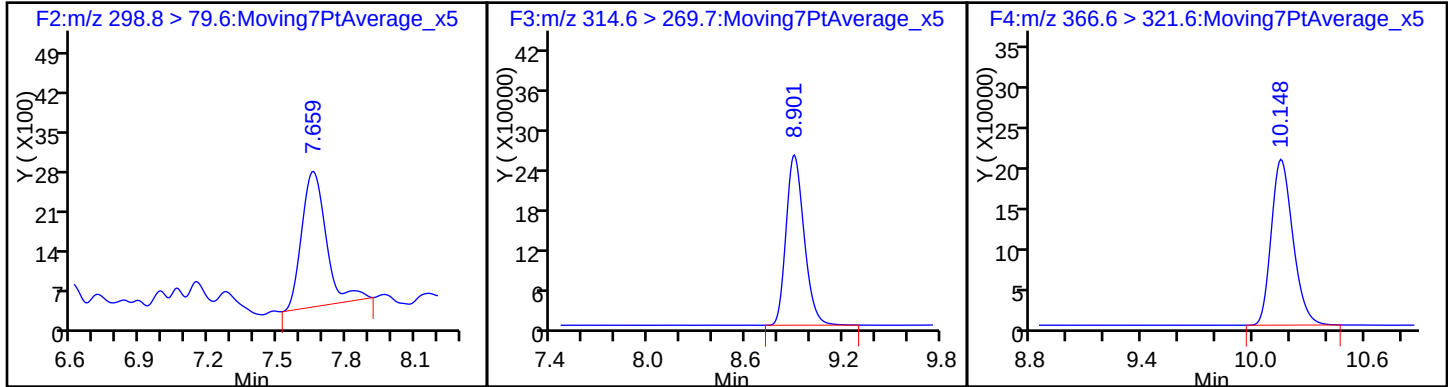
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

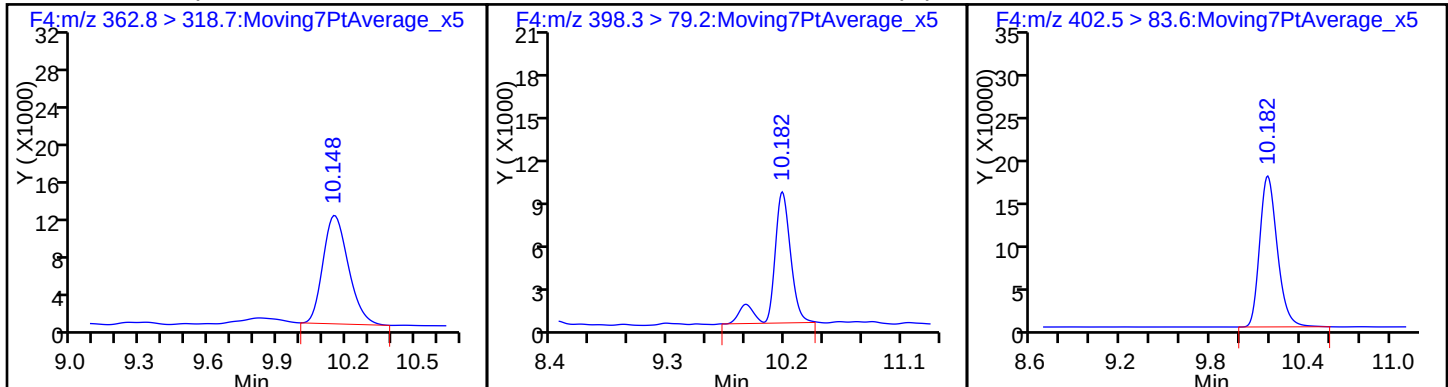
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

58 Perfluorohexanesulfonic acid (M)

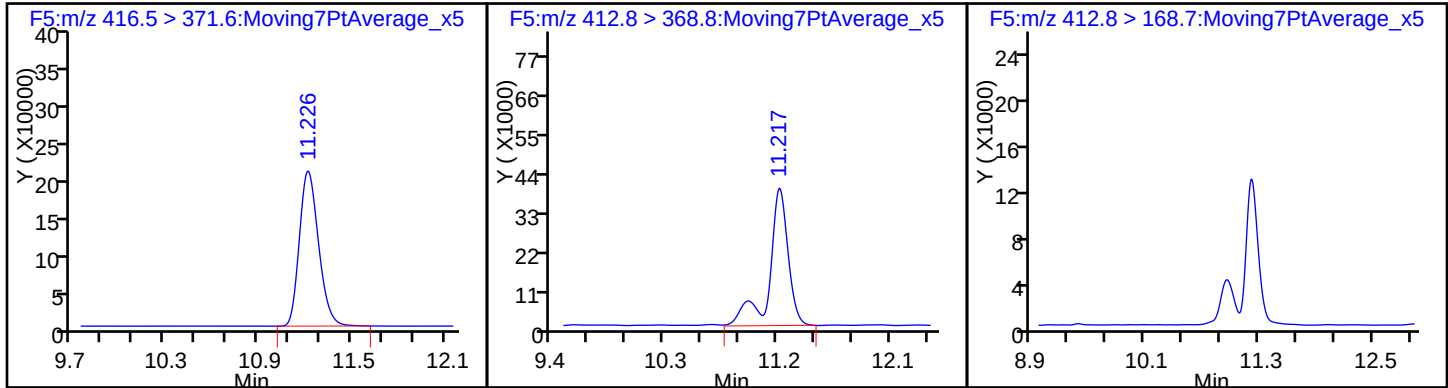
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid (M)

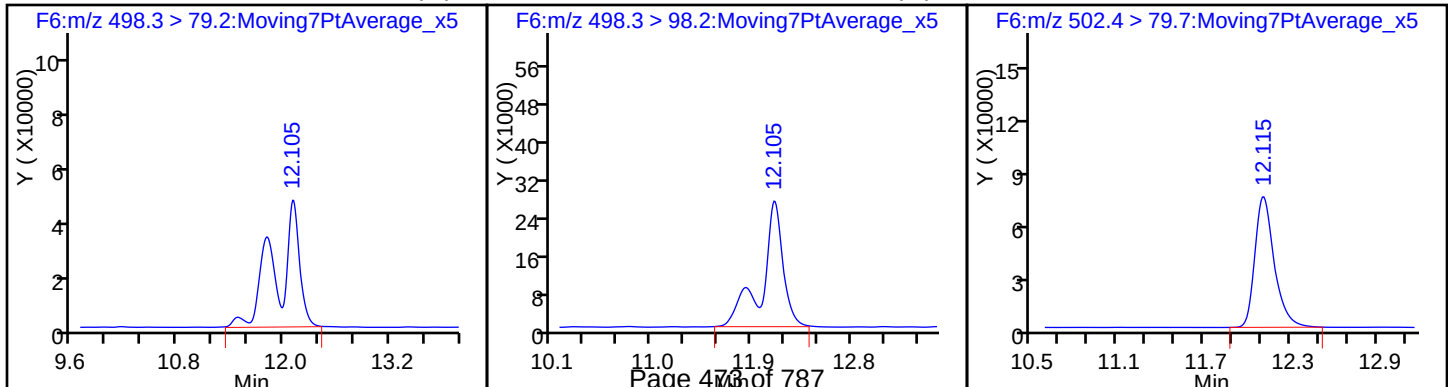
13 Perfluorooctanoic acid (M)



15 Perfluorooctane sulfonic acid (M)

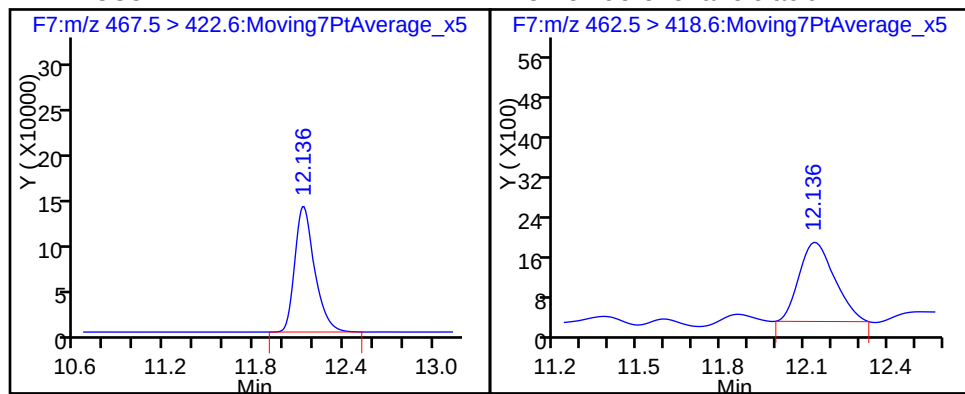
15 Perfluorooctane sulfonic acid (M)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid



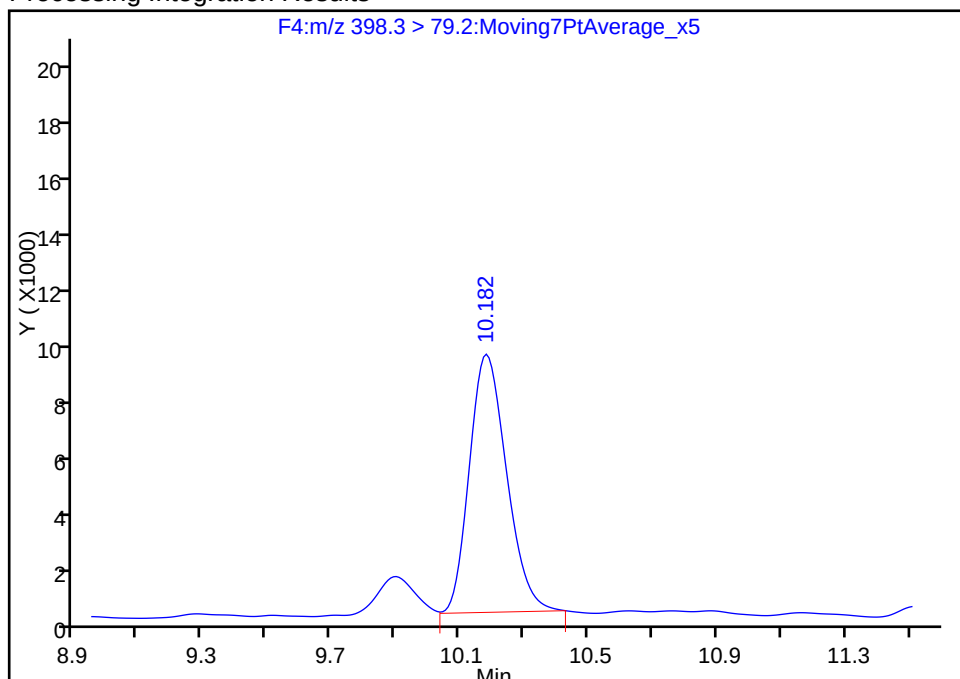
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_055.d		
Injection Date:	27-Feb-2016 16:31:22	Instrument ID:	A4
Lims ID:	320-17406-A-18-A	Lab Sample ID:	320-17406-18
Client ID:	DW-95		
Operator ID:	JRB	ALS Bottle#:	38
Injection Vol:	15.0 ul	Dil. Factor:	1.0000
Method:	PFAC_A4	Limit Group:	LC PFC_DOD ICAL
Column:		Detector:	F4:MRM
		Worklist Smp#:	51

58 Perfluorohexanesulfonic acid, CAS: 355-46-4

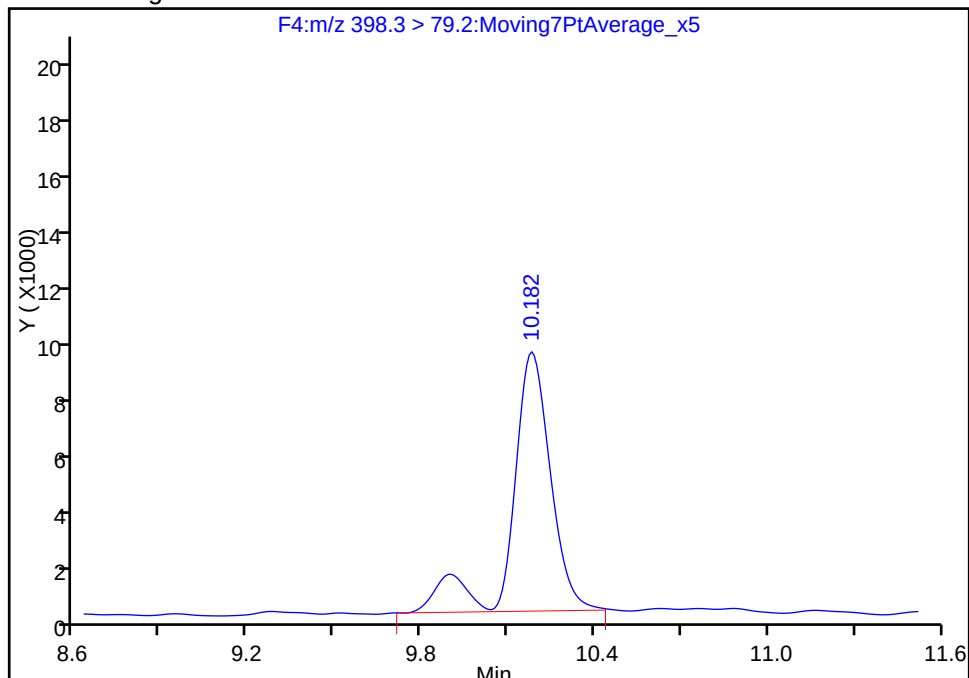
RT: 10.18
Area: 71956
Amount: 2.294435
Amount Units: ng/ml

Processing Integration Results



RT: 10.18
Area: 83494
Amount: 2.662343
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 29-Feb-2016 10:30:21
Audit Action: Manually Integrated
Audit Reason: Isomers

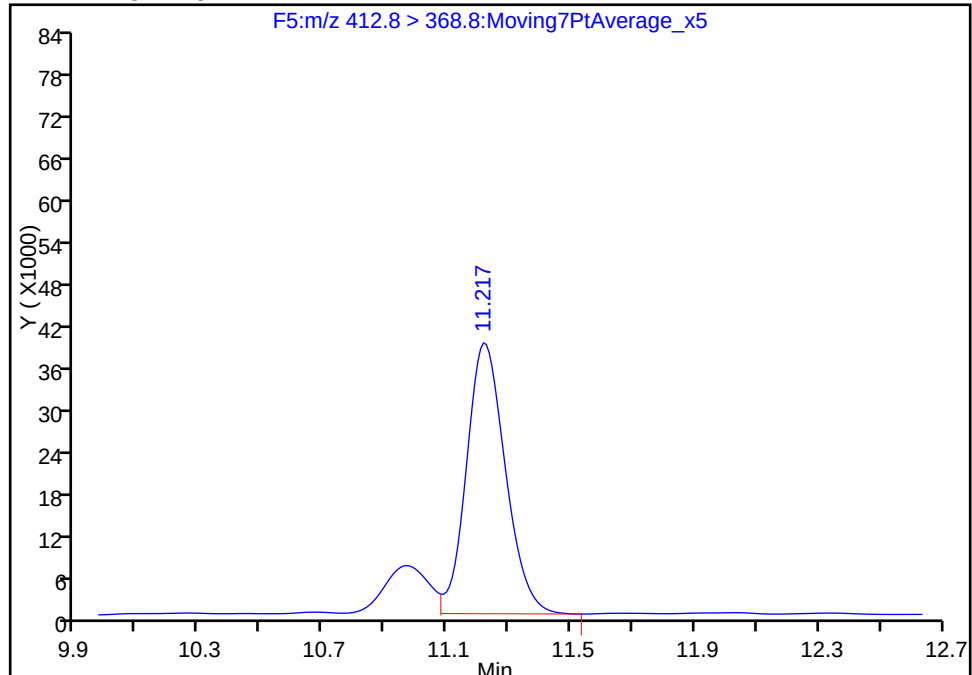
TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_055.d		
Injection Date:	27-Feb-2016 16:31:22	Instrument ID:	A4
Lims ID:	320-17406-A-18-A	Lab Sample ID:	320-17406-18
Client ID:	DW-95		
Operator ID:	JRB	ALS Bottle#:	38
Injection Vol:	15.0 ul	Dil. Factor:	1.0000
Method:	PFAC_A4	Limit Group:	LC PFC_DOD ICAL
Column:		Detector	F5:MRM
		Worklist Smp#:	51

13 Perfluorooctanoic acid, CAS: 335-67-1

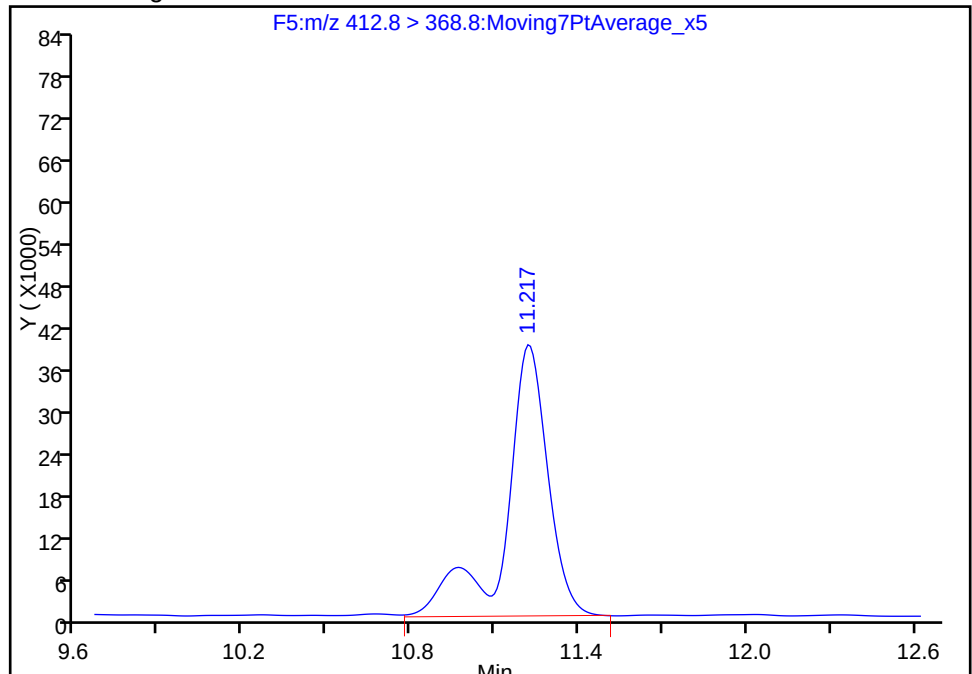
RT: 11.22
Area: 337511
Amount: 17.733703
Amount Units: ng/ml

Processing Integration Results



RT: 11.22
Area: 408358
Amount: 21.456188
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 29-Feb-2016 10:30:21
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-95 RA</u>	Lab Sample ID: <u>320-17406-18 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_025.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 16:36</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>513.2 (mL)</u>	Date Analyzed: <u>03/01/2016 01:19</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	M	3.9	2.9	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	72		25-150
STL00990	13C4 PFOA	60		25-150
STL00991	13C4 PFOS	100		25-150
STL01892	13C4-PFHpA	69		25-150
STL00995	13C5 PFNA	42		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_025.d
 Lims ID: 320-17406-A-18-A Lab Sample ID: 320-17406-18
 Client ID: DW-95
 Sample Type: Client
 Inject. Date: 01-Mar-2016 01:19:52 ALS Bottle#: 19 Worklist Smp#: 25
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-18-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50°C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 11-Mar-2016 10:35:10 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK013

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:08:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.859	6.905	-0.046	1.000	18651	1.36				
D 6 13C2 PFHxA										
315.0 > 270.0	7.980	8.035	-0.055		1035329	35.9		71.9	83746	
D 8 13C4-PFHpA										
367.0 > 322.0	9.205	9.261	-0.056		1154545	34.5		68.9	18354	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.211	9.262	-0.051	1.000	116198	4.87			15.1	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.246	9.296	-0.050	1.000	32131	3.10				
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.297	-0.057		690763	47.6		101	28016	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.335	10.388	-0.053	1.000	378407	18.6			13.7	
413.0 > 169.0	10.335	10.388	-0.053	1.000	116340		3.25(0.00-0.00)		9.4	
D 12 13C4 PFOA										
417.0 > 372.0	10.335	10.389	-0.054		1079829	30.1		60.1	80730	
D 16 13C4 PFOS										
503.0 > 80.0	11.298	11.350	-0.052		792904	47.8		100	39331	
15 Perfluorooctane sulfonic acid										M
499.0 > 80.0	11.298	11.350	-0.052	1.000	230899	14.2			237	M
499.0 > 99.0	11.305	11.350	-0.045	1.001	77843		2.97(0.00-0.00)		314	M
D 17 13C5 PFNA										
468.0 > 423.0	11.313	11.368	-0.055		651118	21.2		42.3	47674	
18 Perfluorononanoic acid										
463.0 > 419.0	11.320	11.370	-0.050	1.000	4236	0.3889			0.2	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_025.d

Injection Date: 01-Mar-2016 01:19:52

Instrument ID: A6

Lims ID: 320-17406-A-18-A

Lab Sample ID: 320-17406-18

Client ID: DW-95

Operator ID: JRB

ALS Bottle#: 19

Worklist Smp#: 25

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

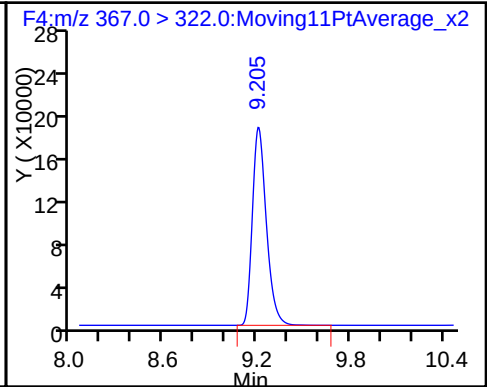
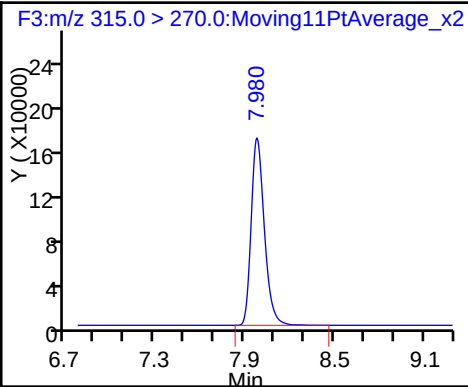
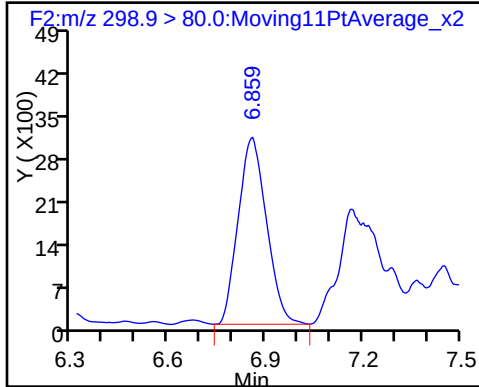
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

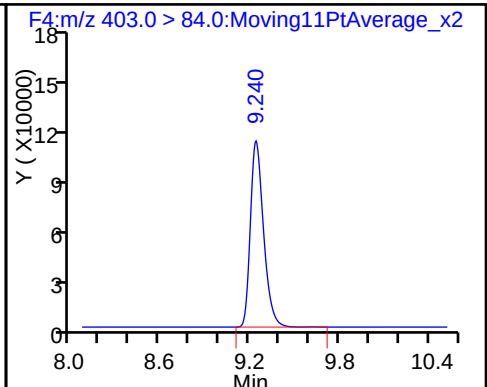
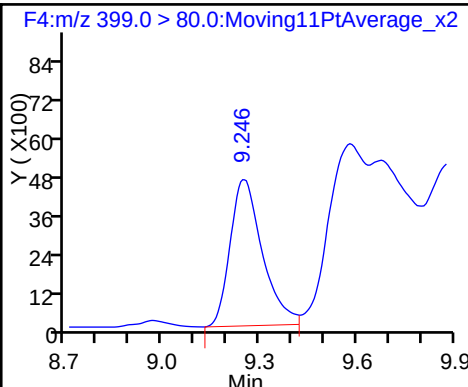
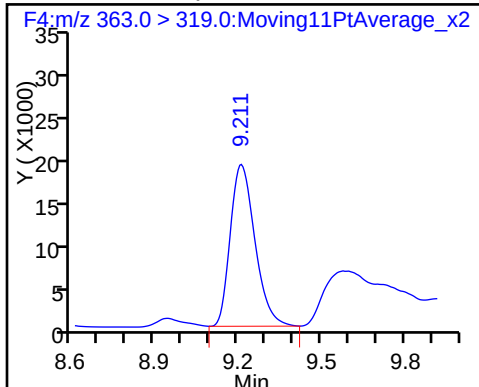
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

41 Perfluorohexanesulfonic acid

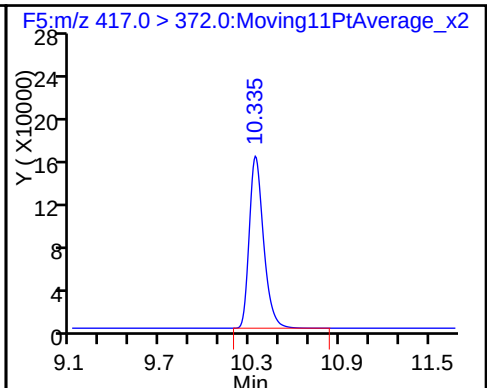
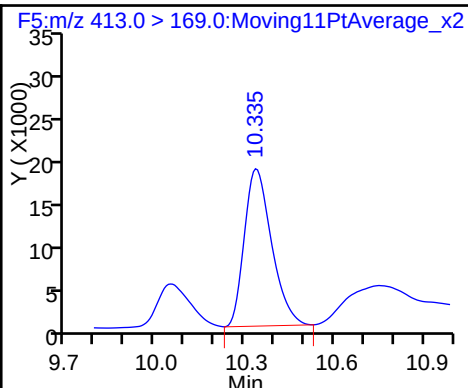
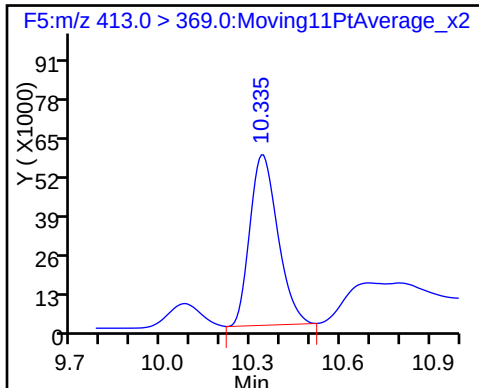
D 11 18O2 PFHxS



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

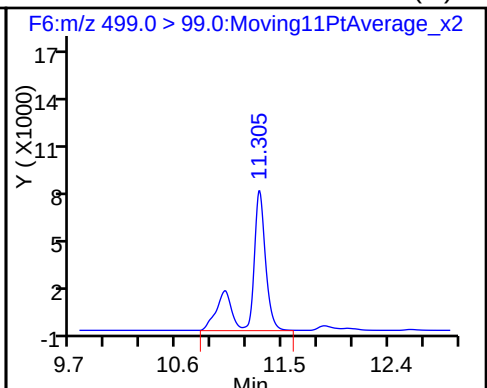
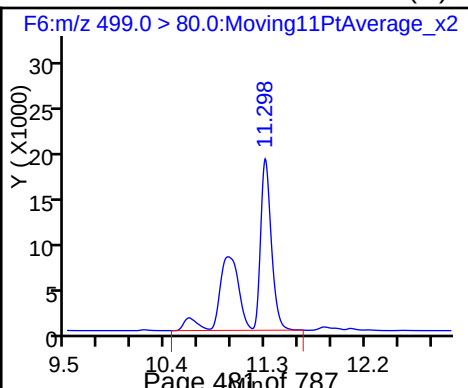
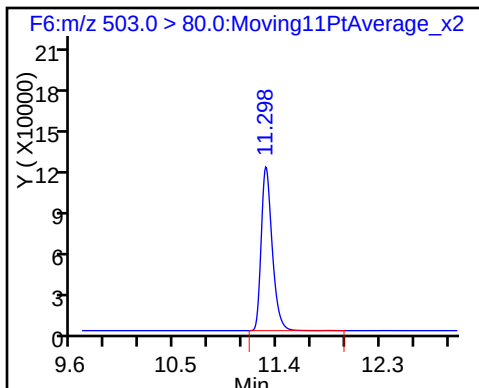
D 12 13C4 PFOA



D 16 13C4 PFOS

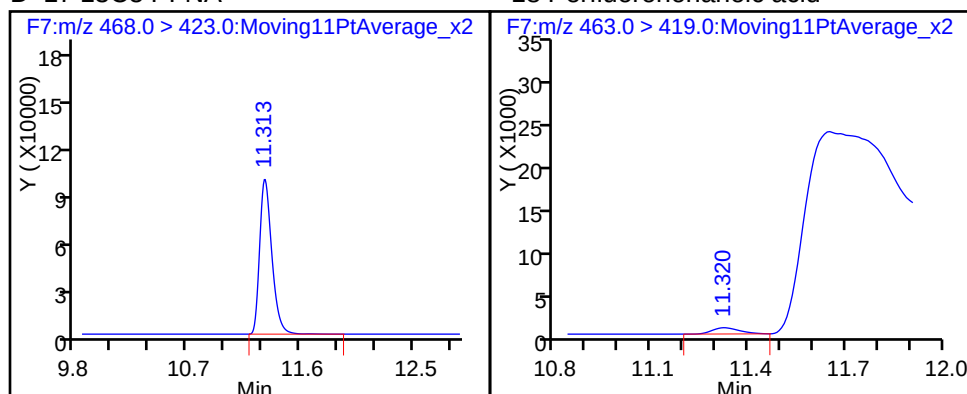
15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid (M)



D 17 13C5 PFNA

18 Perfluorononanoic acid



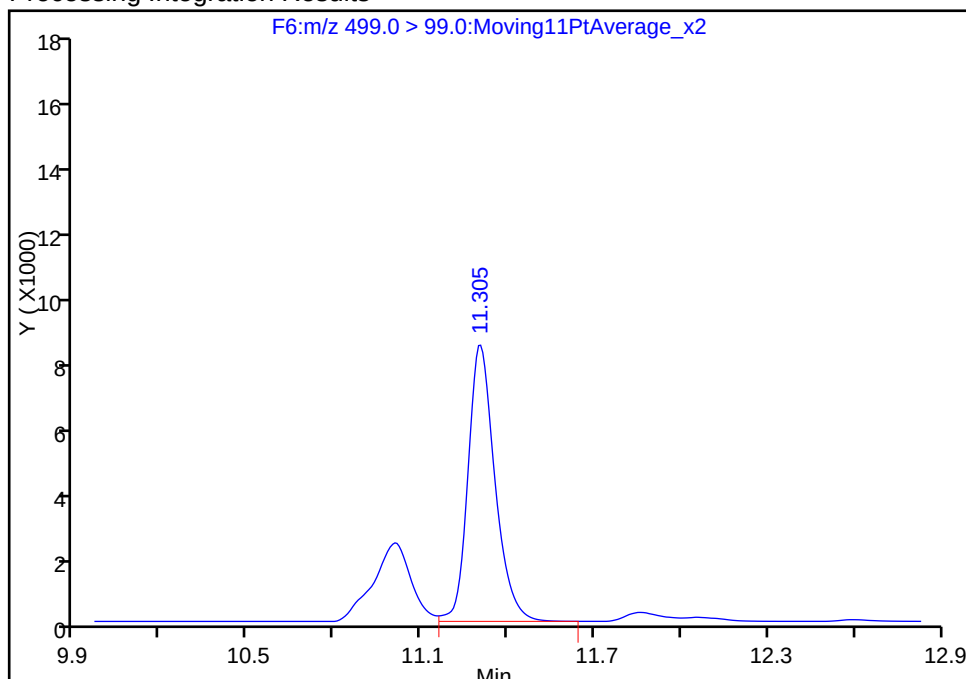
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_025.d
Injection Date: 01-Mar-2016 01:19:52 Instrument ID: A6
Lims ID: 320-17406-A-18-A Lab Sample ID: 320-17406-18
Client ID: DW-95
Operator ID: JRB ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

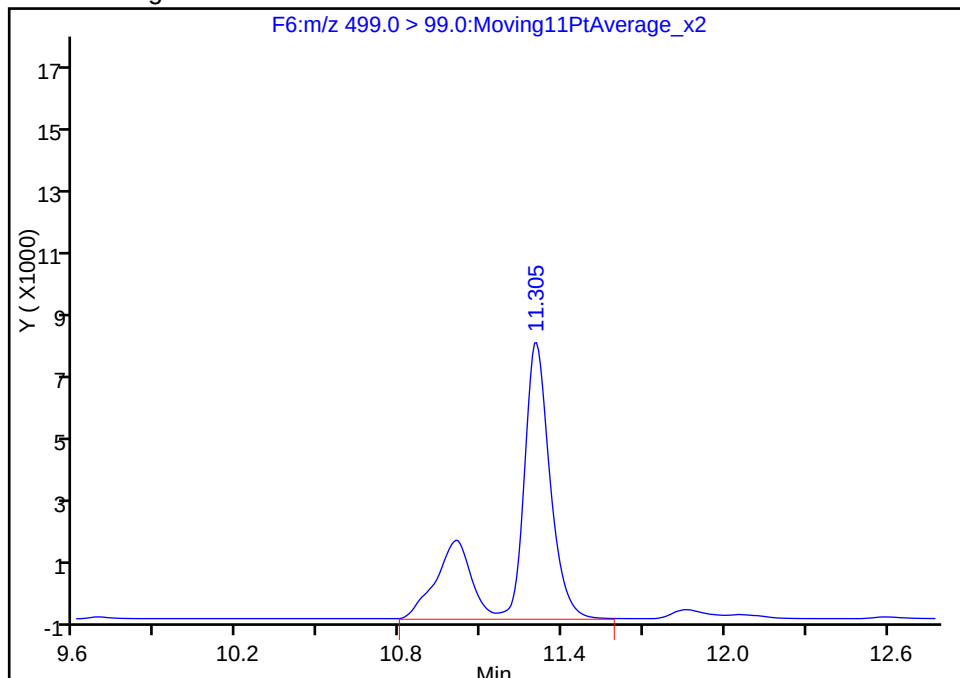
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Area: 55102
Amount: 7.887247
Amount Units: ng/ml

Processing Integration Results



RT: 11.30
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Amount: 14.217806
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 01-Mar-2016 09:08:04
Audit Action: Manually Integrated
Audit Reason: Isomers

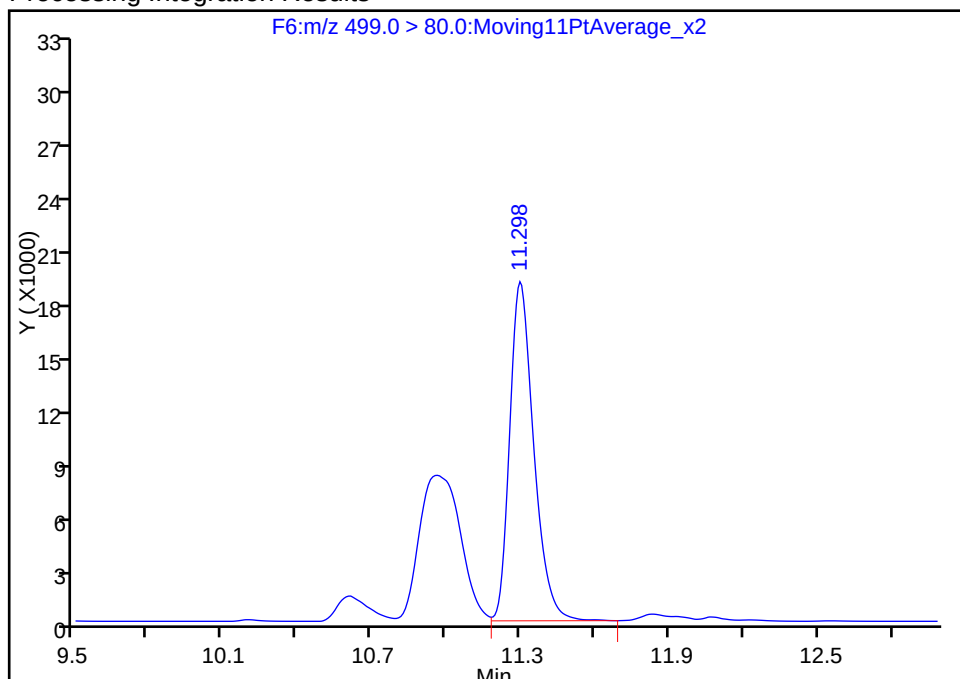
TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_025.d
Injection Date: 01-Mar-2016 01:19:52 Instrument ID: A6
Lims ID: 320-17406-A-18-A Lab Sample ID: 320-17406-18
Client ID: DW-95
Operator ID: JRB ALS Bottle#: 19 Worklist Smp#: 25
Injection Vol: 15.0 ul Dil. Factor: 1.0000
Method: PFAC_A6 Limit Group: LC PFC_DOD ICAL
Column: Acquity BEH C18 (2.10 mm) Detector F6:MRM

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

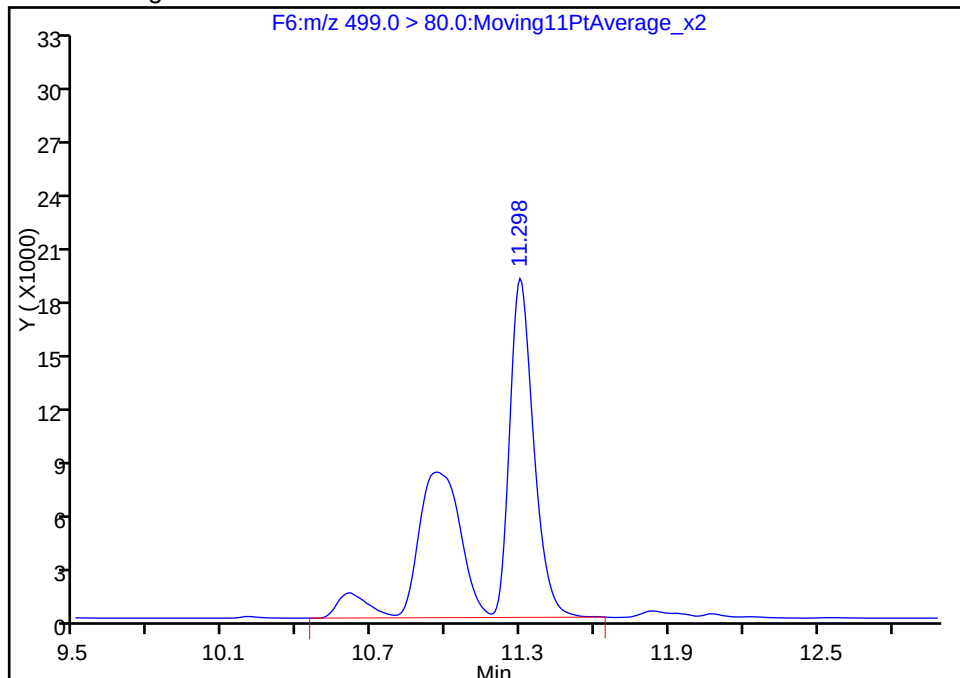
RT: 11.30
Area: 126621
Amount: 7.887247
Amount Units: ng/ml

Processing Integration Results



RT: 11.30
Area: 230899
Amount: 14.217806
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Mar-2016 10:35:10
Audit Action: Manually Integrated
Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-95FB</u>	Lab Sample ID: <u>320-17406-19</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_056.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 16:21</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>425.6 (mL)</u>	Date Analyzed: <u>02/27/2016 16:52</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.3	U	2.9	2.3	1.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	U	2.9	2.3	0.94
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.3	U	2.9	2.3	1.0
375-95-1	Perfluorononanoic acid (PFNA)	2.3	U	2.9	2.3	0.77
335-67-1	Perfluorooctanoic acid (PFOA)	2.3	U	2.9	2.3	0.88

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		25-150
STL00990	13C4 PFOA	98		25-150
STL00991	13C4 PFOS	105		25-150
STL01892	13C4-PFHpA	93		25-150
STL00995	13C5 PFNA	97		25-150
STL00994	18O2 PFHxS	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_056.d
 Lims ID: 320-17406-A-19-A Lab Sample ID: 320-17406-19
 Client ID: DW-95FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 16:52:34 ALS Bottle#: 39 Worklist Smp#: 52
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-19-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 29-Feb-2016 10:36:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.191	8.604	0.587		3918159	48.6		97.2	7680	
D 8 13C4-PFHpA										
366.6 > 321.6	10.437	9.856	0.581		3146672	46.3		92.7	5609	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.480	9.892	0.588	1.000	4551	0.1241				
D 11 18O2 PFHxS										
402.5 > 83.6	10.471	9.892	0.579		1710427	47.2		99.7	4552	
D 12 13C4 PFOA										
416.5 > 371.6	11.484	10.958	0.526		3860480	49.2		98.5	5504	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.484	10.958	0.526	1.000	3680	0.0907			4.4	
D 16 13C4 PFOS										
502.4 > 79.7	12.346	11.876	0.470		816719	50.1		105	2651	
D 17 13C5 PFNA										
467.5 > 422.6	12.360	11.898	0.462		3137058	48.4		96.8	5217	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_056.d

Injection Date: 27-Feb-2016 16:52:34

Instrument ID: A4

Lims ID: 320-17406-A-19-A

Lab Sample ID: 320-17406-19

Client ID: DW-95FB

Operator ID: JRB

ALS Bottle#: 39

Worklist Smp#: 52

Injection Vol: 15.0 ul

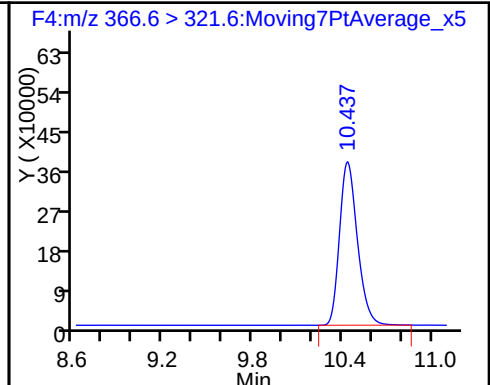
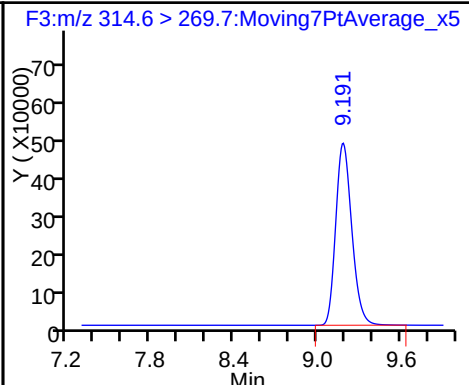
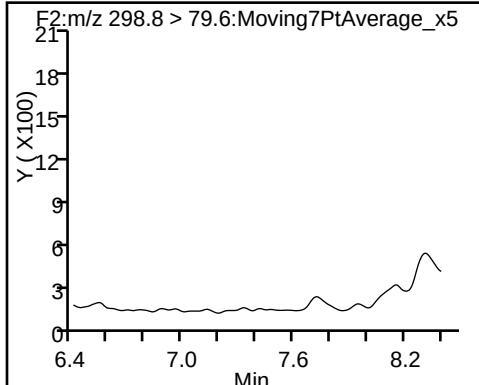
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

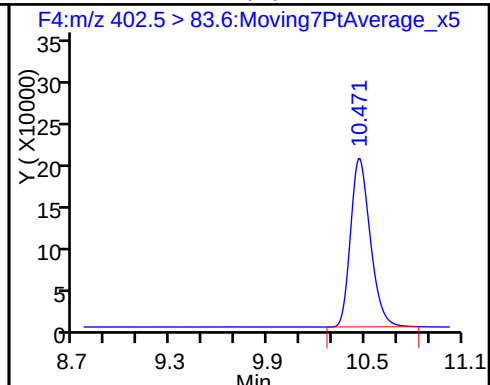
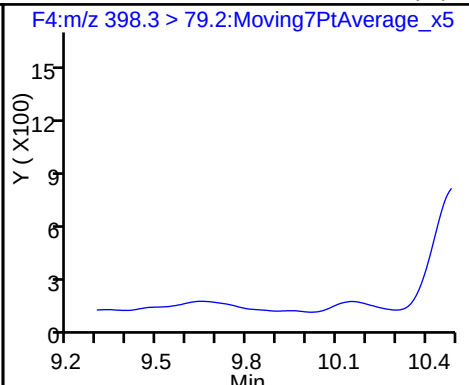
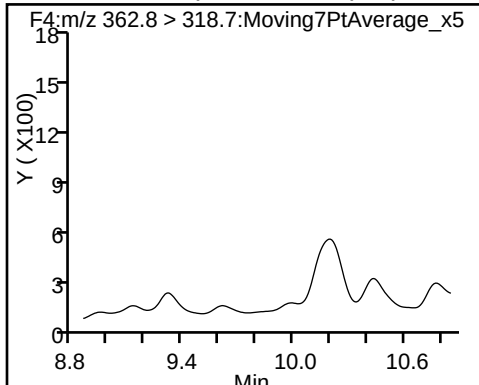
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (M)

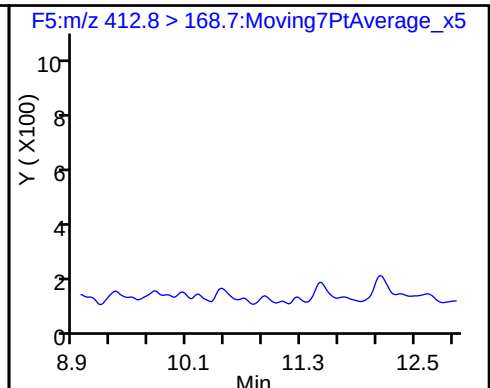
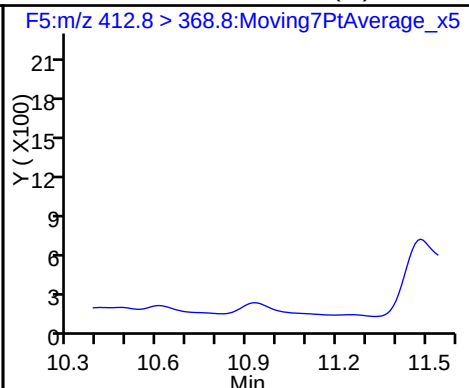
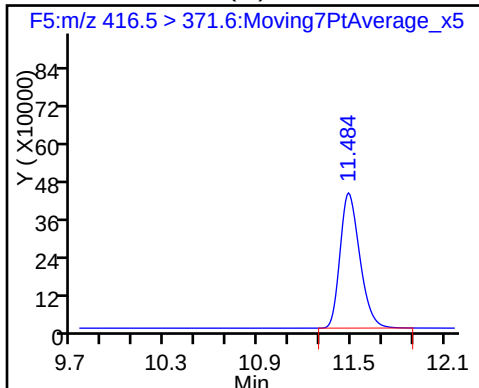
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (M)

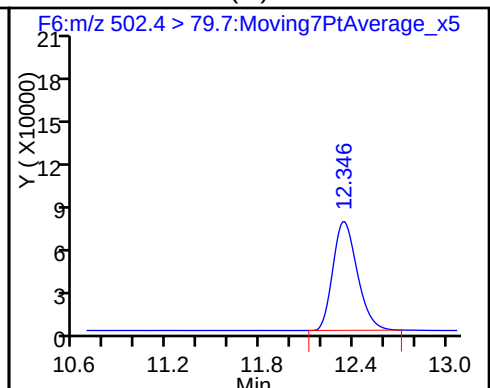
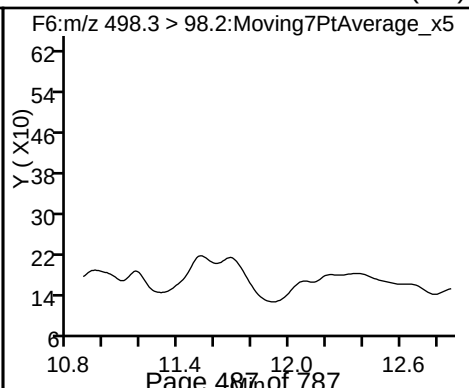
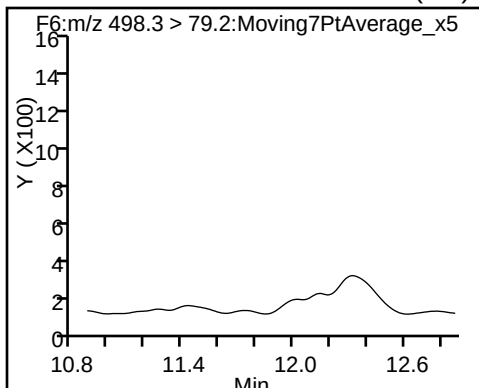
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (ND)

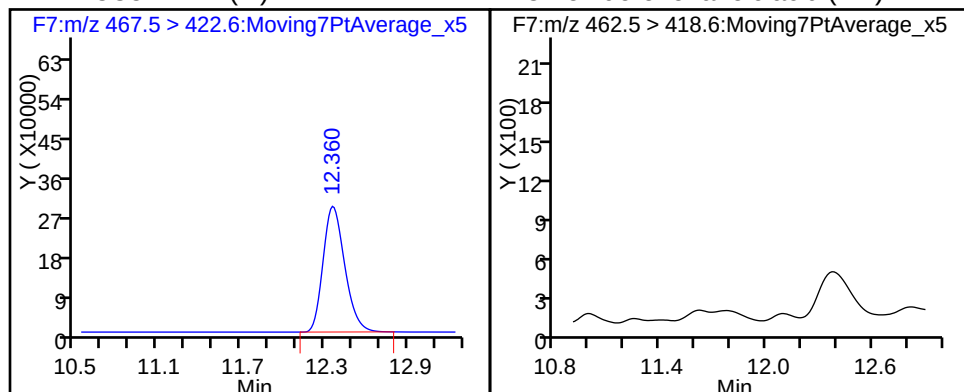
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-95FB RA</u>	Lab Sample ID: <u>320-17406-19 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_026.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 16:21</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>425.6(mL)</u>	Date Analyzed: <u>03/01/2016 01:41</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.5	U	4.7	3.5	1.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	113		25-150
STL00990	13C4 PFOA	111		25-150
STL00991	13C4 PFOS	108		25-150
STL01892	13C4-PFHpA	110		25-150
STL00995	13C5 PFNA	106		25-150
STL00994	18O2 PFHxS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_026.d
 Lims ID: 320-17406-A-19-A Lab Sample ID: 320-17406-19
 Client ID: DW-95FB
 Sample Type: Client
 Inject. Date: 01-Mar-2016 01:41:05 ALS Bottle#: 20 Worklist Smp#: 26
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-a-19-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:08:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	8.035	-0.044		1626585	56.5		113	31886	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.261	-0.050		1836245	54.8		110	94897	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.322	9.296	0.026	1.000	5287	0.6014				
D 11 18O2 PFHxS										
403.0 > 84.0	9.246	9.297	-0.051		712643	49.1		104	55471	
D 12 13C4 PFOA										
417.0 > 372.0	10.335	10.389	-0.054		1989661	55.4		111	72117	
D 16 13C4 PFOS										
503.0 > 80.0	11.298	11.350	-0.052		860096	51.9		108	63309	
D 17 13C5 PFNA										
468.0 > 423.0	11.321	11.368	-0.047		1634379	53.1		106	78302	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_026.d

Injection Date: 01-Mar-2016 01:41:05

Instrument ID: A6

Lims ID: 320-17406-A-19-A

Lab Sample ID: 320-17406-19

Client ID: DW-95FB

Operator ID: JRB

ALS Bottle#: 20

Worklist Smp#: 26

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

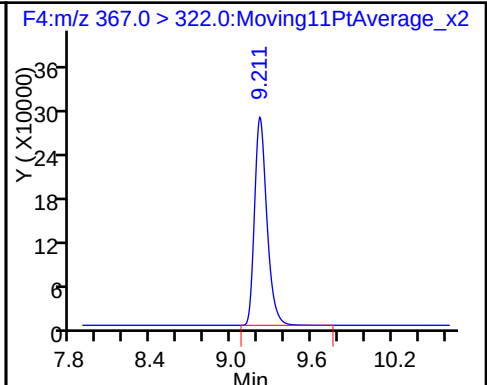
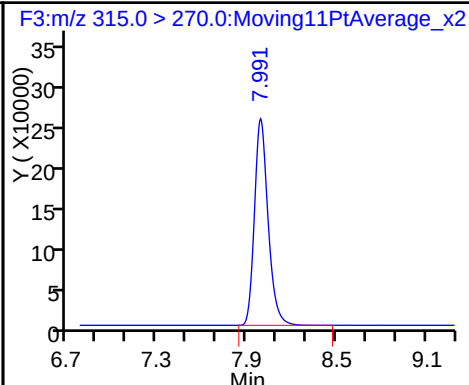
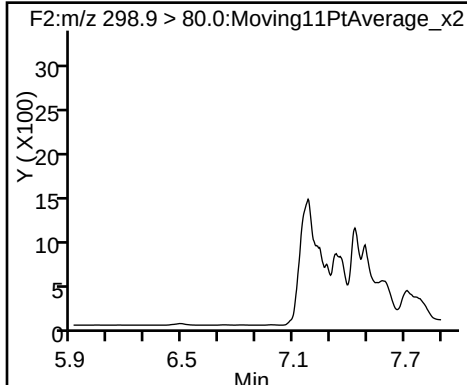
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND)

D 6 13C2 PFHxA

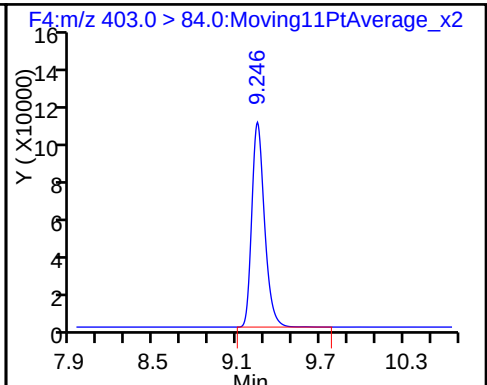
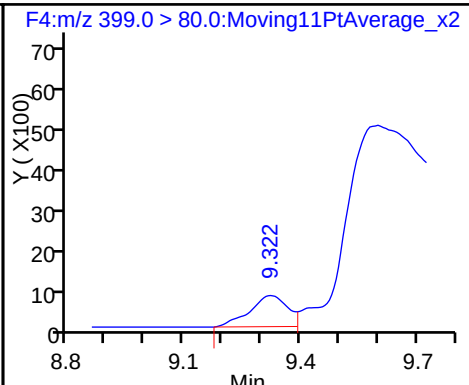
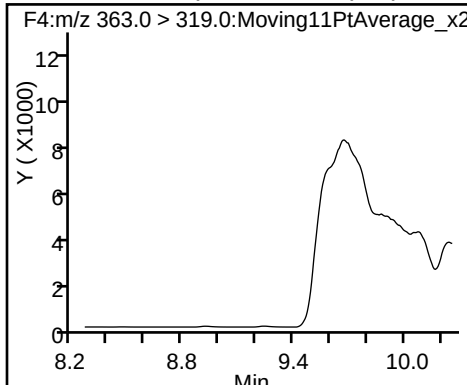
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

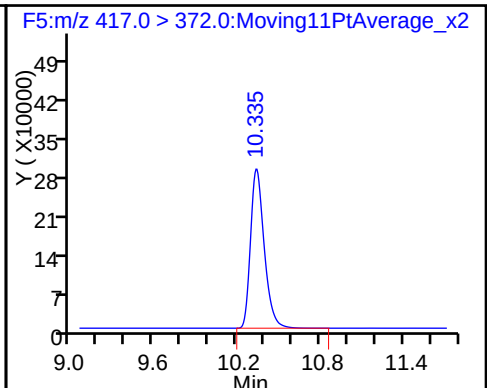
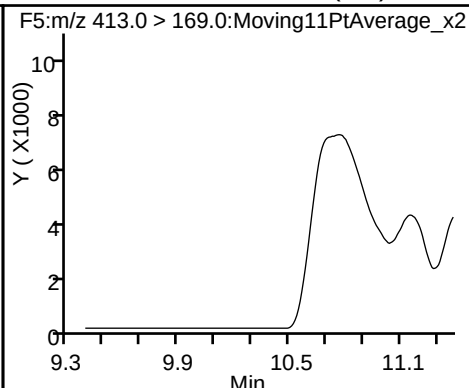
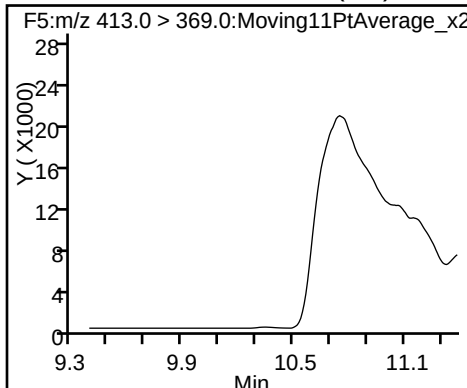
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

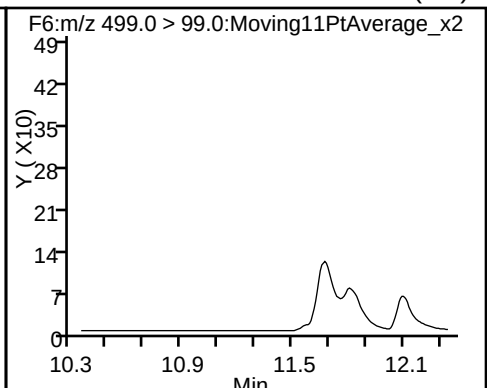
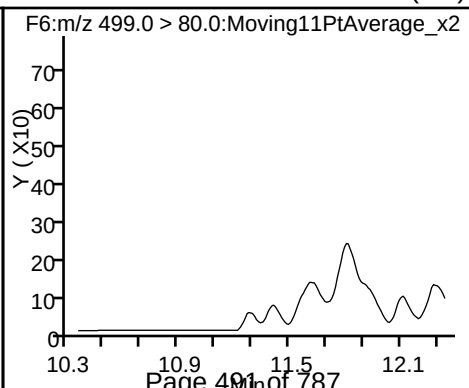
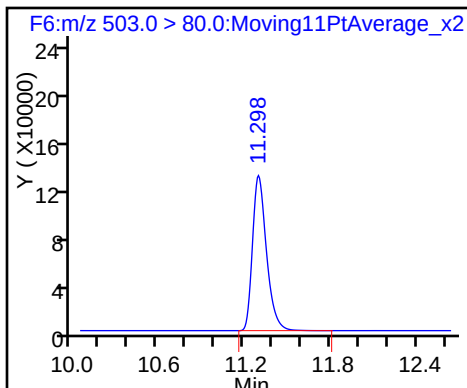
D 12 13C4 PFOA



D 16 13C4 PFOS

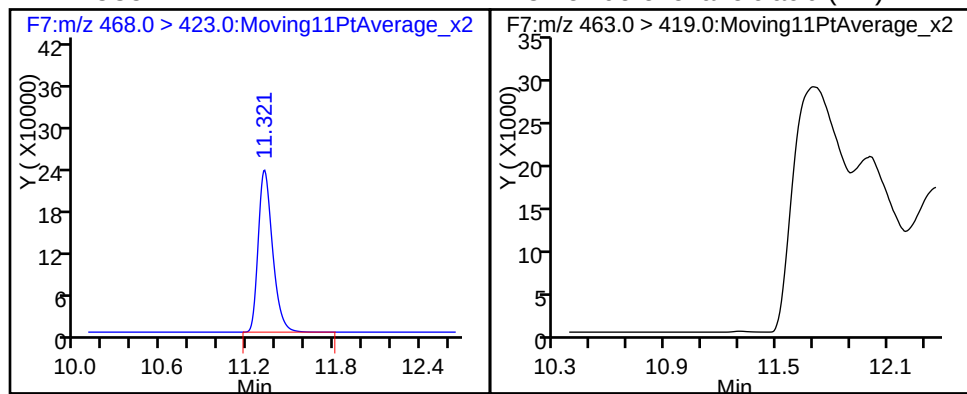
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-6</u>	Lab Sample ID: <u>320-17406-20</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_057.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 17:01</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>570.5 (mL)</u>	Date Analyzed: <u>02/27/2016 17:13</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	U	2.2	1.8	0.80
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	U	2.2	1.8	0.70
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	U	2.2	1.8	0.76
375-95-1	Perfluorononanoic acid (PFNA)	1.8	U	2.2	1.8	0.57
335-67-1	Perfluorooctanoic acid (PFOA)	1.8	U	2.2	1.8	0.66

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	69		25-150
STL00990	13C4 PFOA	65		25-150
STL00991	13C4 PFOS	96		25-150
STL01892	13C4-PFHpA	69		25-150
STL00995	13C5 PFNA	54		25-150
STL00994	18O2 PFHxS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_057.d
 Lims ID: 320-17406-B-20-A Lab Sample ID: 320-17406-20
 Client ID: DW-6
 Sample Type: Client
 Inject. Date: 27-Feb-2016 17:13:45 ALS Bottle#: 40 Worklist Smp#: 53
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-20-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:37:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	9.159	8.604	0.555		2781723	34.5		69.0	7180	
D 8 13C4-PFHpA										
366.6 > 321.6	10.386	9.856	0.530		2359467	34.7		69.5	5960	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.437	9.892	0.545	1.000	7315	0.2003				
D 11 18O2 PFHxS										
402.5 > 83.6	10.420	9.892	0.528		1702904	46.9		99.2	3357	
D 12 13C4 PFOA										
416.5 > 371.6	11.438	10.958	0.480		2560899	32.7		65.3	6860	
D 16 13C4 PFOS										
502.4 > 79.7	12.308	11.876	0.432		746080	45.8		95.7	1056	
D 17 13C5 PFNA										
467.5 > 422.6	12.322	11.898	0.424		1741376	26.9		53.8	3558	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_057.d

Injection Date: 27-Feb-2016 17:13:45

Instrument ID: A4

Lims ID: 320-17406-B-20-A

Lab Sample ID: 320-17406-20

Client ID: DW-6

Operator ID: JRB

ALS Bottle#: 40

Worklist Smp#: 53

Injection Vol: 15.0 ul

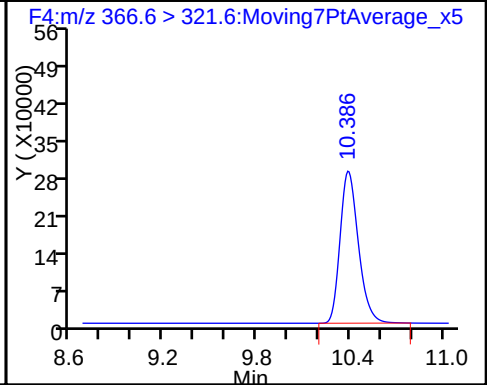
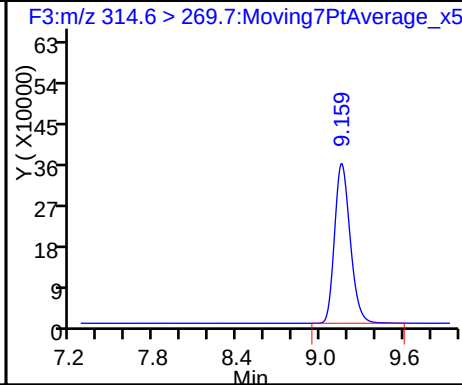
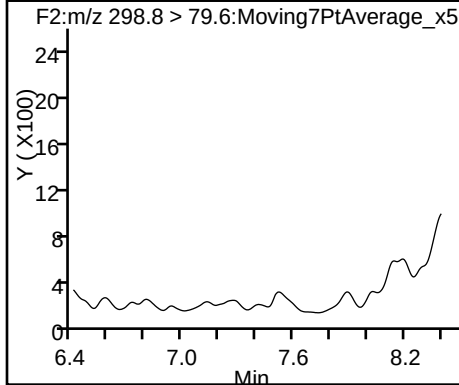
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

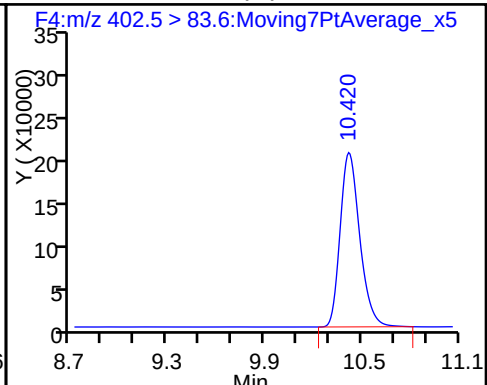
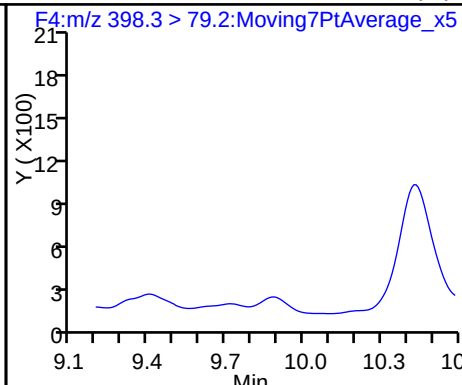
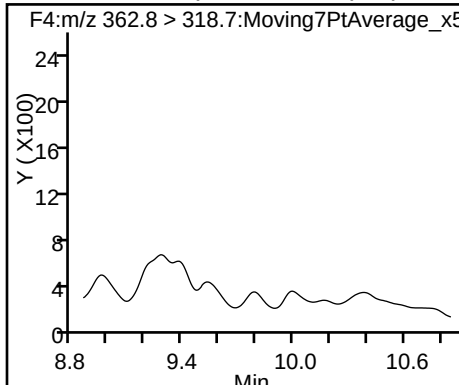
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (M)

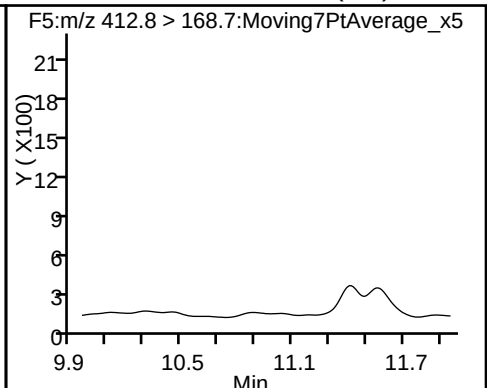
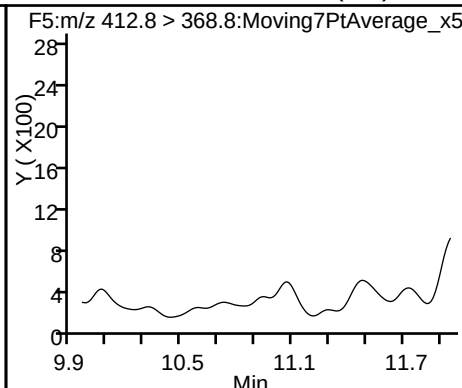
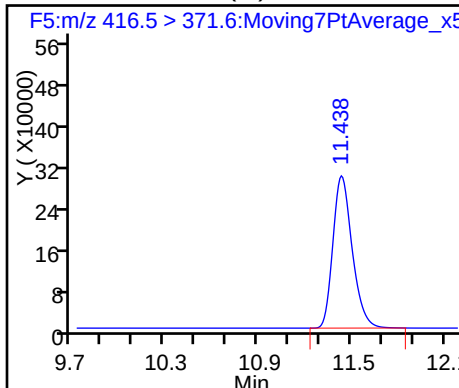
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

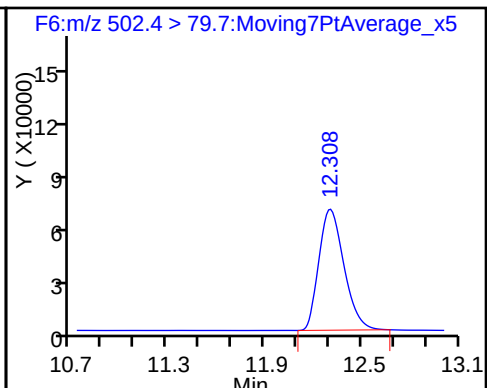
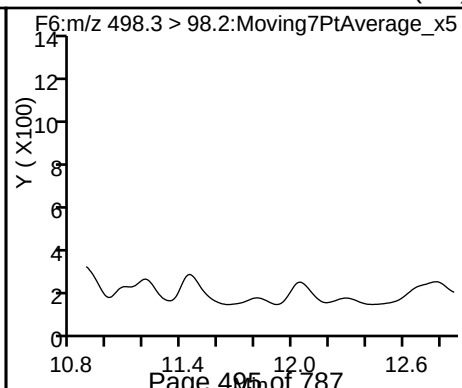
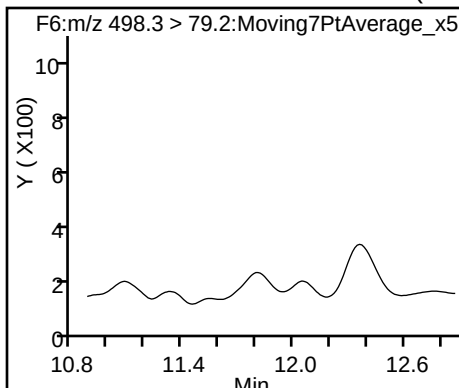
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

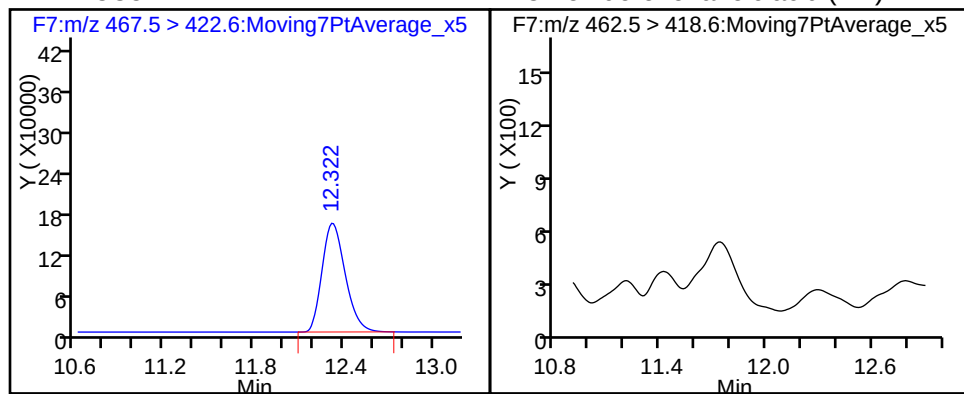
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-6 RA</u>	Lab Sample ID: <u>320-17406-20 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>29FEB2016A6B_027.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 17:01</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>570.5 (mL)</u>	Date Analyzed: <u>03/01/2016 02:02</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101944</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	1.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	83		25-150
STL00990	13C4 PFOA	73		25-150
STL00991	13C4 PFOS	105		25-150
STL01892	13C4-PFHpA	81		25-150
STL00995	13C5 PFNA	54		25-150
STL00994	18O2 PFHxS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_027.d
 Lims ID: 320-17406-B-20-A Lab Sample ID: 320-17406-20
 Client ID: DW-6
 Sample Type: Client
 Inject. Date: 01-Mar-2016 02:02:18 ALS Bottle#: 21 Worklist Smp#: 27
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-b-20-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: westendorfc

Date: 01-Mar-2016 09:08:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
315.0 > 270.0	7.986	8.035	-0.049		1200718	41.7		83.4	38575	
D 8 13C4-PFHpA										
367.0 > 322.0	9.211	9.261	-0.050		1361416	40.6		81.3	212467	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.328	9.296	0.032	1.000	2164	0.3189				
D 11 18O2 PFHxS										
403.0 > 84.0	9.240	9.297	-0.057		722424	49.7		105	38188	
D 12 13C4 PFOA										
417.0 > 372.0	10.335	10.389	-0.054		1317752	36.7		73.4	64910	
D 16 13C4 PFOS										
503.0 > 80.0	11.298	11.350	-0.052		830228	50.1		105	60322	
D 17 13C5 PFNA										
468.0 > 423.0	11.313	11.368	-0.055		824409	26.8		53.6	40131	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_027.d

Injection Date: 01-Mar-2016 02:02:18

Instrument ID: A6

Lims ID: 320-17406-B-20-A

Lab Sample ID: 320-17406-20

Client ID: DW-6

Operator ID: JRB

ALS Bottle#: 21

Worklist Smp#: 27

Injection Vol: 15.0 ul

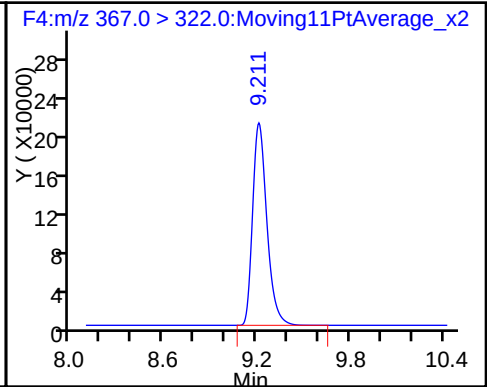
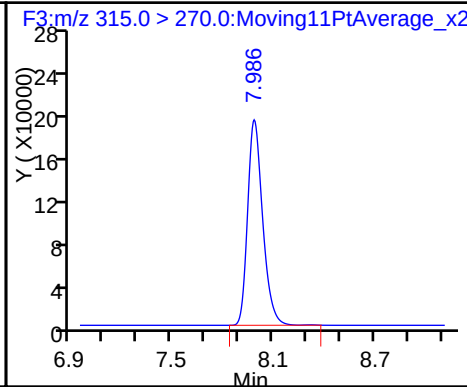
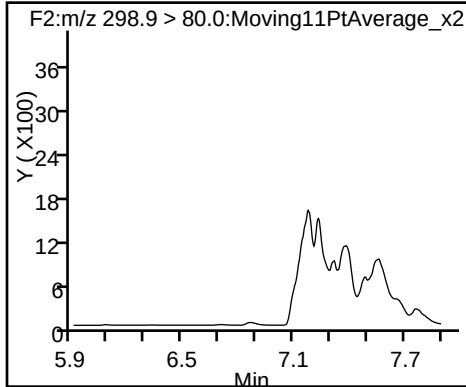
Dil. Factor: 1.0000

Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

40 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA

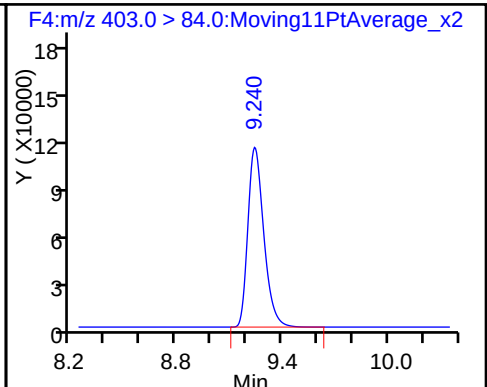
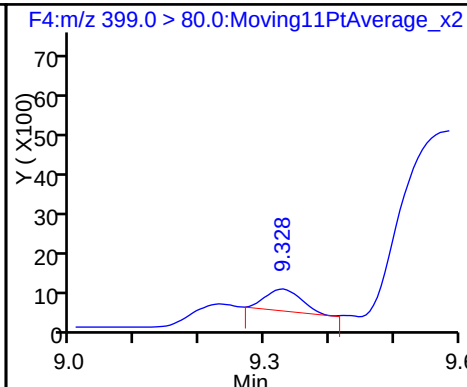
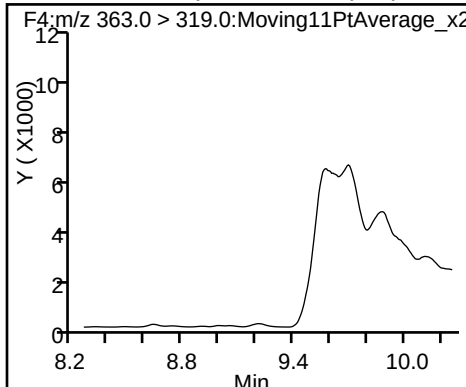
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

41 Perfluorohexanesulfonic acid

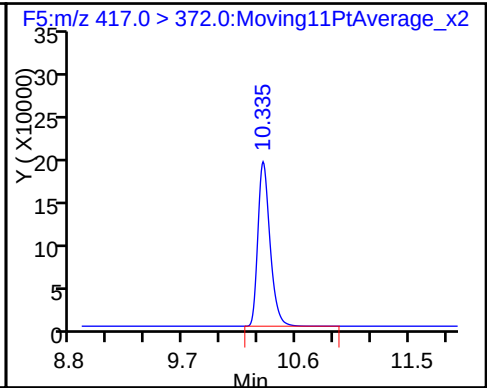
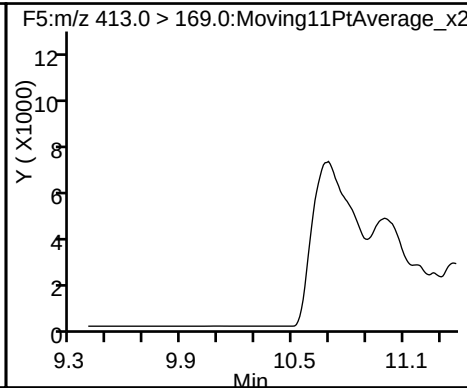
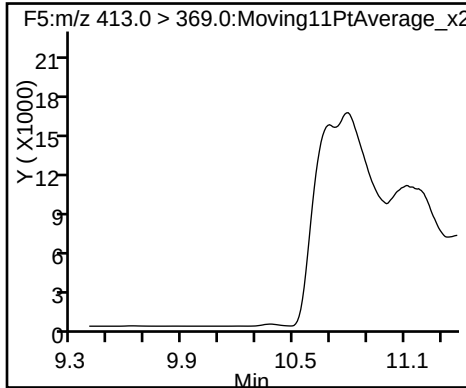
D 11 18O2 PFHxS



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

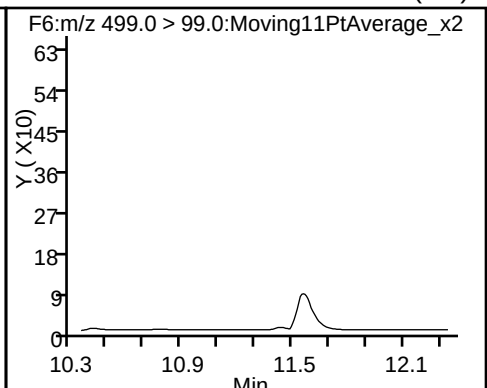
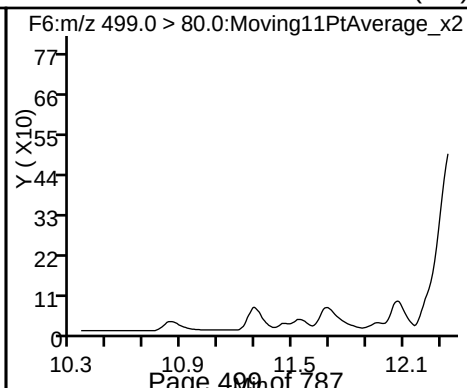
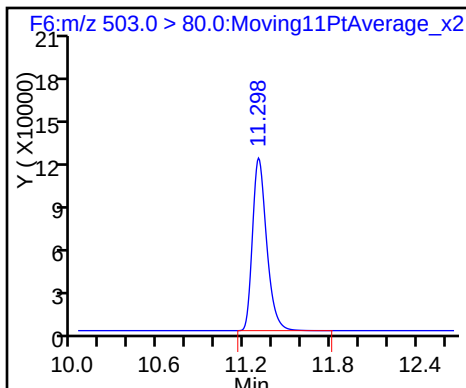
D 12 13C4 PFOA



D 16 13C4 PFOS

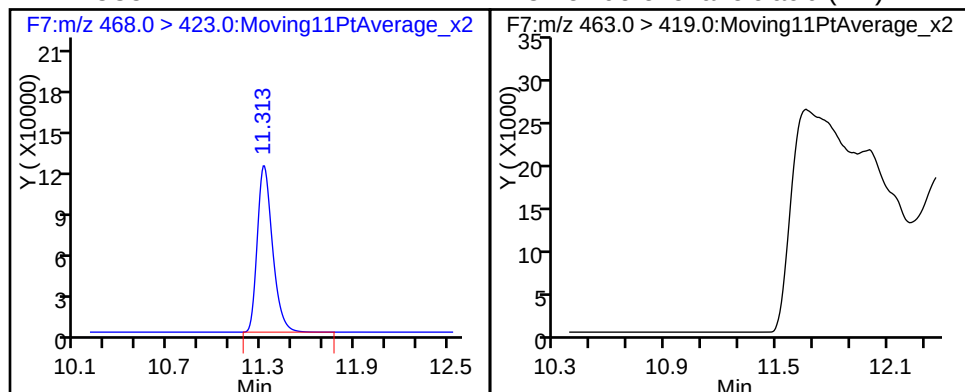
15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-6FB</u>	Lab Sample ID: <u>320-17406-21</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_059.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 16:51</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>439.9 (mL)</u>	Date Analyzed: <u>02/27/2016 17:56</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.3	U	2.8	2.3	1.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	U	2.8	2.3	0.91
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.3	U	2.8	2.3	0.99
375-95-1	Perfluorononanoic acid (PFNA)	2.3	U	2.8	2.3	0.74
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.4	U	4.5	3.4	1.5
335-67-1	Perfluorooctanoic acid (PFOA)	2.3	U	2.8	2.3	0.85

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		25-150
STL00990	13C4 PFOA	99		25-150
STL00991	13C4 PFOS	103		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	97		25-150
STL00994	18O2 PFHxS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_059.d
 Lims ID: 320-17406-B-21-A Lab Sample ID: 320-17406-21
 Client ID: DW-6FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 17:56:05 ALS Bottle#: 41 Worklist Smp#: 55
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-21-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:45 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:39:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	8.137	7.404	0.733	1.000	893	0.0420				
D 6 13C2 PFHxA										
314.6 > 269.7	9.151	8.604	0.547		3671162	45.6		91.1	6336	
D 8 13C4-PFHpA										
366.6 > 321.6	10.386	9.856	0.530		3216140	47.4		94.7	6279	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.412	9.892	0.520	1.000	6296	0.1752				
D 11 18O2 PFHxS										
402.5 > 83.6	10.420	9.892	0.528		1675660	46.2		97.7	5230	
D 12 13C4 PFOA										
416.5 > 371.6	11.438	10.958	0.480		3897653	49.7		99.4	7070	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.438	10.958	0.480	1.000	3355	0.0819			3.3	
D 16 13C4 PFOS										
502.4 > 79.7	12.308	11.876	0.432		804132	49.3		103	1770	
D 17 13C5 PFNA										
467.5 > 422.6	12.335	11.898	0.437		3131825	48.3		96.7	5007	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_059.d

Injection Date: 27-Feb-2016 17:56:05

Instrument ID: A4

Lims ID: 320-17406-B-21-A

Lab Sample ID: 320-17406-21

Client ID: DW-6FB

Operator ID: JRB

ALS Bottle#: 41

Worklist Smp#: 55

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

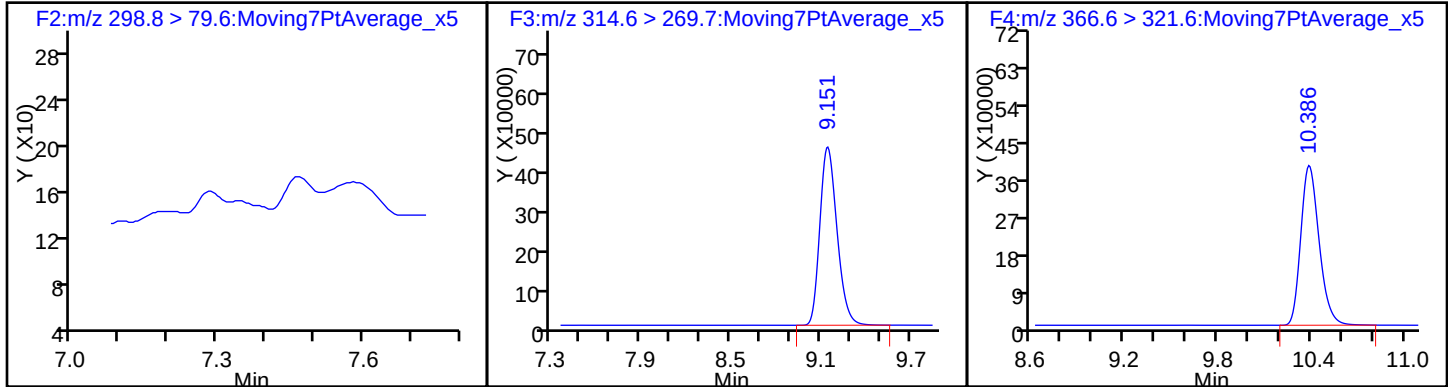
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

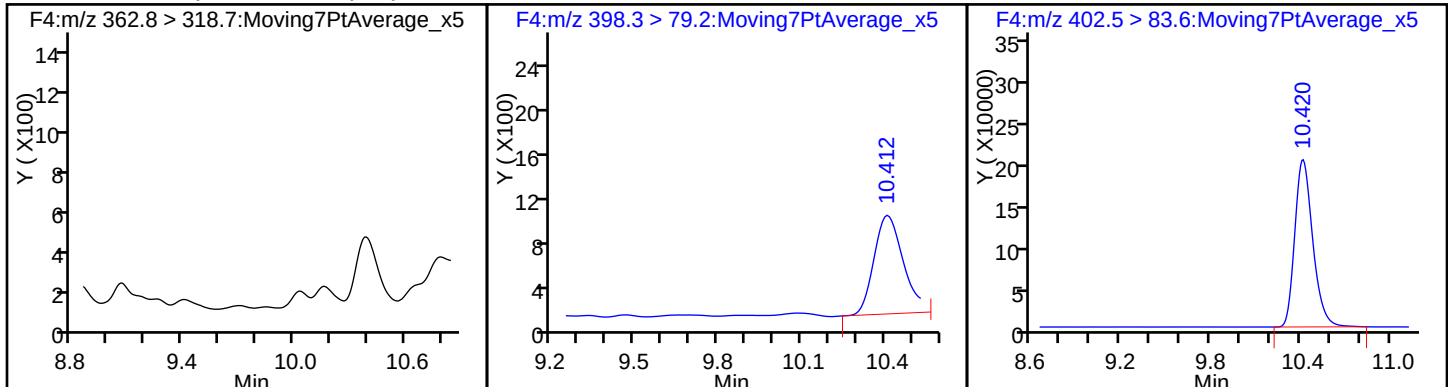
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid

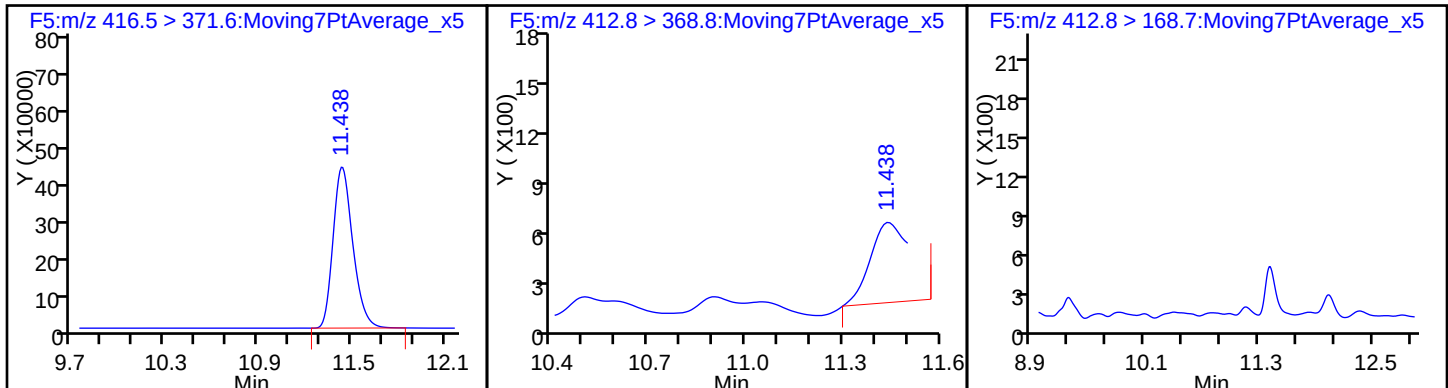
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid

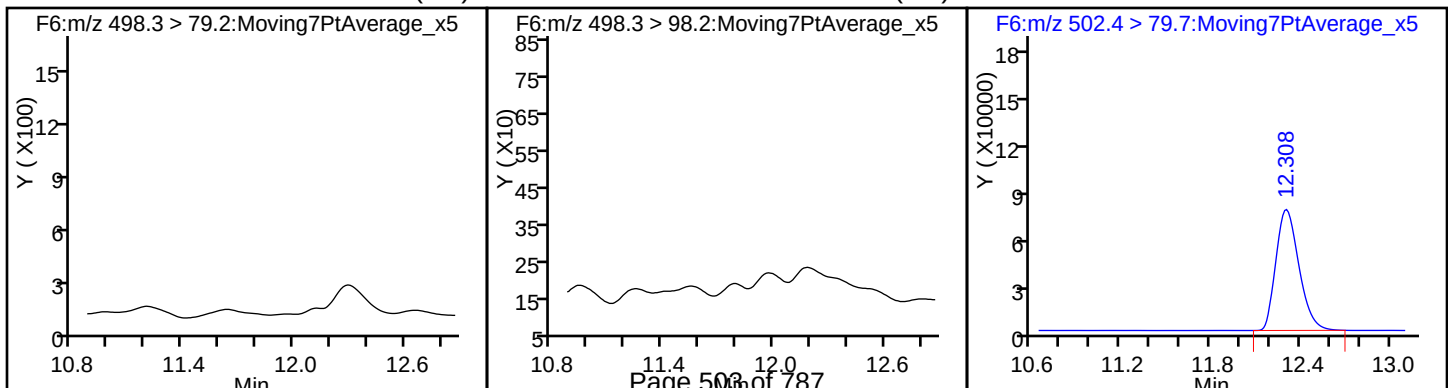
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (ND)

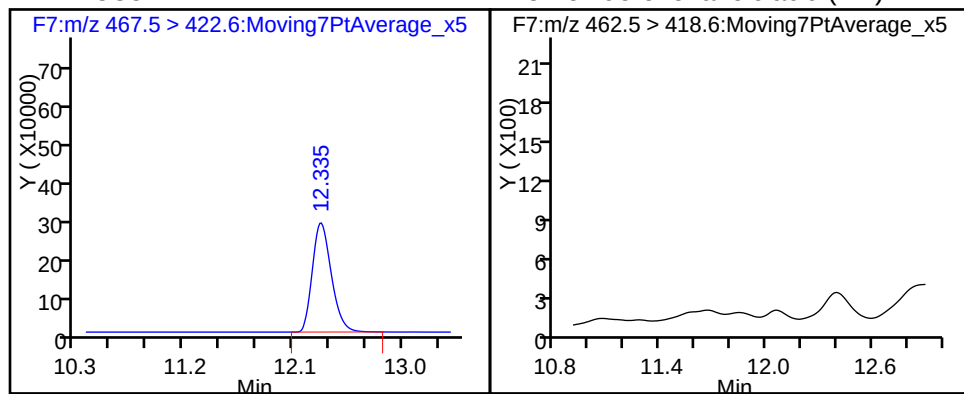
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-37</u>	Lab Sample ID: <u>320-17406-22</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_060.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 10:46</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>499.6 (mL)</u>	Date Analyzed: <u>02/27/2016 18:17</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	79		25-150
STL00990	13C4 PFOA	67		25-150
STL00991	13C4 PFOS	114		25-150
STL01892	13C4-PFHxA	78		25-150
STL00995	13C5 PFNA	44		25-150
STL00994	18O2 PFHxS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_060.d
 Lims ID: 320-17406-A-22-A Lab Sample ID: 320-17406-22
 Client ID: DW-37
 Sample Type: Client
 Inject. Date: 27-Feb-2016 18:17:16 ALS Bottle#: 42 Worklist Smp#: 56
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-22-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:45 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:39:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.856	7.404	0.452	1.000	4252	0.1710				
D 6 13C2 PFHxA										
314.6 > 269.7	9.112	8.604	0.508		3197579	39.7		79.4	6232	
D 8 13C4-PFHpA										
366.6 > 321.6	10.344	9.856	0.488		2651087	39.0		78.1	4971	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.310	9.859	0.451	1.000	3478	0.1649			2.0	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.361	9.892	0.469	1.000	6651	0.1581				
D 11 18O2 PFHxS										
402.5 > 83.6	10.369	9.892	0.477		1962500	54.1		114	3959	
D 12 13C4 PFOA										
416.5 > 371.6	11.392	10.958	0.434		2624419	33.5		67.0	7343	
D 16 13C4 PFOS										
502.4 > 79.7	12.258	11.876	0.382		887773	54.5		114	1925	
D 17 13C5 PFNA										
467.5 > 422.6	12.284	11.898	0.386		1415875	21.9		43.7	2408	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_060.d

Injection Date: 27-Feb-2016 18:17:16

Instrument ID: A4

Lims ID: 320-17406-A-22-A

Lab Sample ID: 320-17406-22

Client ID: DW-37

Operator ID: JRB

ALS Bottle#: 42

Worklist Smp#: 56

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

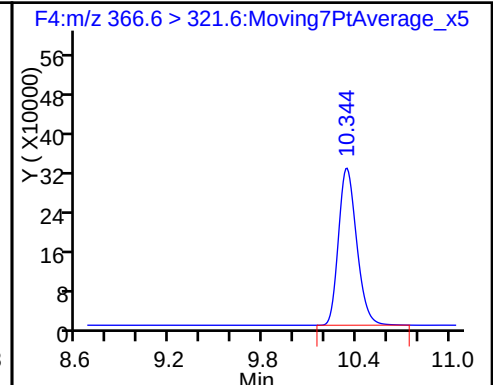
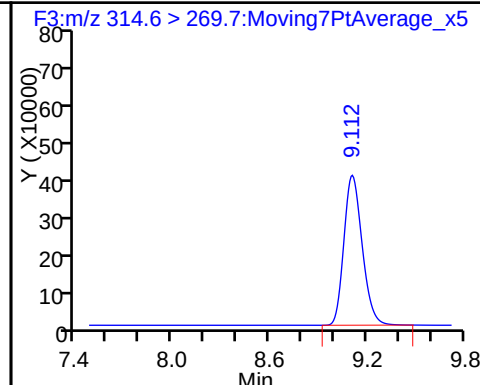
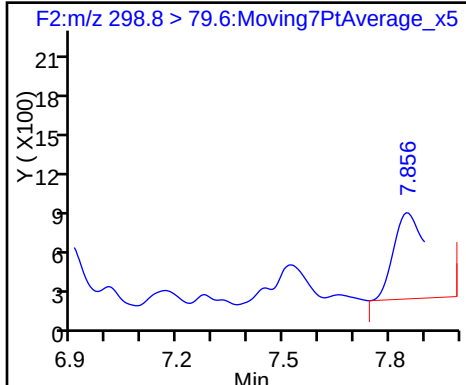
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid

D 6 13C2 PFHxA

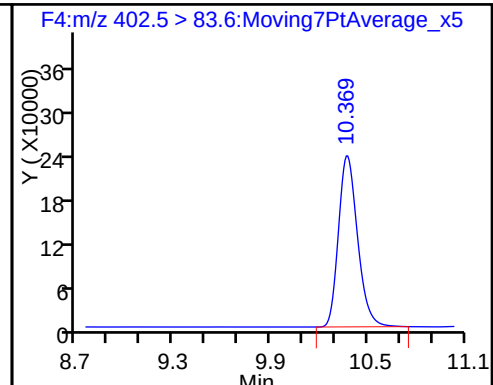
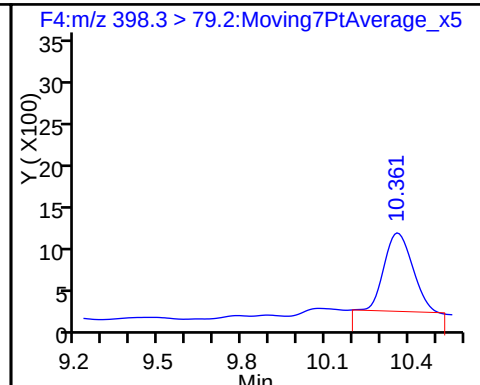
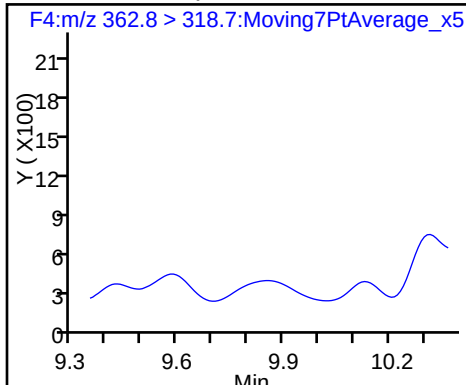
D 8 13C4-PFHpA



9 Perfluoroheptanoic acid

58 Perfluorohexanesulfonic acid

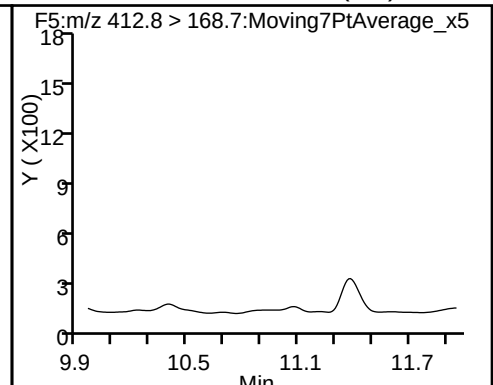
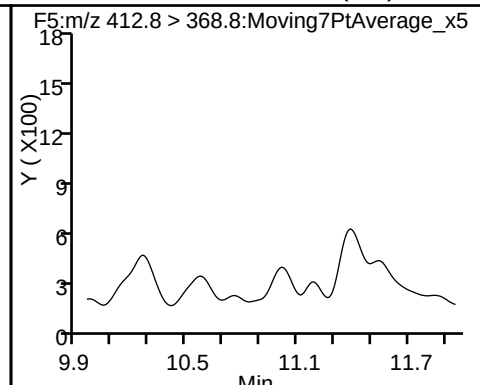
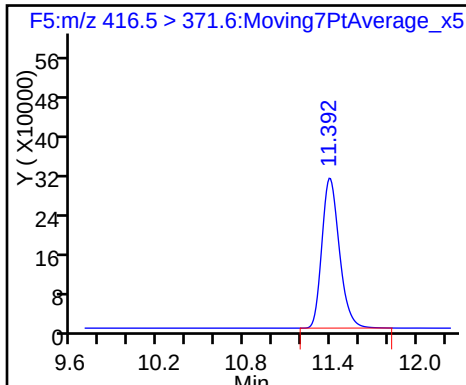
D 11 18O2 PFHxS



D 12 13C4 PFOA

13 Perfluorooctanoic acid (ND)

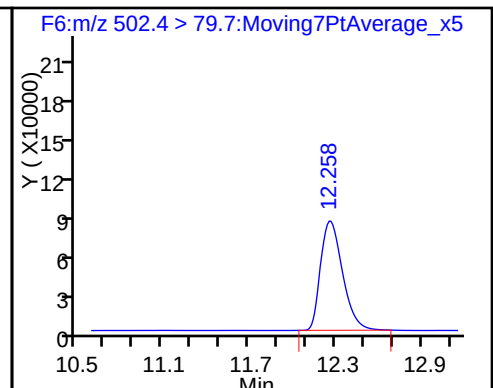
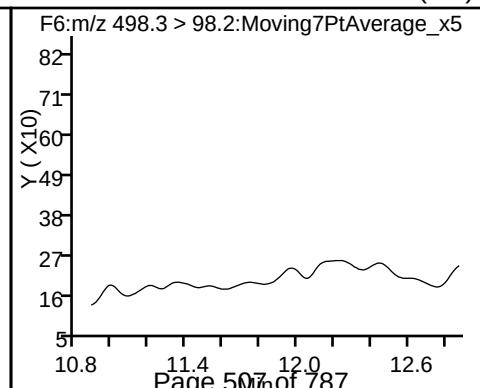
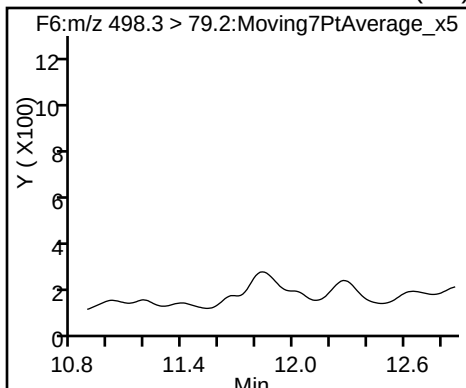
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

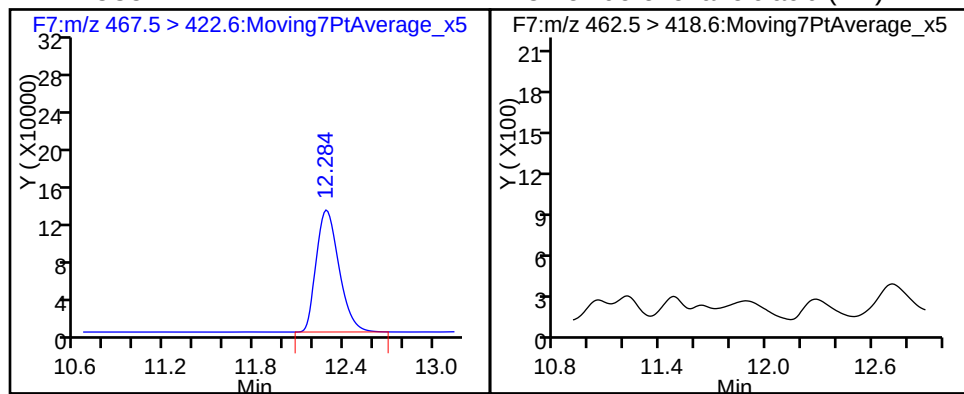
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS



D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DW-37FB</u>	Lab Sample ID: <u>320-17406-23</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_061.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 10:27</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>504(mL)</u>	Date Analyzed: <u>02/27/2016 18:38</u>
Con. Extract Vol.: <u>1.00 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.91
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		25-150
STL00990	13C4 PFOA	101		25-150
STL00991	13C4 PFOS	117		25-150
STL01892	13C4-PFHpA	82		25-150
STL00995	13C5 PFNA	98		25-150
STL00994	18O2 PFHxS	90		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_061.d
 Lims ID: 320-17406-A-23-A Lab Sample ID: 320-17406-23
 Client ID: DW-37FB
 Sample Type: Client
 Inject. Date: 27-Feb-2016 18:38:26 ALS Bottle#: 43 Worklist Smp#: 57
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-A-23-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:45 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj Date: 29-Feb-2016 10:40:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	8.815	8.604	0.211		3551239	44.1		88.1	8769	
D 8 13C4-PFHpA										
366.6 > 321.6	10.063	9.856	0.207		2780735	40.9		81.9	6135	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.097	9.892	0.205	1.000	5110	0.1538				
D 11 18O2 PFHxS										
402.5 > 83.6	10.088	9.892	0.196		1549517	42.7		90.3	3662	
D 12 13C4 PFOA										
416.5 > 371.6	11.134	10.958	0.176		3943404	50.3		101	8070	
D 16 13C4 PFOS										
502.4 > 79.7	12.026	11.876	0.150		910582	55.9		117	2289	
D 17 13C5 PFNA										
467.5 > 422.6	12.047	11.898	0.149		3171146	48.9		97.9	10302	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_061.d

Injection Date: 27-Feb-2016 18:38:26

Instrument ID: A4

Lims ID: 320-17406-A-23-A

Lab Sample ID: 320-17406-23

Client ID: DW-37FB

Operator ID: JRB

ALS Bottle#: 43

Worklist Smp#: 57

Injection Vol: 15.0 ul

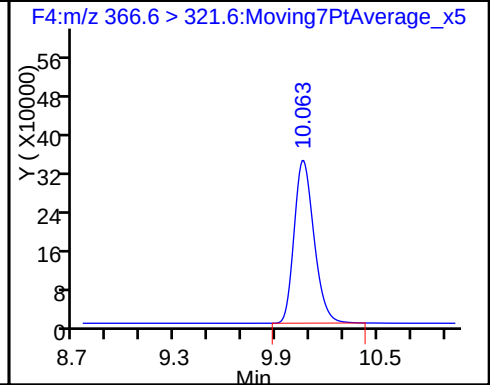
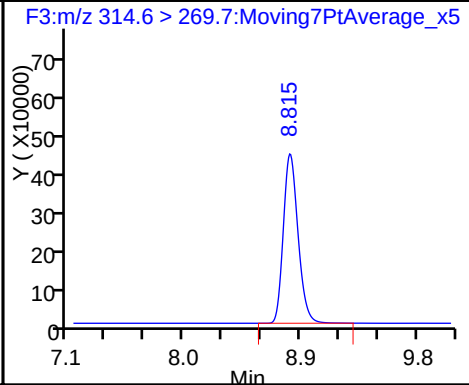
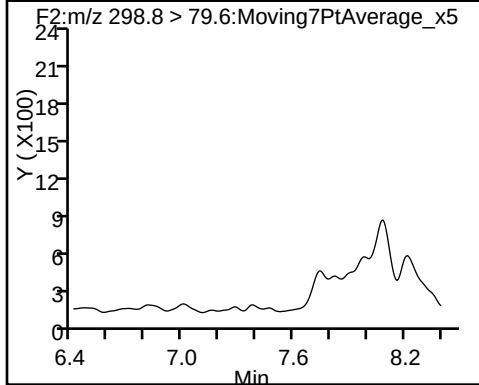
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

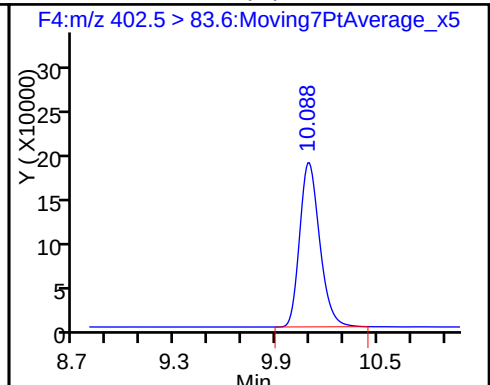
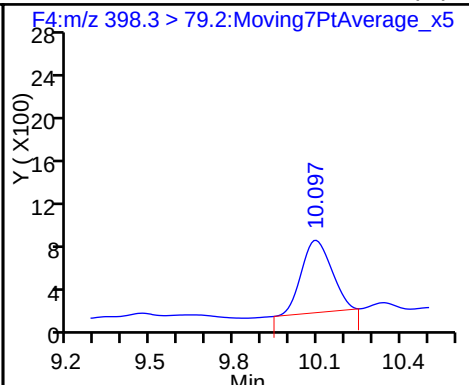
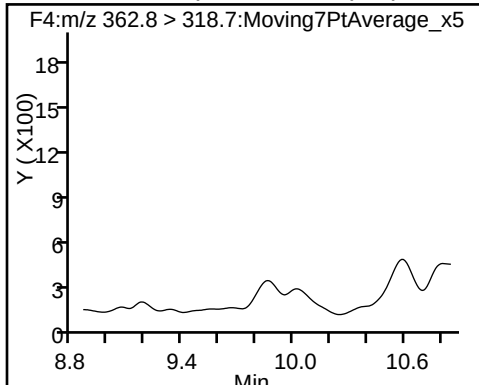
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (M)

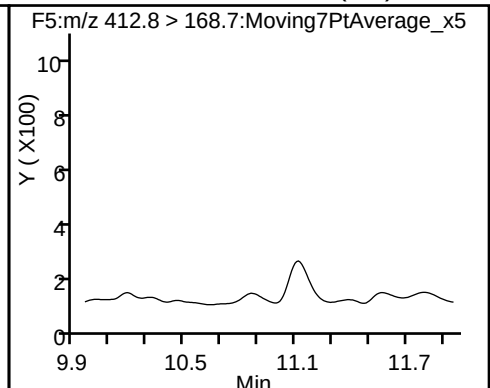
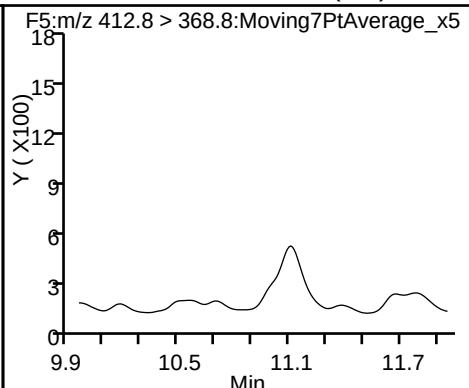
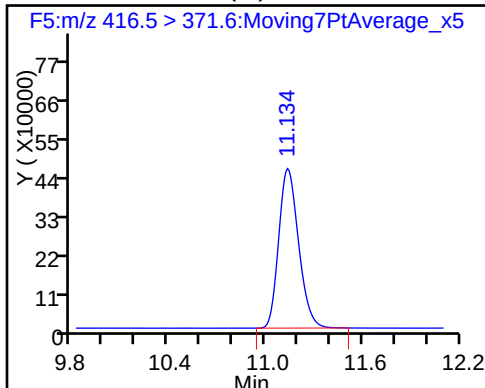
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid (ND)

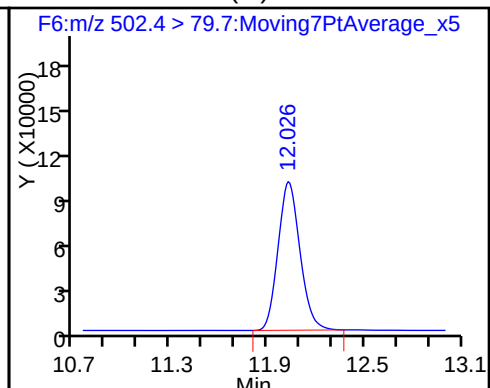
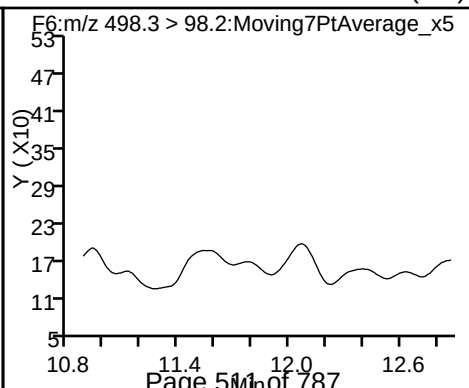
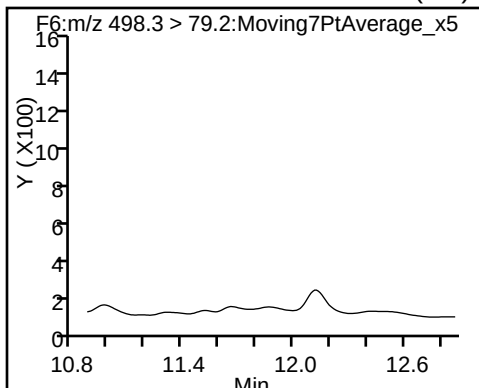
13 Perfluorooctanoic acid (ND)



15 Perfluorooctane sulfonic acid (ND)

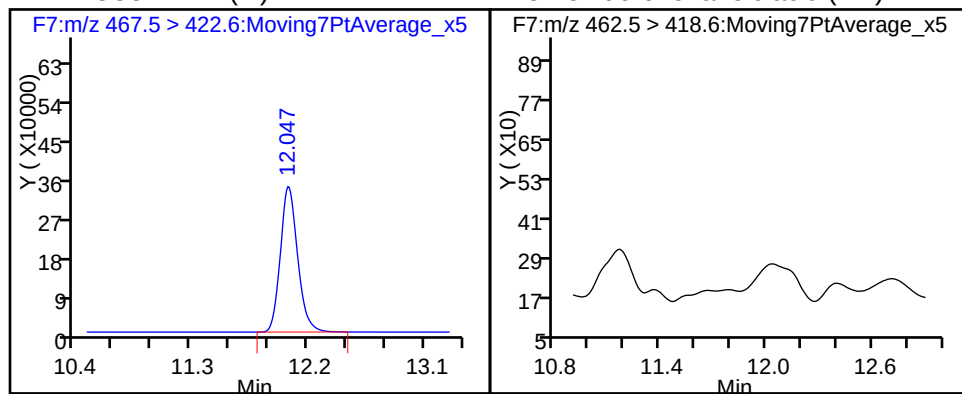
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-17406-1</u>
SDG No.: _____	
Client Sample ID: <u>DUP-022216</u>	Lab Sample ID: <u>320-17406-24</u>
Matrix: <u>Water</u>	Lab File ID: <u>26FEB2016A4A_062.d</u>
Analysis Method: <u>WS-LC-0025</u>	Date Collected: <u>02/22/2016 10:46</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>02/26/2016 08:58</u>
Sample wt/vol: <u>537.7(mL)</u>	Date Analyzed: <u>02/27/2016 18:59</u>
Con. Extract Vol.: <u>1.00(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>15(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>101820</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.3	1.9	0.85
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	1.9	0.75
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	1.9	0.81
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U	2.3	1.9	0.70

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	65		25-150
STL00990	13C4 PFOA	59		25-150
STL00991	13C4 PFOS	113		25-150
STL01892	13C4-PFHpA	62		25-150
STL00995	13C5 PFNA	57		25-150
STL00994	18O2 PFHxS	101		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_062.d
 Lims ID: 320-17406-B-24-A Lab Sample ID: 320-17406-24
 Client ID: DUP-022216
 Sample Type: Client
 Inject. Date: 27-Feb-2016 18:59:37 ALS Bottle#: 44 Worklist Smp#: 58
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: 320-17406-B-24-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:45 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 28-Feb-2016 13:47:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 6 13C2 PFHxA										
314.6 > 269.7	8.854	8.604	0.250		2617615	32.5		65.0	5202	
D 8 13C4-PFHpA										
366.6 > 321.6	10.105	9.856	0.249		2104116	31.0		62.0	4810	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.148	9.892	0.256	1.000	4288	0.1159				
D 11 18O2 PFHxS										
402.5 > 83.6	10.131	9.892	0.239		1724843	47.5		101	3432	
D 12 13C4 PFOA										
416.5 > 371.6	11.180	10.958	0.222		2326602	29.7		59.4	4473	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.746	10.958	0.788	1.000	2709	0.1108			1.5	
D 16 13C4 PFOS										
502.4 > 79.7	12.085	11.876	0.209		882063	54.1		113	2041	
D 17 13C5 PFNA										
467.5 > 422.6	12.106	11.898	0.208		1841310	28.4		56.8	5046	

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_062.d

Injection Date: 27-Feb-2016 18:59:37

Instrument ID: A4

Lims ID: 320-17406-B-24-A

Lab Sample ID: 320-17406-24

Client ID: DUP-022216

Operator ID: JRB

ALS Bottle#: 44

Worklist Smp#: 58

Injection Vol: 15.0 ul

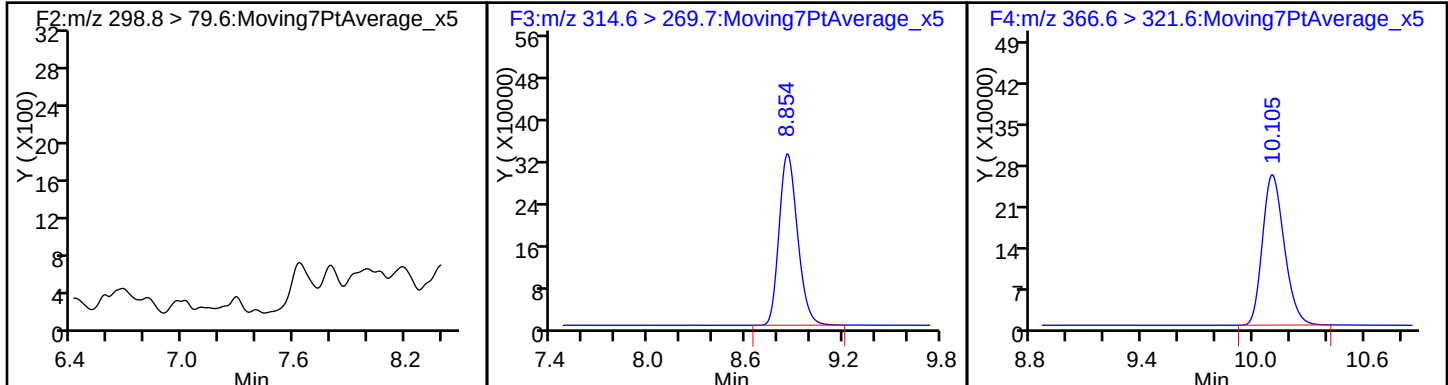
Dil. Factor: 1.0000

Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

51 Perfluorobutanesulfonic acid (ND) D 6 13C2 PFHxA (M)

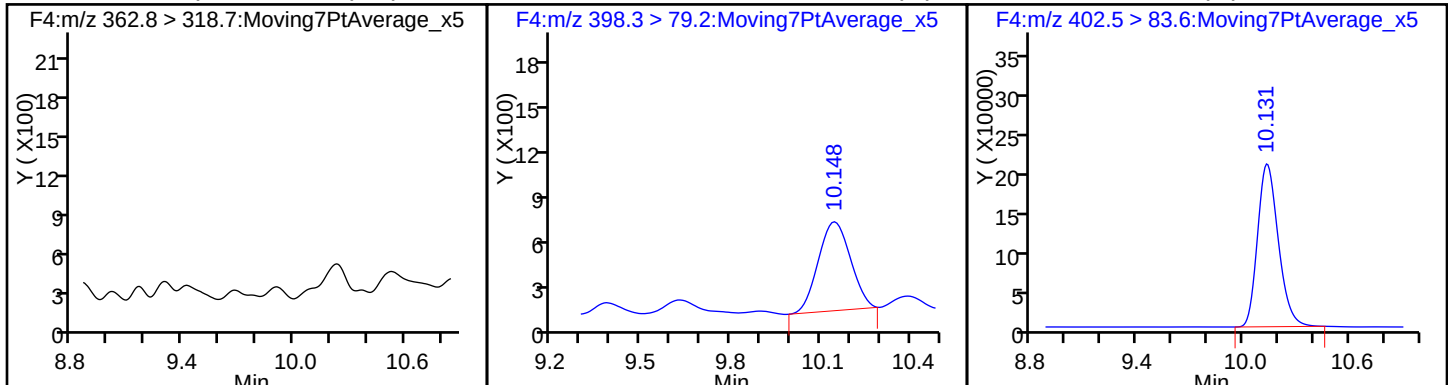
D 8 13C4-PFHpA (M)



9 Perfluoroheptanoic acid (ND)

58 Perfluorohexanesulfonic acid (M)

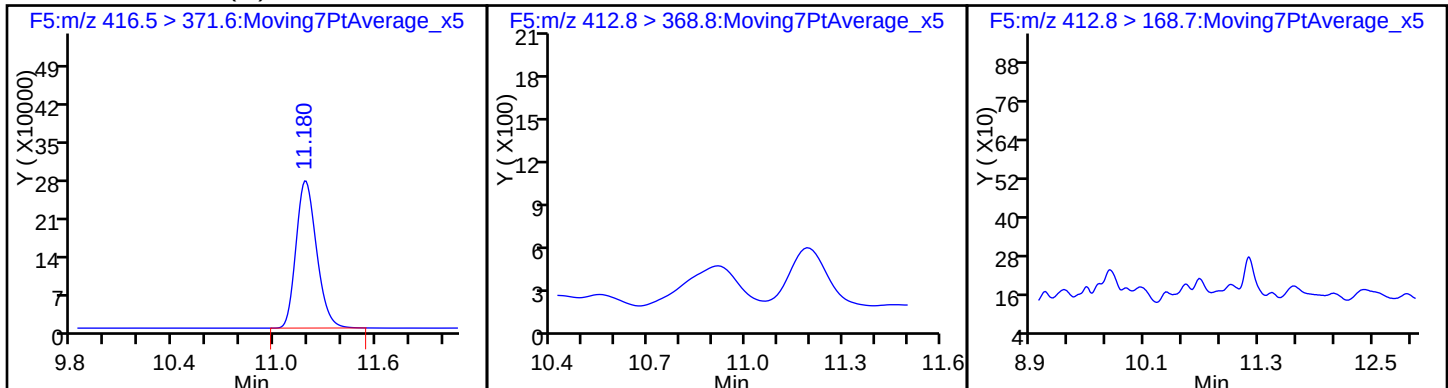
D 11 18O2 PFHxS (M)



D 12 13C4 PFOA (M)

13 Perfluorooctanoic acid

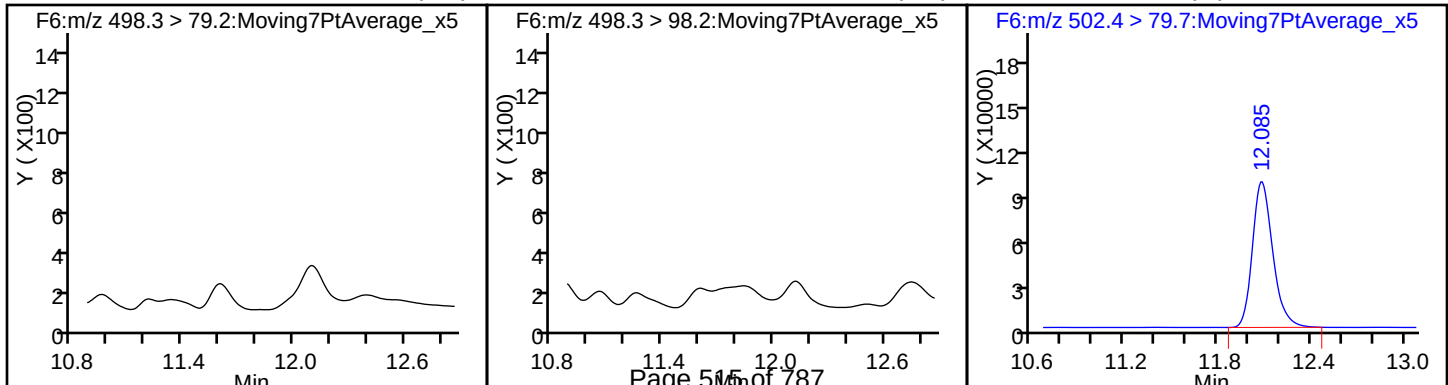
13 Perfluorooctanoic acid



15 Perfluorooctane sulfonic acid (ND)

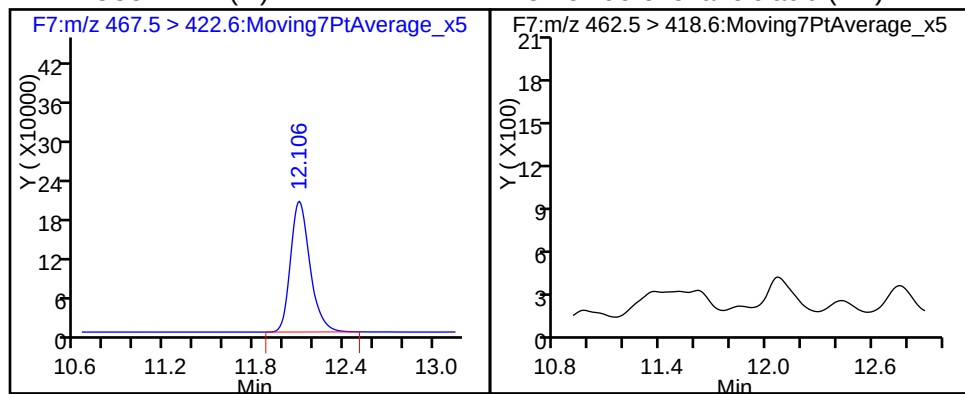
15 Perfluorooctane sulfonic acid (ND)

D 16 13C4 PFOS (M)



D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101820

SDG No.: _____

Instrument ID: A4 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/26/2016 17:27 Calibration End Date: 02/26/2016 19:34 Calibration ID: 19414

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101820/2	26FEB2016A4A_006.d
Level 2	STD 320-101820/3	26FEB2016A4A_007.d
Level 3	STD 320-101820/4	26FEB2016A4A_008.d
Level 4	STD 320-101820/5	26FEB2016A4A_009.d
Level 5	STD 320-101820/6	26FEB2016A4A_010.d
Level 6	STD 320-101820/7	26FEB2016A4A_011.d
Level 7	STD 320-101820/8	26FEB2016A4A_012.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	5.996	6.023	5.990	5.996	6.020	6.085	++++				5.793 - 6.293	6.018
Perfluoro-n-hexadecanoic acid (PFHxDA)	5.996	6.023	5.990	5.996	6.020	6.085	6.192				5.793 - 6.293	6.043
Perfluoro-n-octadecanoic acid (PFODA)	5.996	6.023	5.990	5.996	6.020	6.085	6.192				5.793 - 6.293	6.043
Perfluoropentanoic acid (PFPeA)	7.208	7.245	7.198	7.208	7.235	7.336	++++				7.025 - 7.525	7.238
Perfluorobutanesulfonic acid (PFBS)	7.346	7.369	7.318	7.332	7.360	7.465	++++				7.154 - 7.654	7.365
Perfluorohexanoic acid (PFHxA)	8.526	8.550	8.497	8.511	8.550	8.714	++++				8.354 - 8.854	8.558
Perfluoroheptanoic acid (PFHpA)	9.791	9.808	9.740	9.748	9.799	10.003	++++				9.609 - 10.109	9.815
Perfluorohexanesulfonic acid (PFHxS)	++++	9.833	9.765	9.782	9.833	10.037	++++				9.642 - 10.142	9.850
Perfluorooctanoic acid (PFOA)	10.895	10.895	10.831	10.849	10.913	11.116	++++				10.708 - 11.208	10.917
Perfluoroheptanesulfonic Acid (PFHpS)	10.904	10.895	10.831	10.849	10.913	11.116	++++				10.710 - 11.210	10.918
Perfluorooctanesulfonic acid (PFOS)	11.819	11.819	11.748	11.771	11.842	12.026	++++				11.624 - 12.124	11.838
Perfluorononanoic acid (PFNA)	++++	11.844	11.772	11.796	11.867	12.047	12.126				11.649 - 12.149	11.909
Perfluorodecanoic acid (PFDA)	12.641	12.641	12.577	12.603	12.666	12.831	++++				12.443 - 12.943	12.660
Perfluorooctane Sulfonamide (FOSA)	13.173	13.174	13.111	13.132	13.194	13.349	++++				12.972 - 13.472	13.189
Perfluorodecane Sulfonic acid	++++	13.278	13.227	13.237	13.299	13.443	++++				13.074 - 13.574	13.297
Perfluoroundecanoic acid (PFUnA)	13.330	13.330	13.268	13.288	13.350	13.485	++++				13.122 - 13.622	13.342
Perfluorododecanoic acid (PFDoA)	13.899	13.899	13.840	13.864	13.911	14.047	14.099				13.687 - 14.187	13.937
Perfluorotridecanoic Acid (PFTriA)	14.395	14.395	14.340	14.359	14.414	14.524	14.579				14.180 - 14.680	14.429
Perfluorotetradecanoic acid (PFTeA)	++++	14.810	14.764	14.782	14.828	14.929	14.975				14.591 - 15.091	14.848
13C4 PFBA	5.999	6.023	5.987	5.996	6.023	6.082	++++				5.793 - 6.293	6.018
13C2-PFHxDA	5.996	6.023	5.990	5.996	6.020	6.085	6.192				5.793 - 6.293	6.043
13C5-PFPeA	7.208	7.240	7.194	7.208	7.231	7.332	++++				7.022 - 7.522	7.236
13C2 PFHxA	8.526	8.558	8.497	8.511	8.550	8.706	++++				8.354 - 8.854	8.558
13C4-PFHpA	9.791	9.799	9.731	9.748	9.799	10.003	++++				9.606 - 10.106	9.812
18O2 PFHxS	9.825	9.825	9.765	9.782	9.833	10.046	++++				9.642 - 10.142	9.846
13C4 PFOA	10.895	10.895	10.831	10.849	10.913	11.116	++++				10.708 - 11.208	10.917
13C4 PFOS	11.819	11.819	11.748	11.771	11.842	12.026	++++				11.626 - 12.126	11.838
13C5 PFNA	11.843	11.844	11.772	11.796	11.855	12.047	12.126				11.648 - 12.148	11.898
13C2 PFDA	12.641	12.641	12.577	12.603	12.666	12.831	++++				12.443 - 12.943	12.660
13C8 FOSA	13.173	13.174	13.111	13.132	13.194	13.349	++++				12.972 - 13.472	13.189
13C2 PFUnA	13.319	13.319	13.268	13.288	13.350	13.485	++++				13.119 - 13.619	13.338
13C2 PFDoA	13.899	13.899	13.852	13.864	13.911	14.047	14.099				13.689 - 14.189	13.939
13C2-PFTeDA	14.810	14.819	14.764	14.782	14.828	14.929	14.975				14.594 - 15.094	14.844

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

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101820

SDG No.: _____

Instrument ID: A4 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/26/2016 17:27 Calibration End Date: 02/26/2016 19:34 Calibration ID: 19414

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101820/2	26FEB2016A4A_006.d
Level 2	STD 320-101820/3	26FEB2016A4A_007.d
Level 3	STD 320-101820/4	26FEB2016A4A_008.d
Level 4	STD 320-101820/5	26FEB2016A4A_009.d
Level 5	STD 320-101820/6	26FEB2016A4A_010.d
Level 6	STD 320-101820/7	26FEB2016A4A_011.d
Level 7	STD 320-101820/8	26FEB2016A4A_012.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	101409 87550	98603 75131	94921 ++++	94994	Ave		92101.5300				10.3		50.0			
13C2-PFHxDA	472.32 44649	801.90 160903	4765.8 260388	19752	Ave		70247.3686				44.2	*	50.0			
13C5-PFPeA	66933 57294	65230 48932	60667 ++++	62784	Ave		60306.7933				10.8		50.0			
13C2 PFHxA	88525 74991	87441 64224	83155 ++++	85222	Ave		80592.9033				11.6		50.0			
13C4-PFHpA	74692 63851	74281 52539	71360 ++++	70746	Ave		67911.4200				12.5		50.0			
18O2 PFHxS	40363 34411	38693 26467	36972 ++++	40743	Ave		36274.7322				14.7		50.0			
13C4 PFOA	91427 70488	90763 56216	80400 ++++	81044	Ave		78389.7400				17.0		50.0			
13C4 PFOS	17566 16522	16454 12336	16061 ++++	18868	Ave		16301.2622				13.5		50.0			
13C5 PFNA	73947 66566	72488 53847	69470 47334	69892	Ave		64792.1629				15.7		50.0			
13C2 PFDA	89903 76709	90491 58427	87696 ++++	81302	Ave		80754.4933				15.1		50.0			
13C8 FOSA	118951 110565	123711 88279	117686 ++++	119746	Ave		113156.133				11.4		50.0			
13C2 PFUnA	83548 70185	88039 58060	83593 ++++	79295	Ave		77120.1000				14.4		50.0			
13C2 PFDoA	95672 86151	91059 75573	90097 64382	93739	Ave		85239.0714				13.3		50.0			
13C2-PFTeDA	73405 70465	79119 62127	72519 52656	73021	Ave		69044.4371				12.8		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-17406-1Analy Batch No.: 101820

SDG No.: _____

Instrument ID: A4GC Column: Acquity ID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 02/26/2016 17:27Calibration End Date: 02/26/2016 19:34Calibration ID: 19414

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	47232 40226	40095 ++++	47658	49380	44649	AveID		0.4899				9.6		35.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	47232 40226	40095 32549	47658	49380	44649	AveID		0.5065				6.4		50.0			
Perfluoro-n-octadecanoic acid (PFODA)	47232 40226	40095 32549	47658	49380	44649	AveID		0.5065				6.4		50.0			
Perfluoropentanoic acid (PFPeA)	37482 23563	31294 ++++	29930	30439	27061	AveID		0.4953				6.5		35.0			
Perfluorobutanesulfonic acid (PFBS)	18330 19136	19635 ++++	22526	25634	23183	AveID		0.5995				16.9		50.0			
Perfluorohexanoic acid (PFHxA)	40920 29409	44019 ++++	38277	38617	33448	AveID		0.4638				4.4		35.0			
Perfluoroheptanoic acid (PFHpA)	38768 28049	34377 ++++	35642	42571	34005	L2ID	-0.023	0.5375							0.9920		0.9900
Perfluorohexanesulfonic acid (PFHxS)	++++ 26300	45106 ++++	38400	38334	32063	AveID		1.0141				9.4		35.0			
Perfluorooctanoic acid (PFOA)	53138 29410	43783 ++++	40123	43251	37542	AveID		0.5253				6.5		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	43887 26426	44979 ++++	43027	42681	36167	AveID		2.4174				10.6		50.0			
Perfluorooctanesulfonic acid (PFOS)	84559 44705	54662 ++++	63324	61830	56619	AveID		3.7344				15.6		35.0			
Perfluorononanoic acid (PFNA)	++++ 56604	55348 47993	71987	78943	66375	L2ID	-0.286	1.0595							0.9970		0.9900
Perfluorodecanoic acid (PFDA)	82752 53064	66890 ++++	76361	77406	68142	AveID		0.8798				8.4		35.0			
Perfluorooctane Sulfonamide (FOSA)	108830 81887	92552 ++++	113520	116900	106262	AveID		0.9154				9.3		35.0			
Perfluorodecane Sulfonic acid	++++ 17185	27028 ++++	29365	29016	25320	AveID		1.5869				10.2		50.0			
Perfluoroundecanoic acid (PFUnA)	114460 59870	86849 ++++	88736	84020	75752	AveID		1.0980				12.5		35.0			
Perfluorododecanoic acid (PFDoA)	85782 63629	58610 50646	73947	75725	70291	AveID		0.8019				9.7		35.0			
Perfluorotridecanoic Acid (PFTriA)	87546 53505	70711 44971	74348	76078	65277	AveID		0.7847				9.5		50.0			
Perfluorotetradecanoic acid (PFTeA)	++++ 26758	44638 21924	32314	32770	29733	AveID		0.3730				15.5		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101820

SDG No.: _____

Instrument ID: A4 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 02/26/2016 17:27 Calibration End Date: 02/26/2016 19:34 Calibration ID: 19414

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101820/2	26FEB2016A4A_006.d
Level 2	STD 320-101820/3	26FEB2016A4A_007.d
Level 3	STD 320-101820/4	26FEB2016A4A_008.d
Level 4	STD 320-101820/5	26FEB2016A4A_009.d
Level 5	STD 320-101820/6	26FEB2016A4A_010.d
Level 6	STD 320-101820/7	26FEB2016A4A_011.d
Level 7	STD 320-101820/8	26FEB2016A4A_012.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	5070461 3756568	4930149 ++++	4746061	4749707	4377513	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C2-PFHxDA	Ave	23616 8045132	40095 13019404	238292	987601	2232439	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	3346630 2446599	3261520 ++++	3033360	3139219	2864710	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C2 PFHxA	Ave	4426273 3211197	4372033 ++++	4157743	4261075	3749550	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C4-PFHpA	Ave	3734585 2626968	3714051 ++++	3567999	3537280	3192543	50.0 50.0	50.0 ++++	50.0	50.0	50.0
18O2 PFHxS	Ave	1909171 1251868	1830168 ++++	1748784	1927158	1627620	47.3 47.3	47.3 ++++	47.3	47.3	47.3
13C4 PFOA	Ave	4571363 2810804	4538141 ++++	4019997	4052200	3524417	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C4 PFOS	Ave	839661 589650	786520 ++++	767723	901914	789734	47.8 47.8	47.8 ++++	47.8	47.8	47.8
13C5 PFNA	Ave	3697336 2692366	3624410 2366713	3473506	3494609	3328317	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDA	Ave	4495148 2921349	4524534 ++++	4384792	4065096	3835429	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C8 FOSA	Ave	5947539 4413928	6185554 ++++	5884275	5987305	5528239	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C2 PFUnA	Ave	4177390 2903023	4401956 ++++	4179654	3964757	3509250	50.0 50.0	50.0 ++++	50.0	50.0	50.0
13C2 PFDoA	Ave	4783613 3778672	4552925 3219090	4504852	4686949	4307574	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	3670244 3106370	3955936 2632793	3625950	3651029	3523231	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101820

SDG No.: _____

Instrument ID: A4 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 02/26/2016 17:27 Calibration End Date: 02/26/2016 19:34 Calibration ID: 19414

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101820/2	26FEB2016A4A_006.d
Level 2	STD 320-101820/3	26FEB2016A4A_007.d
Level 3	STD 320-101820/4	26FEB2016A4A_008.d
Level 4	STD 320-101820/5	26FEB2016A4A_009.d
Level 5	STD 320-101820/6	26FEB2016A4A_010.d
Level 6	STD 320-101820/7	26FEB2016A4A_011.d
Level 7	STD 320-101820/8	26FEB2016A4A_012.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	23616 8045132	40095 ++++	238292	987601	2232439	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		AveID	23616 8045132	40095 13019404	238292	987601	2232439	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	23616 8045132	40095 13019404	238292	987601	2232439	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	18741 4712598	31294 ++++	149651	608776	1353041	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	8102 3383263	17357 ++++	99563	453215	1024709	0.442 177	0.884 ++++	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	20460 5881715	44019 ++++	191384	772331	1672408	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L2ID	19384 5609888	34377 ++++	178208	851417	1700245	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	++++ 4975885	42670 ++++	181632	725283	1516565	++++ 189	0.946 ++++	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	26569 5881968	43783 ++++	200616	865013	1877109	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	20890 5031569	42820 ++++	204808	812643	1721565	0.476 190	0.952 ++++	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	40419 8547545	52257 ++++	302690	1182197	2706389	0.478 191	0.956 ++++	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		L2ID	++++ 11320855	55348 19197306	359937	1578862	3318743	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		AveID	41376 10612845	66890 ++++	381807	1548111	3407085	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	54415 16377419	92552 ++++	567602	2337995	5313118	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluorodecane Sulfonic acid		AveID	++++ 3313244	26055 ++++	141540	559426	1220447	++++ 193	0.964 ++++	4.82	19.3	48.2

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101820

SDG No.: _____

Instrument ID: A4 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 02/26/2016 17:27 Calibration End Date: 02/26/2016 19:34 Calibration ID: 19414

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluoroundecanoic acid (PFUnA)		AveID	57230 11973923	86849 +++++	443678	1680391	3787583	0.500 200	1.00 +++++	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	42891 12725838	58610 20258578	369734	1514507	3514546	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	43773 10701081	70711 17988306	371742	1521555	3263831	0.500 200	1.00 400	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	+++++ 5351613	44638 8769485	161570	655399	1486647	+++++ 200	1.00 400	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
 L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_006.d
 Lims ID: Std L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 26-Feb-2016 17:27:46 ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L1
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:17:01 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:03:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	5.996	6.043	-0.047	1.000	23616	0.4753		95.1	64.2	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	5.996	6.043	-0.047	1.000	23616	0.4873		97.5	64.2	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	5.996	6.043	-0.047	1.000	23616	0.4873		97.5	64.2	
D 35 13C2-PFHxDA										
212.7 > 168.6	5.996	6.043	-0.047		23616	0.3362		0.7	64.2	
D 1 13C4 PFBA										
216.7 > 171.5	5.999	6.043	-0.044		5070461	55.1		110	12745	
D 3 13C5-PFPeA										
267.6 > 222.7	7.208	7.272	-0.064		3346630	55.5		111	5737	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.208	7.275	-0.067	1.000	18741	0.5653		113	10.4	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.346	7.404	-0.058	1.000	8102	NC			15.5	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.346	7.404	-0.058	1.000	8102	0.3348		75.8		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.526	8.604	-0.078	1.000	20460	0.4983		99.7	66.3	
D 6 13C2 PFHxA										
314.6 > 269.7	8.526	8.604	-0.078		4426273	54.9		110	8074	
D 8 13C4-PFHpA										
366.6 > 321.6	9.791	9.856	-0.065		3734585	55.0		110	4903	
9 Perfluoroheptanoic acid										
362.8 > 318.7	9.791	9.859	-0.068	1.000	19384	0.5257		105	50.7	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	9.825	9.892	-0.067	1.000	24959	0.6097		129		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	9.825	9.892	-0.067	1.000	24959	NC			47.1	
D 11 18O2 PFHxS										
402.5 > 83.6	9.825	9.892	-0.067		1909171	52.6		111	3562	
D 12 13C4 PFOA										
416.5 > 371.6	10.895	10.958	-0.063		4571363	58.3		117	6321	
13 Perfluorooctanoic acid										
412.8 > 368.8	10.895	10.958	-0.063	1.000	26569	0.5532		111	20.3	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	10.904	10.960	-0.056	1.000	20890	NC			93.8	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	10.904	10.960	-0.056	1.000	20890	0.4919		103		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	11.819	11.874	-0.055	1.000	40419	0.6162		129	86.3	
D 16 13C4 PFOS										
502.4 > 79.7	11.819	11.876	-0.057		839661	51.5		108	2673	
D 17 13C5 PFNA										
467.5 > 422.6	11.843	11.898	-0.055		3697336	57.1		114	5407	
18 Perfluorononanoic acid										
462.5 > 418.6	11.843	11.899	-0.056	1.000	44539	0.8387		168	70.8	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.641	12.693	-0.052	1.000	41376	0.5231		105	98.5	
D 19 13C2 PFDA										
514.4 > 469.5	12.641	12.693	-0.052		4495148	55.7		111	6214	
D 23 13C8 FOSA										
505.4 > 77.6	13.173	13.222	-0.049		5947539	52.6		105	4978	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.173	13.222	-0.049	1.000	54415	0.4997		99.9	203	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.278	13.324	-0.046	1.000	8976	NC			48.0	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.278	13.324	-0.046	1.000	8976	0.3220		66.8		
D 26 13C2 PFUnA										
564.3 > 519.5	13.319	13.369	-0.050		4177390	54.2		108	3793	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.330	13.372	-0.042	1.000	57230	0.6239		125	85.6	
29 Perfluorododecanoic acid										
612.4 > 568.6	13.899	13.937	-0.038	1.000	42891	0.5591		112	26.0	
D 28 13C2 PFDaA										
614.4 > 569.4	13.899	13.939	-0.040		4783613	56.1		112	3219	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.395	14.430	-0.035	1.000	43773	0.5831		117	33.6	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.800	14.841	-0.041	1.000	23303	0.6530		131	25.6	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.810	14.844	-0.034		3670244	53.2		106	2655	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L1_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_006.d

Injection Date: 26-Feb-2016 17:27:46

Instrument ID: A4

Lims ID: Std L1

Client ID:

Operator ID: JRB

ALS Bottle#: 2

Worklist Smp#: 2

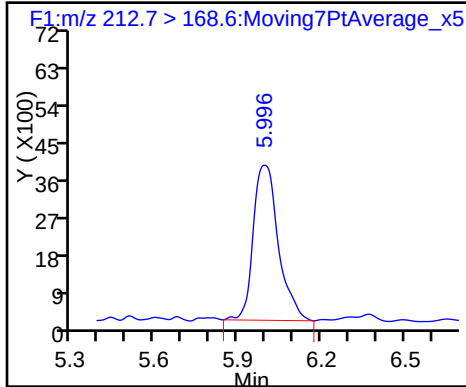
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

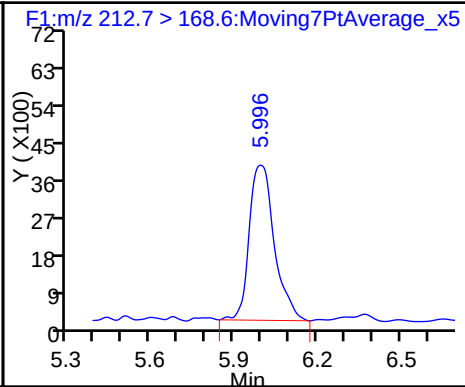
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

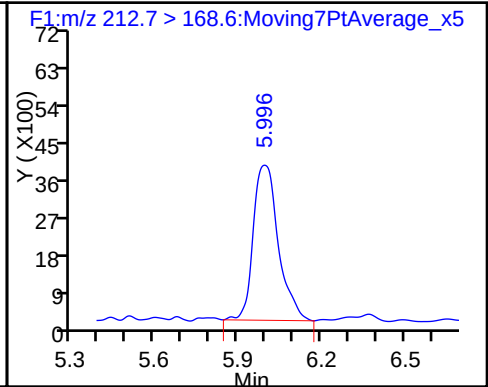
2 Perfluorobutyric acid



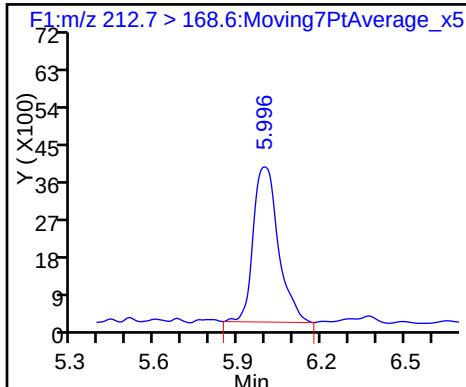
36 Perfluorooctadecanoic acid



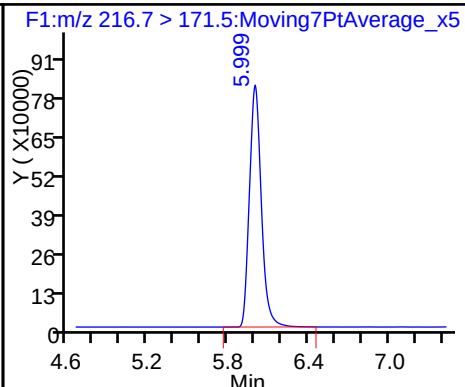
34 Perfluorohexadecanoic acid



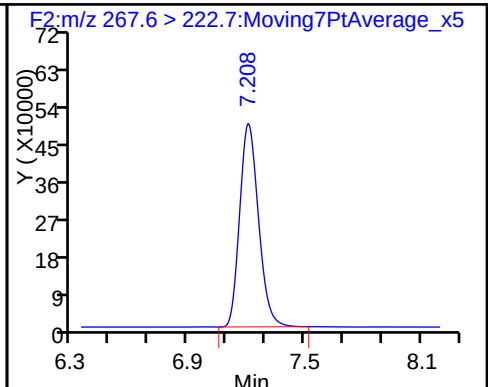
D 35 13C2-PFHxDA



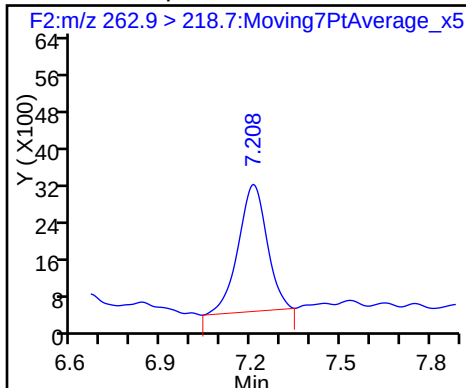
D 1 13C4 PFBA



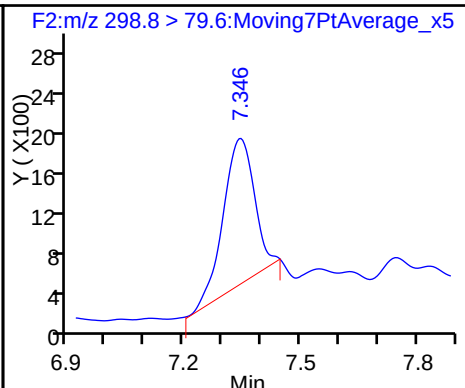
D 3 13C5-PFPeA



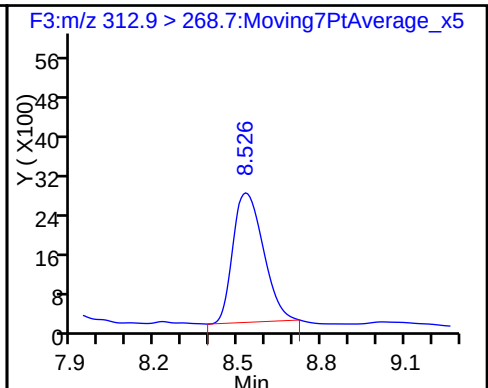
4 Perfluoropentanoic acid



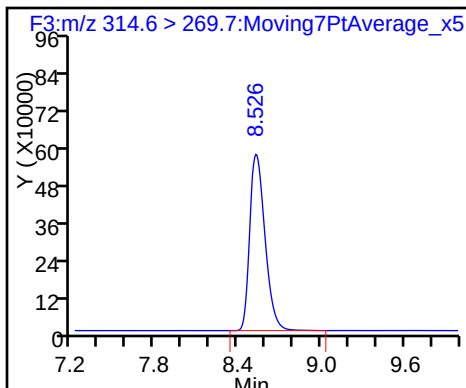
51 Perfluorobutanesulfonic acid



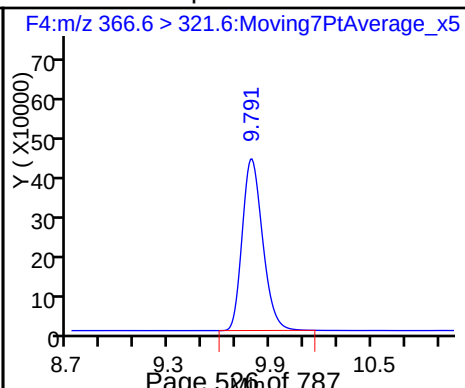
7 Perfluorohexanoic acid



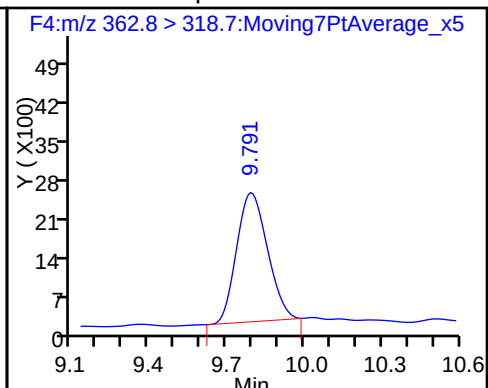
D 6 13C2 PFHxA



D 8 13C4-PFHpA



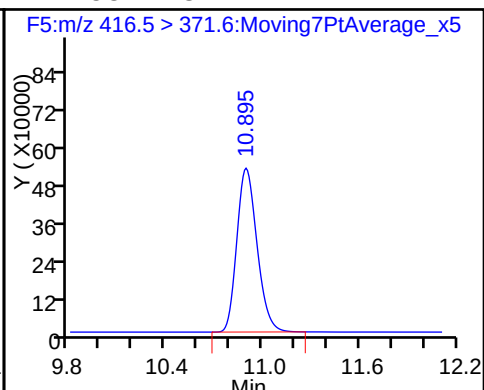
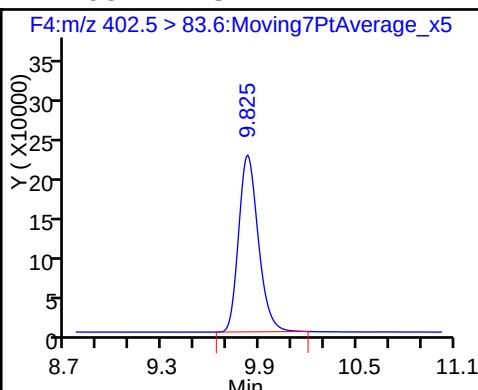
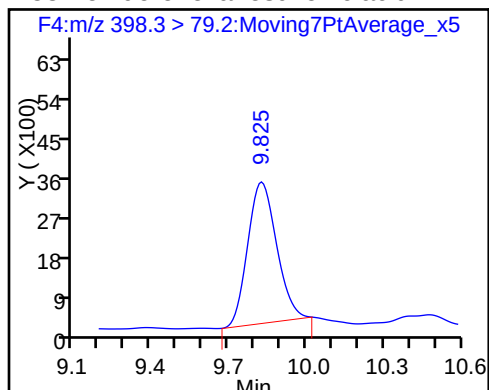
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

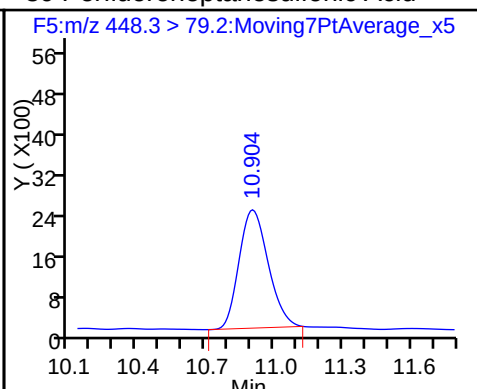
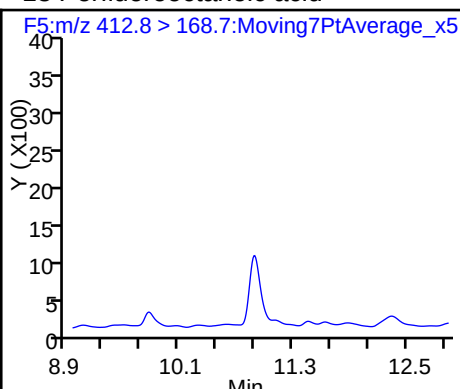
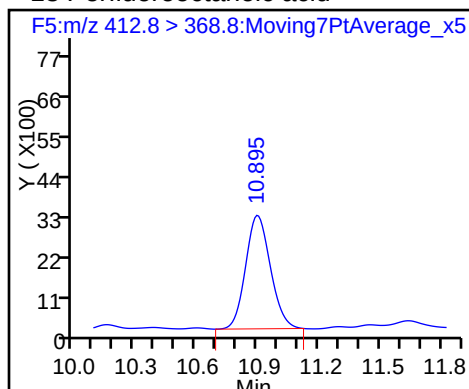
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

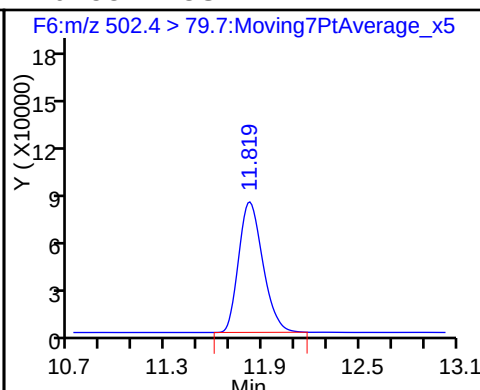
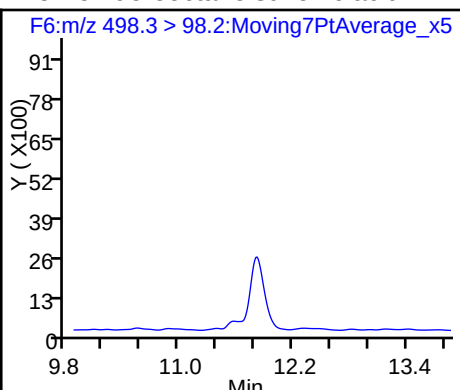
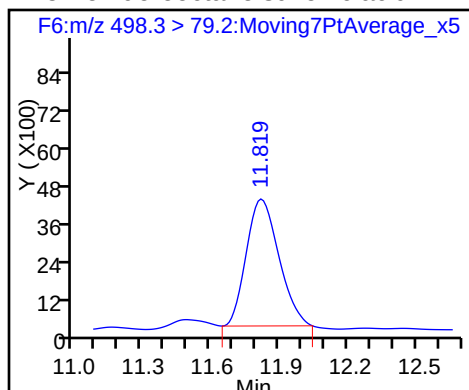
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

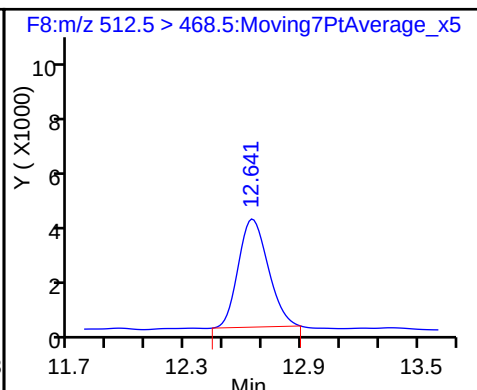
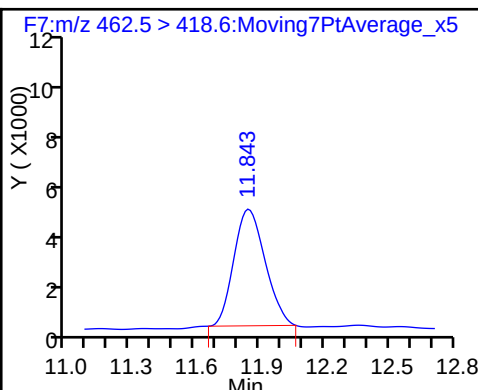
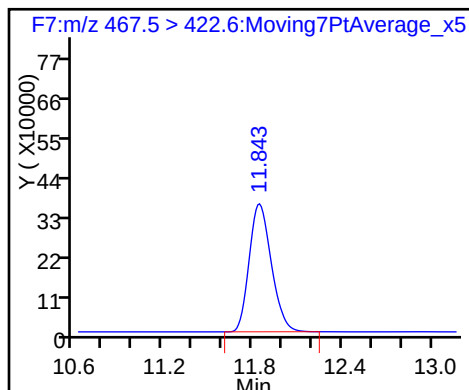
D 16 13C4 PFOS



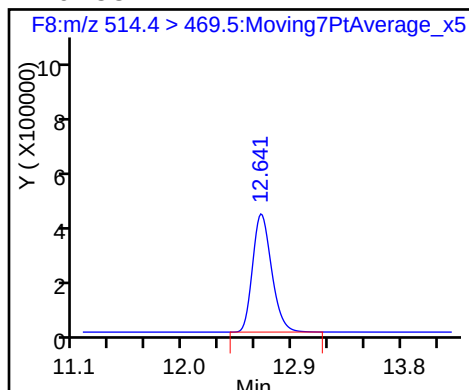
D 17 13C5 PFNA

18 Perfluorononanoic acid

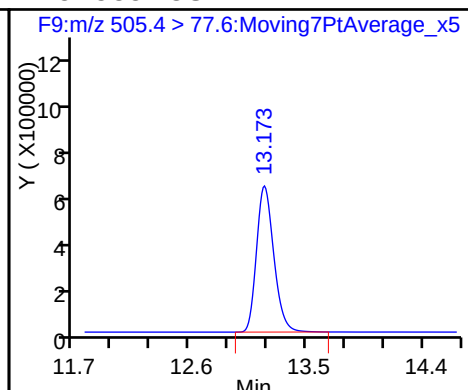
20 Perfluorodecanoic acid



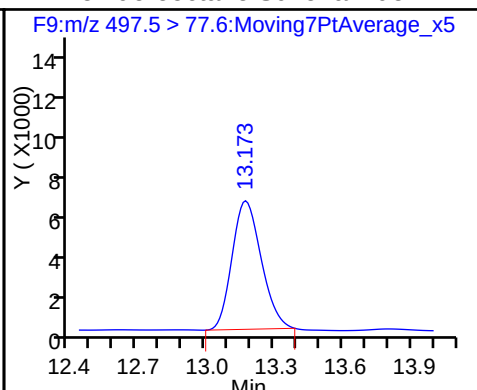
D 19 13C2 PFDA



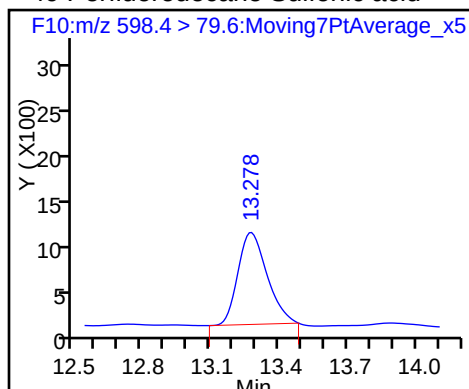
D 23 13C8 FOSA



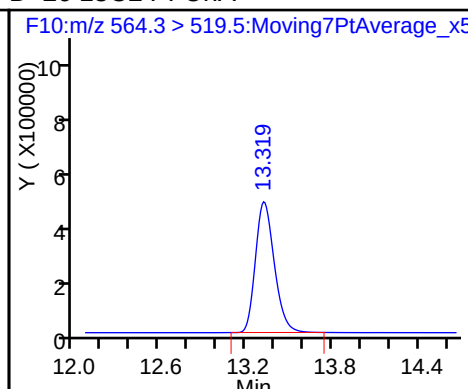
24 Perfluorooctane Sulfonamide



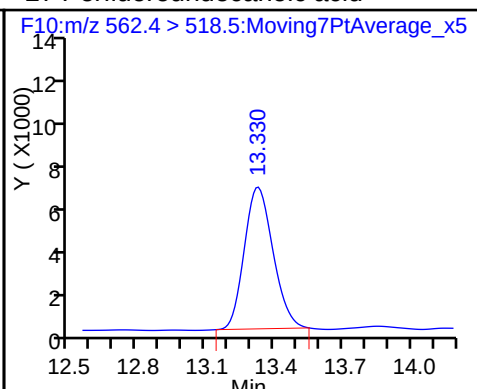
49 Perfluorodecane Sulfonic acid



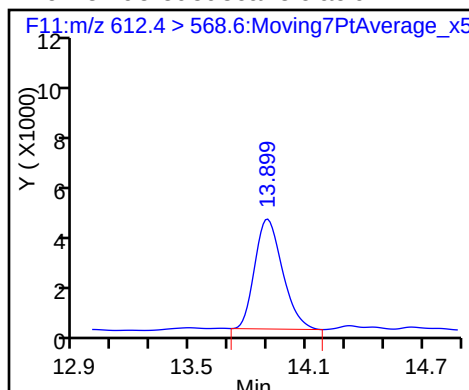
D 26 13C2 PFUnA



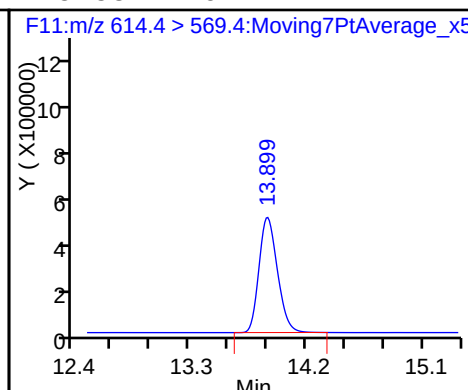
27 Perfluoroundecanoic acid



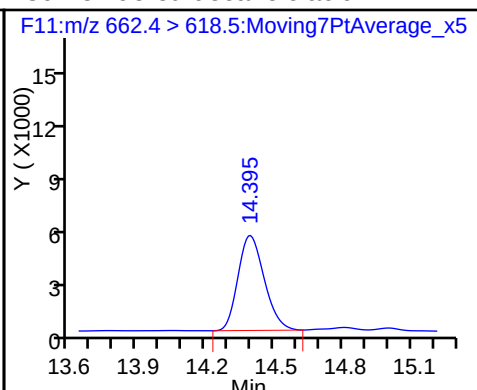
29 Perfluorododecanoic acid



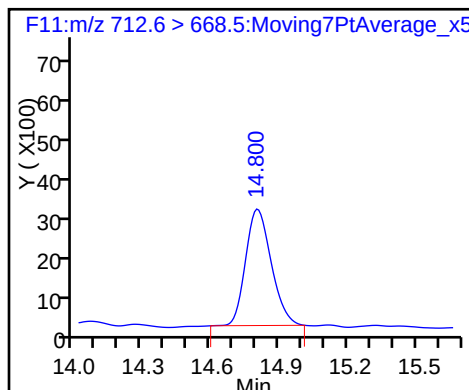
D 28 13C2 PFDoA



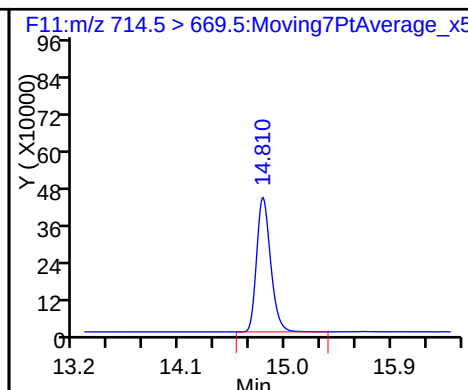
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_007.d
 Lims ID: Std L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 26-Feb-2016 17:48:56 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L2
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:17:10 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.023	6.043	-0.020	1.000	40095	0.8300		83.0	112	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.023	6.043	-0.020	1.000	40095	0.8693		86.9	112	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.023	6.043	-0.020	1.000	40095	0.8693		86.9	112	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.023	6.043	-0.020		40095	0.5708		1.1	112	
D 1 13C4 PFBA										
216.7 > 171.5	6.023	6.043	-0.020		4930149	53.5		107	14775	
D 3 13C5-PFPeA										
267.6 > 222.7	7.240	7.272	-0.032		3261520	54.1		108	7856	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.245	7.275	-0.030	1.000	31294	0.9686		96.9	15.3	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.369	7.404	-0.035	1.000	17357	NC			30.3	
298.8 > 98.6	7.369	7.404	-0.035	1.000	15061		1.15(0.00-0.00)		34.1	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.369	7.404	-0.035	1.000	17357	0.7483		84.7		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.550	8.604	-0.054	1.000	44019	1.09		109	176	
D 6 13C2 PFHxA										
314.6 > 269.7	8.558	8.604	-0.046		4372033	54.2		108	8690	
D 8 13C4-PFHpA										
366.6 > 321.6	9.799	9.856	-0.057		3714051	54.7		109	6533	
9 Perfluoroheptanoic acid										
362.8 > 318.7	9.808	9.859	-0.051	1.000	34377	0.9039		90.4	73.9	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	9.833	9.892	-0.059	1.000	42670	1.09		115		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	9.833	9.892	-0.059	1.000	42670	NC			83.9	
D 11 18O2 PFHxS										
402.5 > 83.6	9.825	9.892	-0.067		1830168	50.5		107	4022	
D 12 13C4 PFOA										
416.5 > 371.6	10.895	10.958	-0.063		4538141	57.9		116	6277	
13 Perfluorooctanoic acid										
412.8 > 368.8	10.895	10.958	-0.063	1.000	43783	0.9182		91.8	29.7	
412.8 > 168.7	10.904	10.958	-0.054	1.001	14847		2.95(0.00-0.00)	91.8	56.8	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	10.895	10.960	-0.065	1.000	42820	NC			211	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	10.895	10.960	-0.065	1.000	42820	1.08		113		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	11.819	11.874	-0.055	1.000	52257	0.8504		89.0	158	
498.3 > 98.2	11.819	11.874	-0.055	1.000	29878		1.75(0.00-0.00)	89.0	76.9	
D 16 13C4 PFOS										
502.4 > 79.7	11.819	11.876	-0.057		786520	48.2		101	1567	
D 17 13C5 PFNA										
467.5 > 422.6	11.844	11.898	-0.054		3624410	55.9		112	4469	
18 Perfluorononanoic acid										
462.5 > 418.6	11.844	11.899	-0.055	1.000	55348	0.99		99.1	81.8	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.641	12.693	-0.052	1.000	66890	0.8401		84.0	126	
D 19 13C2 PFDA										
514.4 > 469.5	12.641	12.693	-0.052		4524534	56.0		112	5090	
D 23 13C8 FOSA										
505.4 > 77.6	13.174	13.222	-0.048		6185554	54.7		109	3864	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.174	13.222	-0.048	1.000	92552	0.8172		81.7	245	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.278	13.324	-0.046	1.000	26055	NC			91.9	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.278	13.324	-0.046	1.000	26055	1.00		104		
D 26 13C2 PFUnA										
564.3 > 519.5	13.319	13.369	-0.050		4401956	57.1		114	4364	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.330	13.372	-0.042	1.000	86849	0.8984		89.8	115	
29 Perfluorododecanoic acid										
612.4 > 568.6	13.899	13.937	-0.038	1.000	58610	0.8026		80.3	44.1	
D 28 13C2 PFDaA										
614.4 > 569.4	13.899	13.939	-0.040		4552925	53.4		107	2649	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.395	14.430	-0.035	1.000	70711	0.9897		99.0	68.6	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.810	14.841	-0.031	1.000	44638	1.31		131	46.8	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.819	14.844	-0.025		3955936	57.3		115	3035	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L2_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_007.d

Injection Date: 26-Feb-2016 17:48:56

Instrument ID: A4

Lims ID: Std L2

Client ID:

Operator ID: JRB

ALS Bottle#: 3

Worklist Smp#: 3

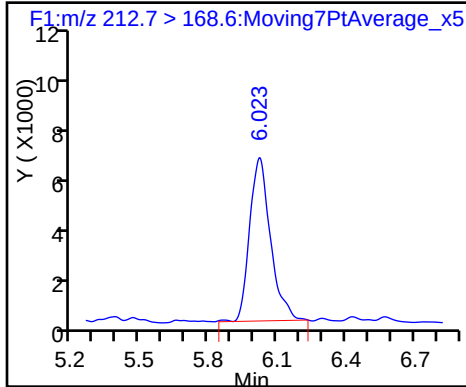
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

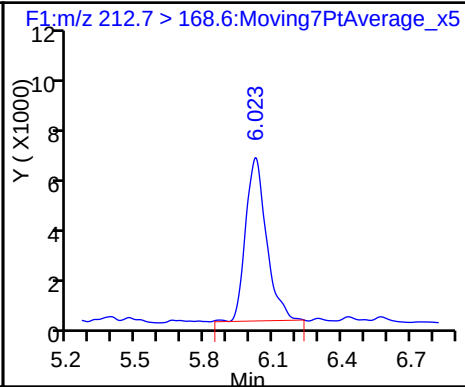
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Limit Group: LC PFC_DOD ICAL

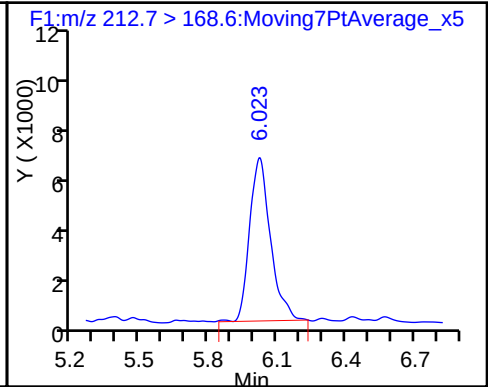
2 Perfluorobutyric acid



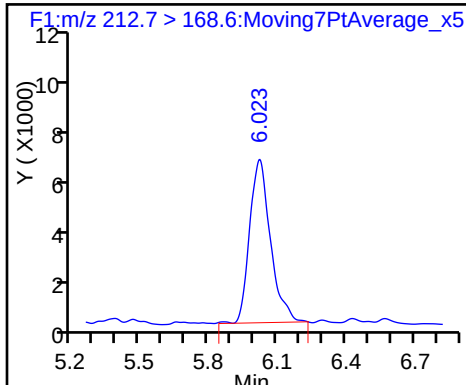
36 Perfluorooctadecanoic acid



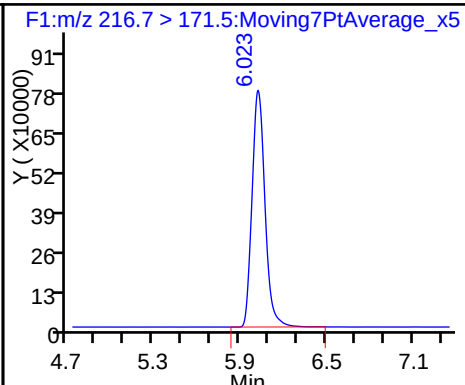
34 Perfluorohexadecanoic acid



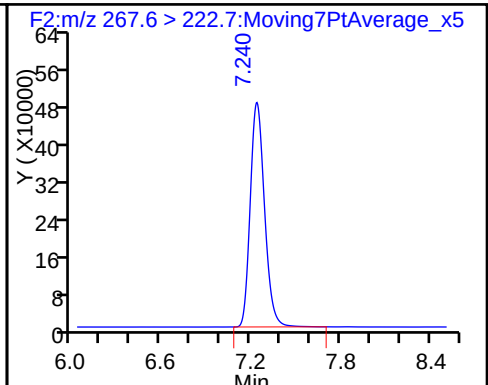
D 35 13C2-PFHxDA



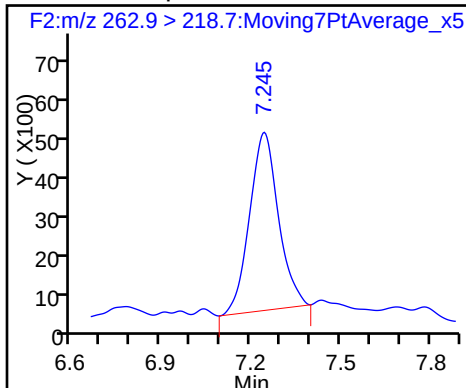
D 1 13C4 PFBA



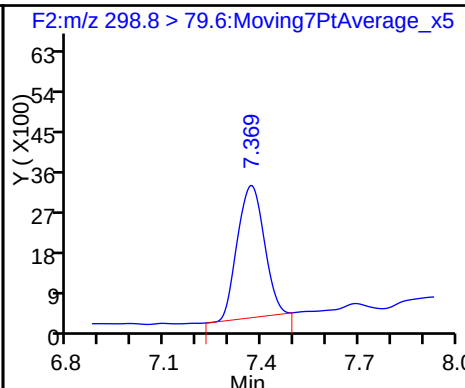
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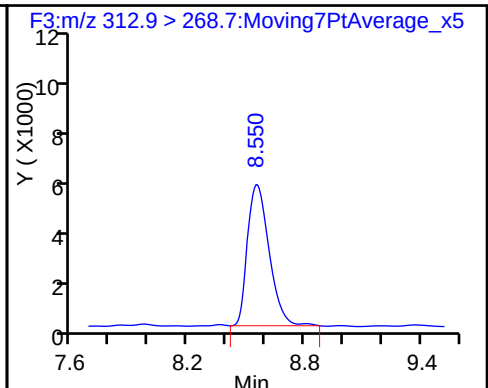
4 Perfluoropentanoic acid



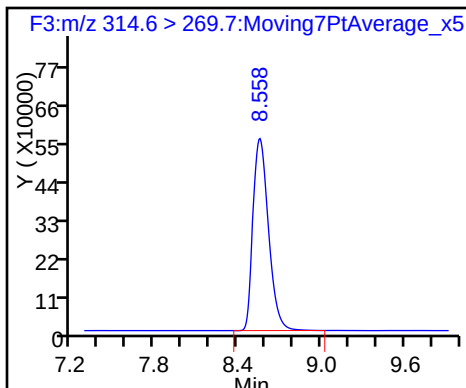
51 Perfluorobutanesulfonic acid



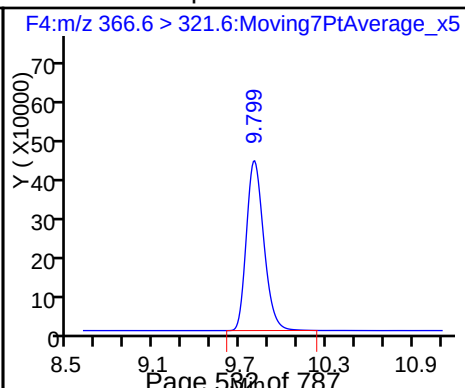
7 Perfluorohexanoic acid



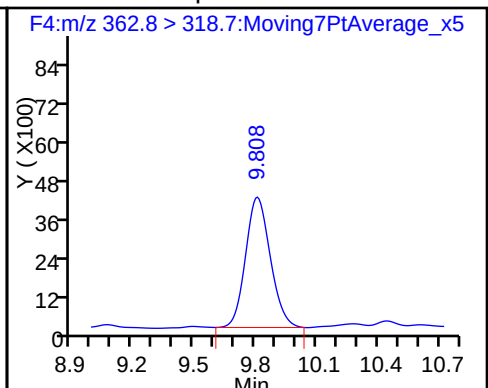
D 6 13C2 PFHxA



D 8 13C4-PFHpA



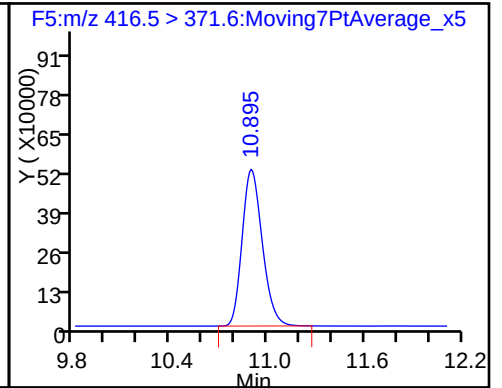
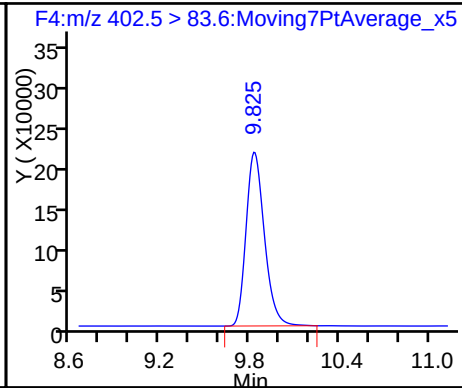
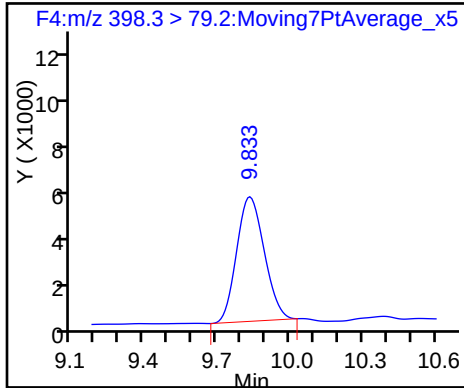
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

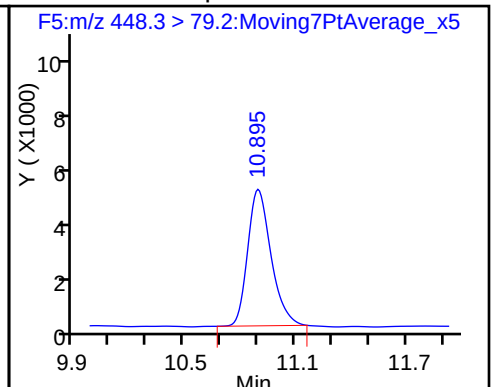
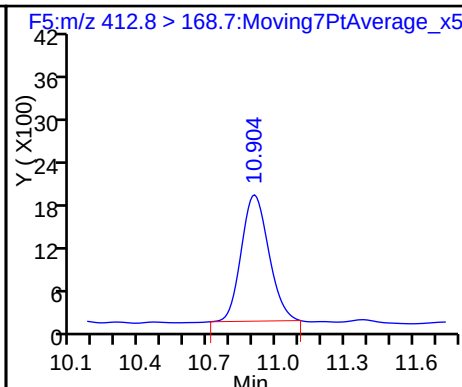
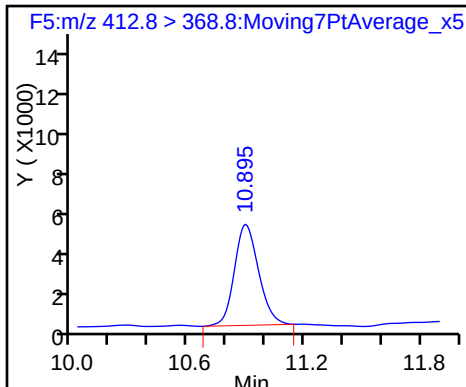
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

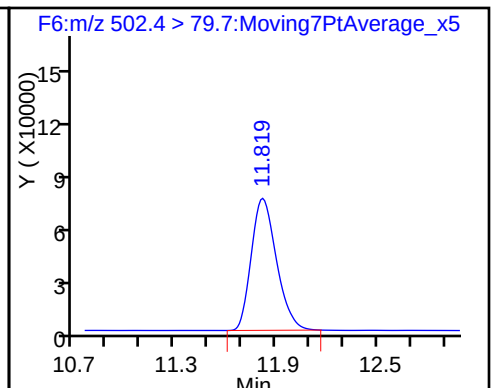
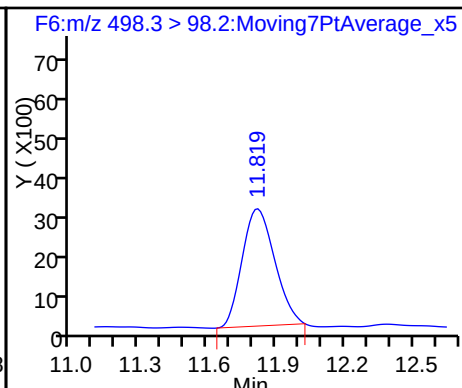
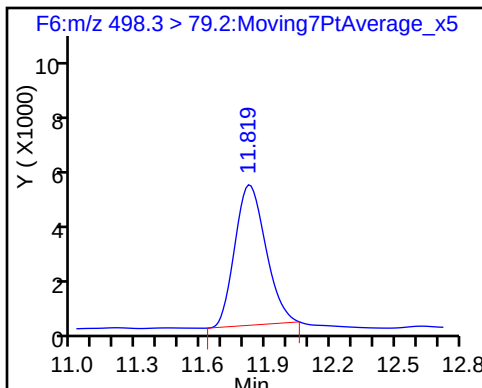
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

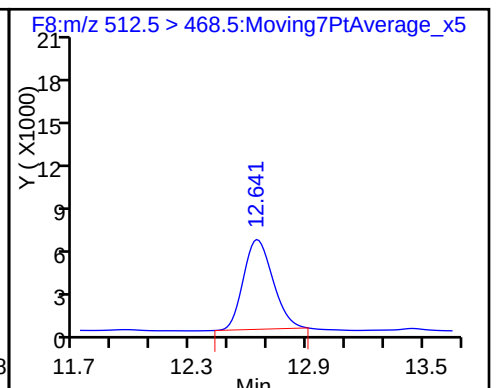
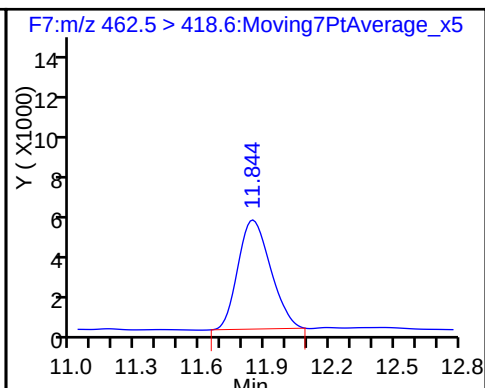
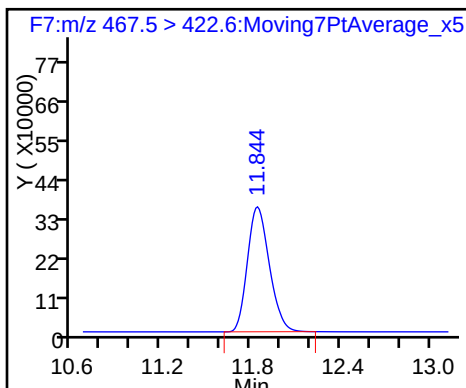
D 16 13C4 PFOS



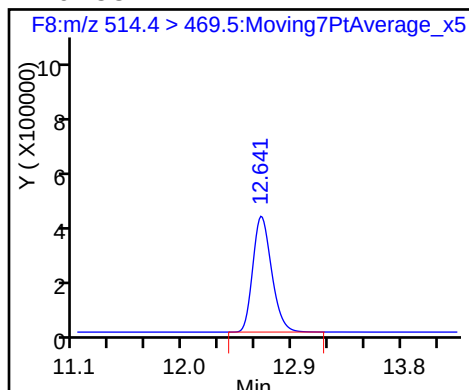
D 17 13C5 PFNA

18 Perfluorononanoic acid

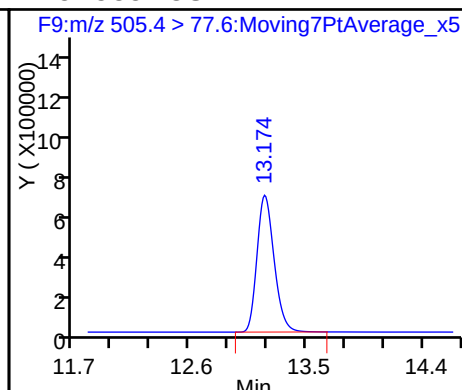
20 Perfluorodecanoic acid



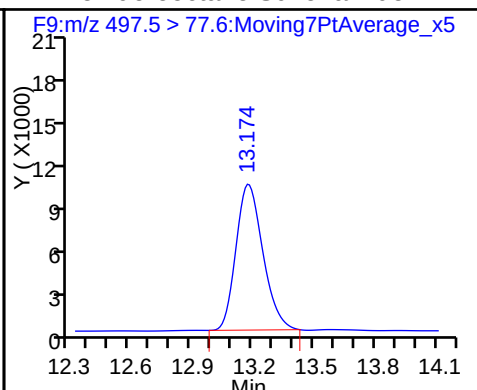
D 19 13C2 PFDA



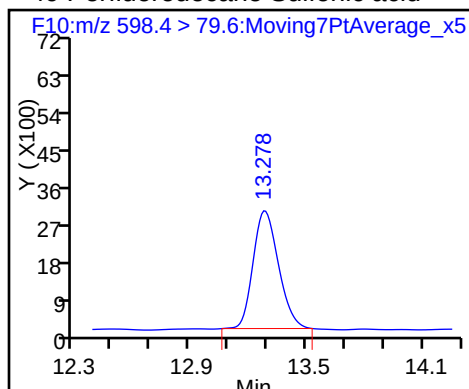
D 23 13C8 FOSA



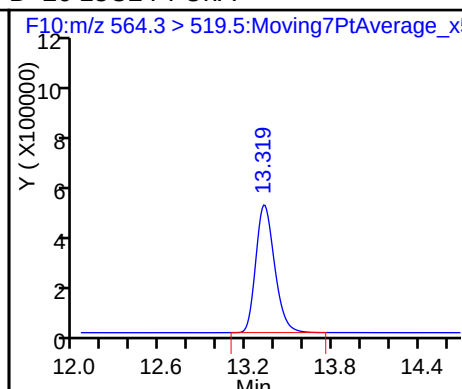
24 Perfluorooctane Sulfonamide



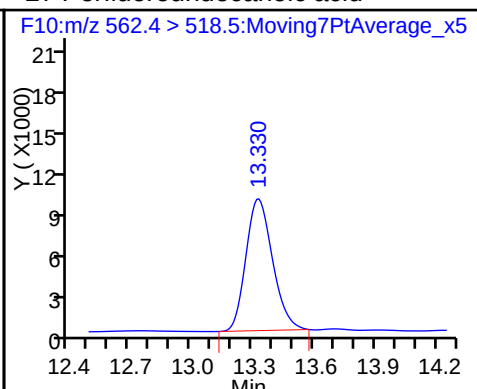
49 Perfluorodecane Sulfonic acid



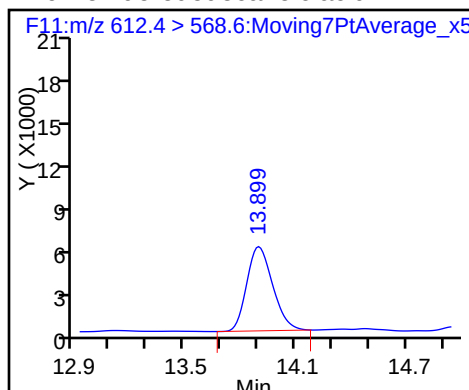
D 26 13C2 PFUnA



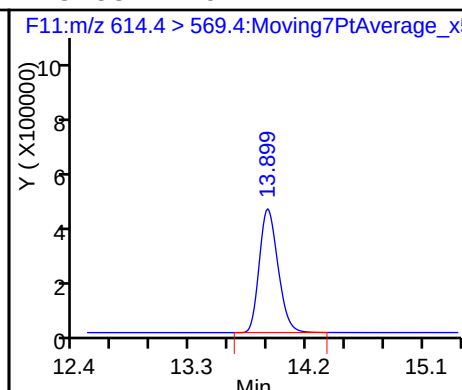
27 Perfluoroundecanoic acid



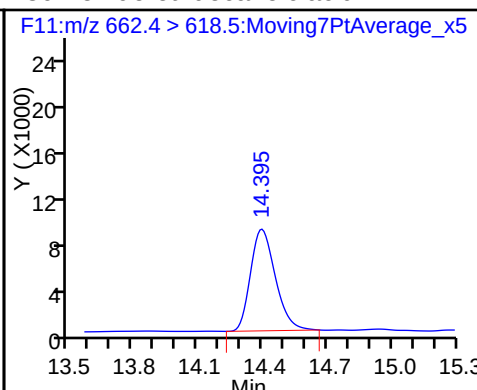
29 Perfluorododecanoic acid



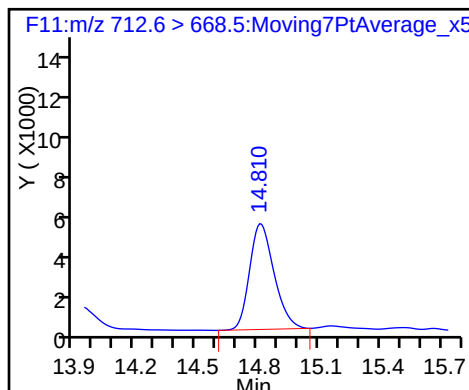
D 28 13C2 PFDaA



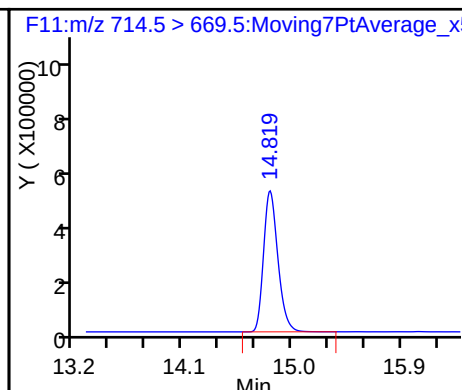
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_008.d
 Lims ID: Std L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 26-Feb-2016 18:10:07 ALS Bottle#: 4 Worklist Smp#: 4
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L3
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:17:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	5.990	6.043	-0.053	1.000	238292	5.12		102	604	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	5.990	6.043	-0.053	1.000	238292	5.22		104	604	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	5.990	6.043	-0.053	1.000	238292	5.22		104	604	
D 35 13C2-PFHxDA										
212.7 > 168.6	5.990	6.043	-0.053		238292	3.39		6.8	604	
D 1 13C4 PFBA										
216.7 > 171.5	5.987	6.043	-0.056		4746061	51.5		103	14547	
D 3 13C5-PFPeA										
267.6 > 222.7	7.194	7.272	-0.078		3033360	50.3		101	5923	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.198	7.275	-0.077	1.000	149651	4.98		99.6	85.6	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.318	7.404	-0.086	1.000	99563	NC			174	
298.8 > 98.6	7.318	7.404	-0.086	1.000	64987		1.53(0.00-0.00)		103	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.318	7.404	-0.086	1.000	99563	4.49		102		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.497	8.604	-0.107	1.000	191384	4.96		99.2	450	
D 6 13C2 PFHxA										
314.6 > 269.7	8.497	8.604	-0.107		4157743	51.6		103	8734	
D 8 13C4-PFHpA										
366.6 > 321.6	9.731	9.856	-0.125		3567999	52.5		105	5760	
9 Perfluoroheptanoic acid										
362.8 > 318.7	9.740	9.859	-0.119	1.000	178208	4.69		93.8	291	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	9.765	9.892	-0.127	1.000	181632	4.84		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	9.765	9.892	-0.127	1.000	181632	NC			437	
D 11 18O2 PFHxS										
402.5 > 83.6	9.765	9.892	-0.127		1748784	48.2		102	2500	
D 12 13C4 PFOA										
416.5 > 371.6	10.831	10.958	-0.127		4019997	51.3		103	7451	
13 Perfluorooctanoic acid										
412.8 > 368.8	10.831	10.958	-0.127	1.000	200616	4.75		95.0	195	
412.8 > 168.7	10.831	10.958	-0.127	1.000	67115		2.99(0.00-0.00)	95.0	204	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	10.831	10.960	-0.129	1.000	204808	NC			908	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	10.831	10.960	-0.129	1.000	204808	5.28		111		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	11.748	11.874	-0.126	1.000	302690	5.05		106	648	
498.3 > 98.2	11.748	11.874	-0.126	1.000	188184		1.61(0.00-0.00)	106	655	
D 16 13C4 PFOS										
502.4 > 79.7	11.748	11.876	-0.128		767723	47.1		98.5	1709	
D 17 13C5 PFNA										
467.5 > 422.6	11.772	11.898	-0.126		3473506	53.6		107	5995	
18 Perfluorononanoic acid										
462.5 > 418.6	11.772	11.899	-0.127	1.000	359937	5.16		103	421	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.577	12.693	-0.116	1.000	381807	4.95		99.0	913	
D 19 13C2 PFDA										
514.4 > 469.5	12.577	12.693	-0.116		4384792	54.3		109	5193	
D 23 13C8 FOSA										
505.4 > 77.6	13.111	13.222	-0.111		5884275	52.0		104	3089	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.111	13.222	-0.111	1.000	567602	5.27		105	1109	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.227	13.324	-0.097	1.000	141540	NC			505	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.227	13.324	-0.097	1.000	141540	5.55		115		
D 26 13C2 PFUnA										
564.3 > 519.5	13.268	13.369	-0.101		4179654	54.2		108	4545	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.268	13.372	-0.104	1.000	443678	4.83		96.7	490	
29 Perfluorododecanoic acid										
612.4 > 568.6	13.840	13.937	-0.097	1.000	369734	5.12		102	270	
D 28 13C2 PFDaA										
614.4 > 569.4	13.852	13.939	-0.087		4504852	52.8		106	2671	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.340	14.430	-0.090	1.000	371742	5.26		105	303	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.764	14.841	-0.077	1.000	161570	4.81		96.1	181	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.764	14.844	-0.080		3625950	52.5		105	2692	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L3_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_008.d

Injection Date: 26-Feb-2016 18:10:07

Instrument ID: A4

Lims ID: Std L3

Client ID:

Operator ID: JRB

ALS Bottle#: 4

Worklist Smp#: 4

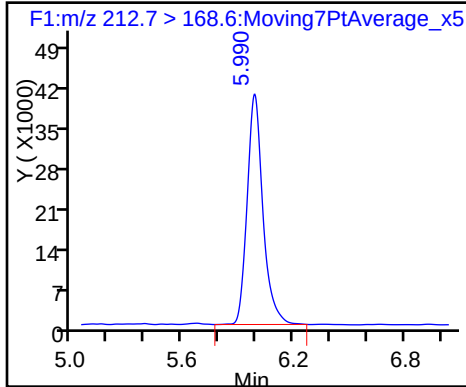
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

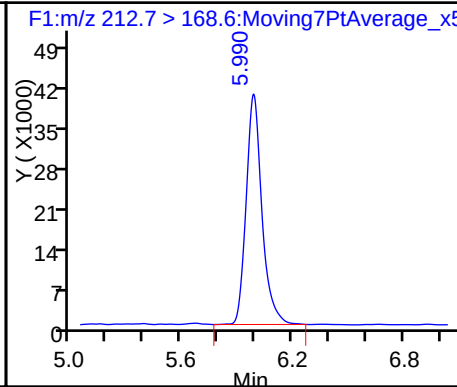
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

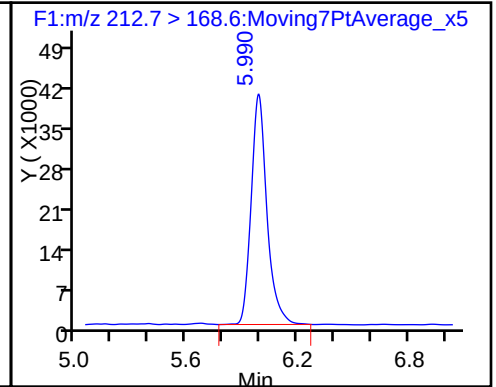
2 Perfluorobutyric acid



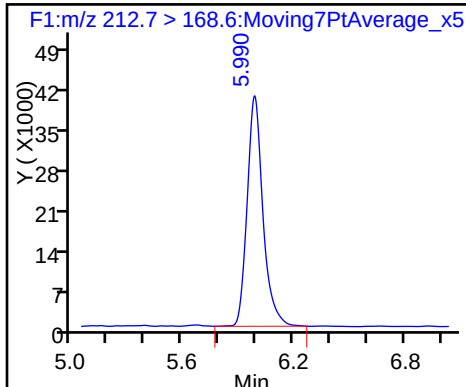
36 Perfluorooctadecanoic acid



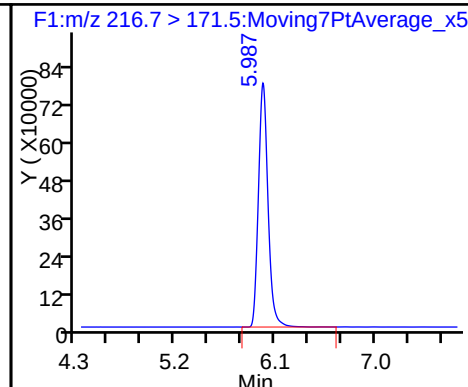
34 Perfluorohexadecanoic acid



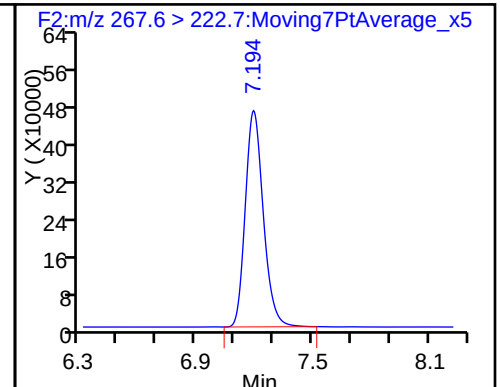
D 35 13C2-PFHxD A



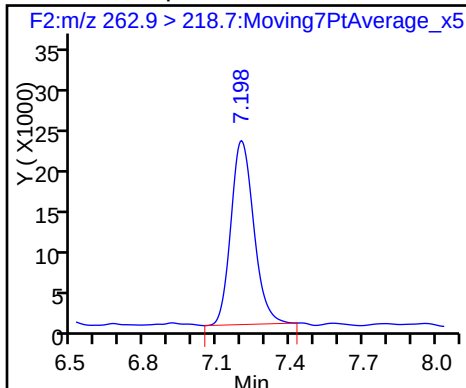
D 1 13C4 PFBA



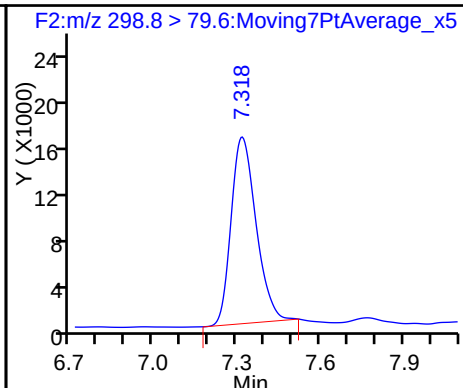
D 3 13C5-PFPeA



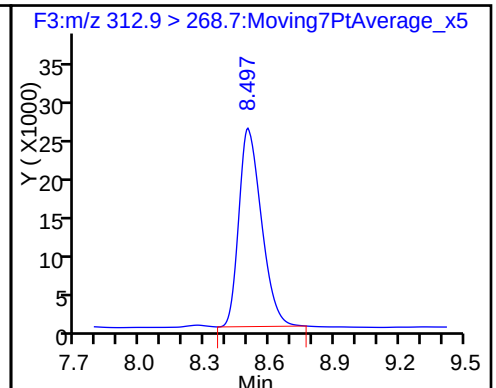
4 Perfluoropentanoic acid



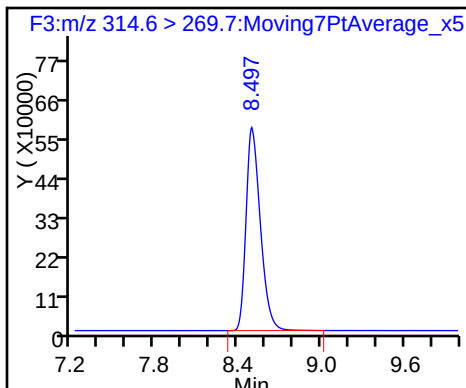
51 Perfluorobutanesulfonic acid



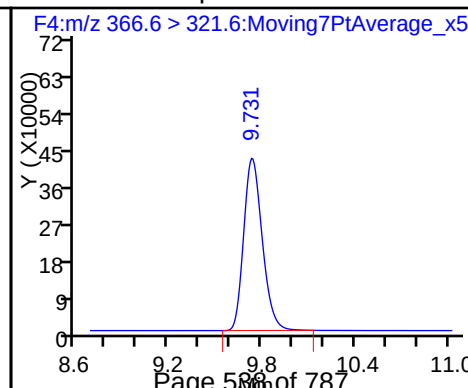
7 Perfluorohexanoic acid



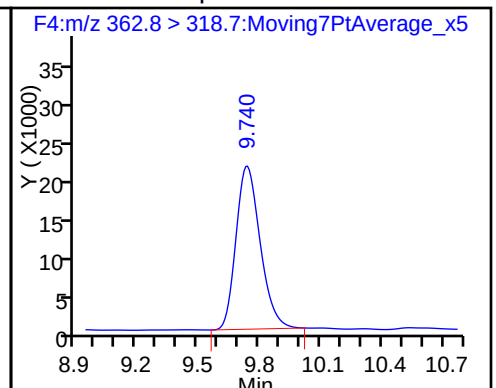
D 6 13C2 PFHxA



D 8 13C4-PFHpA



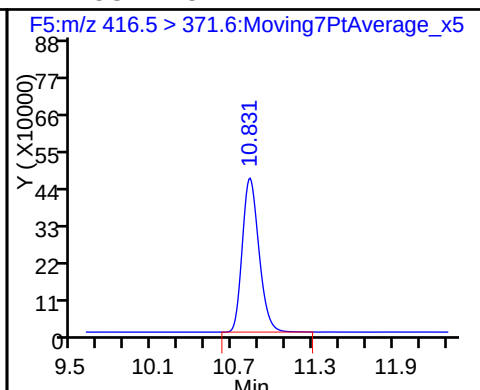
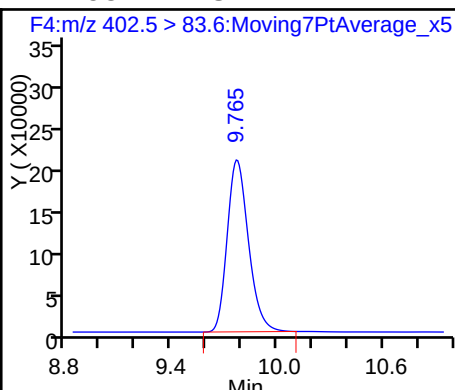
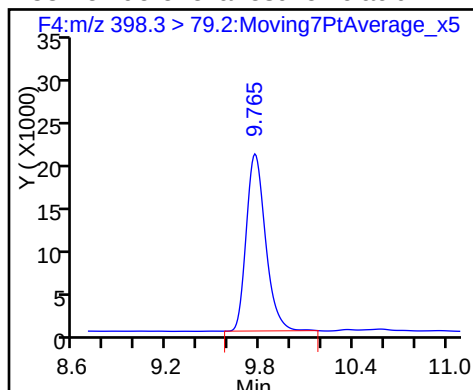
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

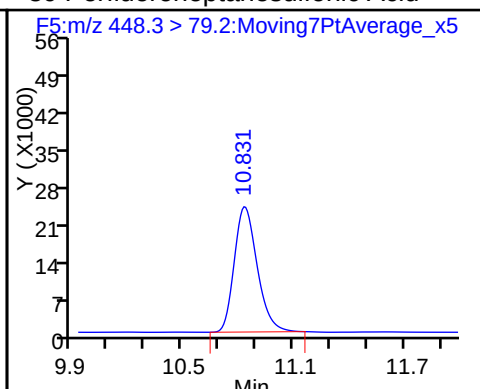
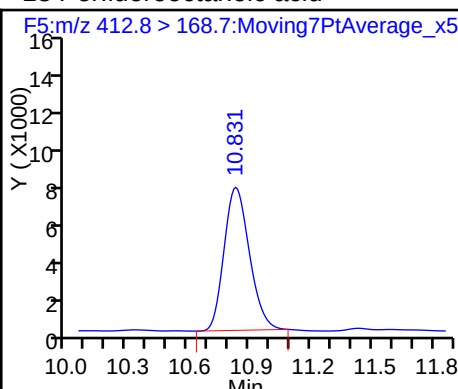
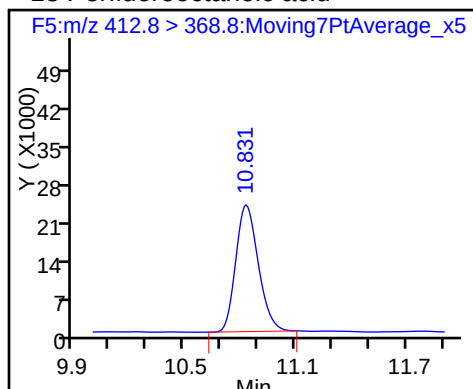
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

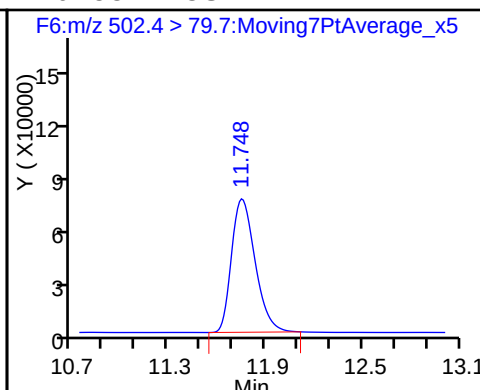
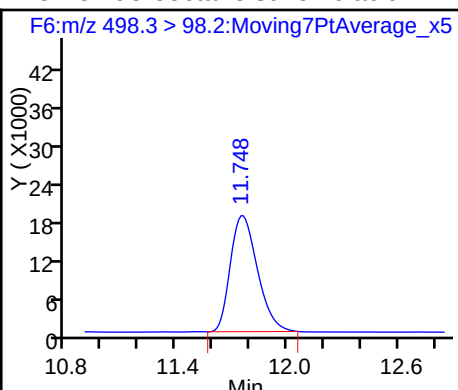
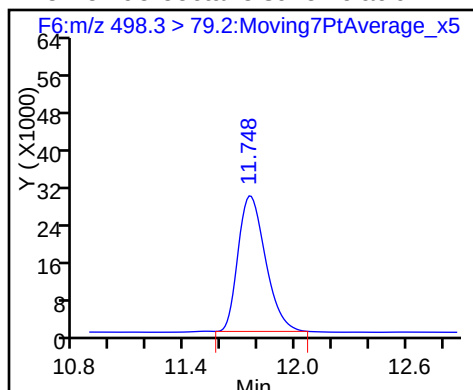
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

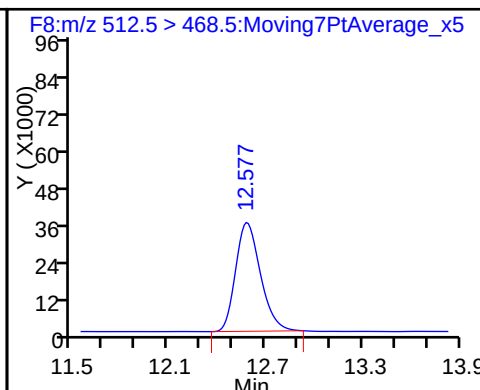
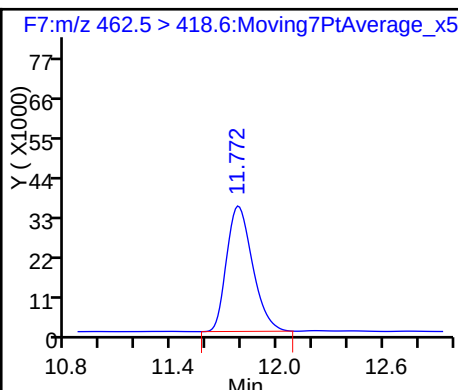
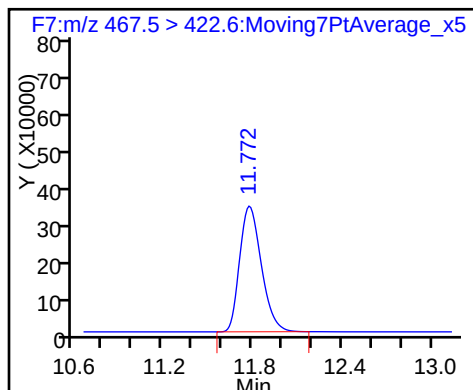
D 16 13C4 PFOS



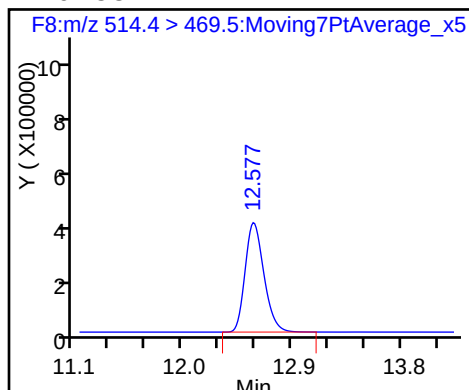
D 17 13C5 PFNA

18 Perfluorononanoic acid

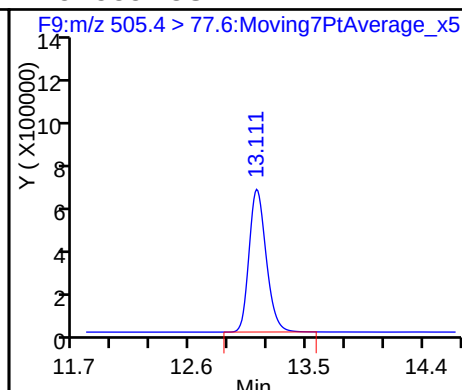
20 Perfluorodecanoic acid



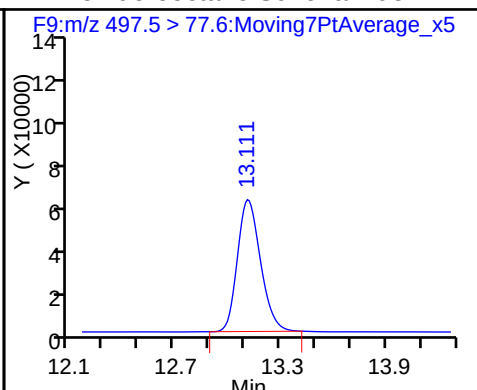
D 19 13C2 PFDA



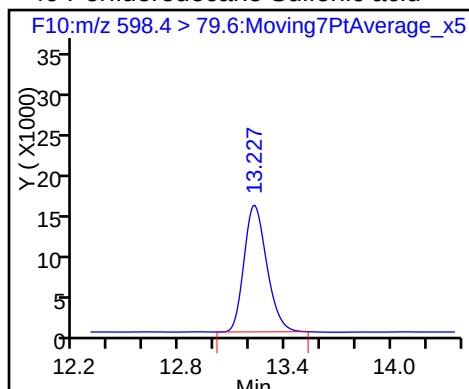
D 23 13C8 FOSA



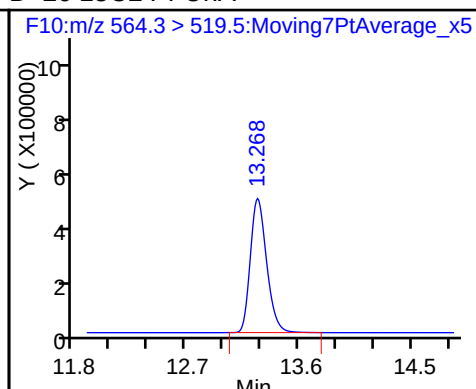
24 Perfluorooctane Sulfonamide



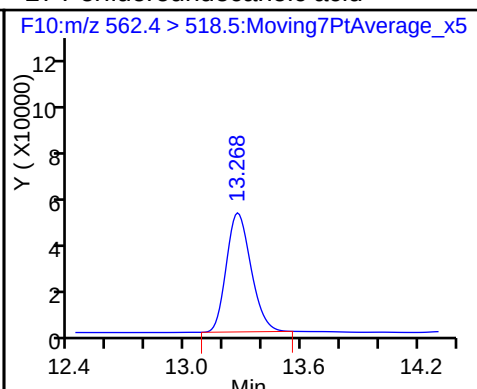
49 Perfluorodecane Sulfonic acid



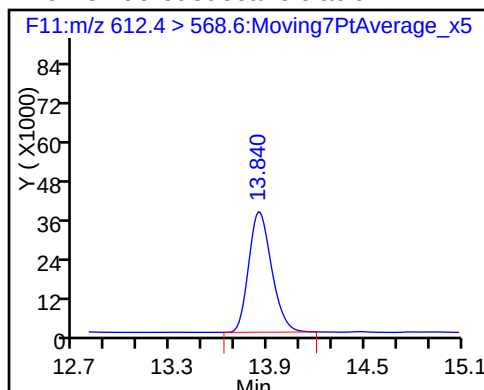
D 26 13C2 PFUnA



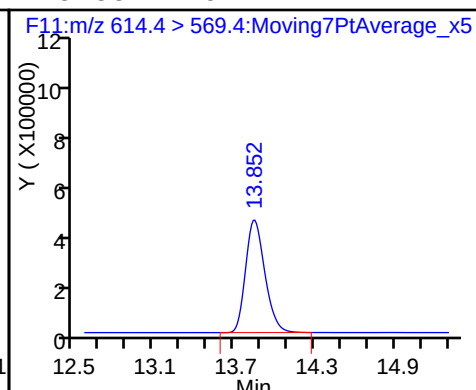
27 Perfluoroundecanoic acid



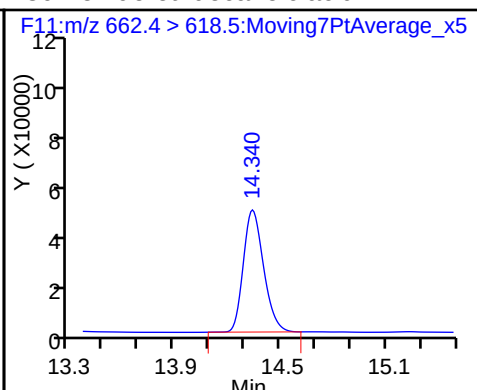
29 Perfluorododecanoic acid



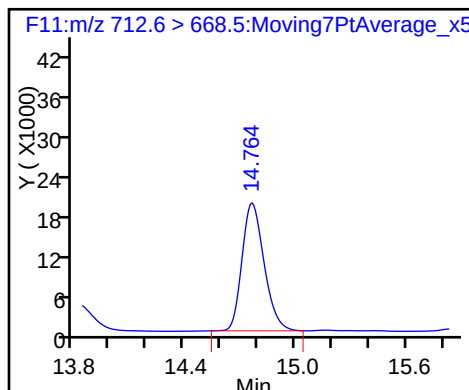
D 28 13C2 PFDaA



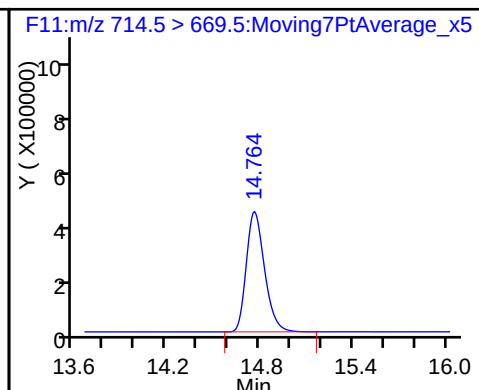
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_009.d
 Lims ID: Std L4
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 26-Feb-2016 18:31:18 ALS Bottle#: 5 Worklist Smp#: 5
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L4
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:17:33 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 10:56:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	5.996	6.043	-0.047	1.000	987601	21.2		106	2450	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	5.996	6.043	-0.047	1.000	987601	20.8		104	2450	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	5.996	6.043	-0.047	1.000	987601	20.8		104	2450	
D 35 13C2-PFHxDA										
212.7 > 168.6	5.996	6.043	-0.047		987601	14.1		28.1	2450	
D 1 13C4 PFBA										
216.7 > 171.5	5.996	6.043	-0.047		4749707	51.6		103	14252	
D 3 13C5-PFPeA										
267.6 > 222.7	7.208	7.272	-0.064		3139219	52.1		104	8664	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.208	7.275	-0.067	1.000	608776	19.6		97.9	392	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.332	7.404	-0.072	1.000	453215	NC			745	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.332	7.404	-0.072	1.000	453215	18.6		105		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.511	8.604	-0.093	1.000	772331	19.5		97.7	1194	
D 6 13C2 PFHxA										
314.6 > 269.7	8.511	8.604	-0.093		4261075	52.9		106	6973	
D 8 13C4-PFHpA										
366.6 > 321.6	9.748	9.856	-0.108		3537280	52.1		104	4941	
9 Perfluoroheptanoic acid										
362.8 > 318.7	9.748	9.859	-0.111	1.000	851417	22.4		112	1651	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	9.782	9.892	-0.110	1.000	725283	17.6		92.8		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	9.782	9.892	-0.110	1.000	725283	NC			1186	
D 11 18O2 PFHxS										
402.5 > 83.6	9.782	9.892	-0.110		1927158	53.1		112	3300	
D 12 13C4 PFOA										
416.5 > 371.6	10.849	10.958	-0.109		4052200	51.7		103	4531	
13 Perfluorooctanoic acid										
412.8 > 368.8	10.849	10.958	-0.109	1.000	865013	20.3		102	829	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	10.849	10.960	-0.111	1.000	812643	NC			2222	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	10.849	10.960	-0.111	1.000	812643	17.8		93.6		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	11.771	11.874	-0.103	1.000	1182197	16.8		87.7	1636	
D 16 13C4 PFOS										
502.4 > 79.7	11.771	11.876	-0.105		901914	55.3		116	2369	
D 17 13C5 PFNA										
467.5 > 422.6	11.796	11.898	-0.102		3494609	53.9		108	3849	
18 Perfluorononanoic acid										
462.5 > 418.6	11.796	11.899	-0.103	1.000	1578862	21.6		108	1611	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.603	12.693	-0.090	1.000	1548111	21.6		108	2076	
D 19 13C2 PFDA										
514.4 > 469.5	12.603	12.693	-0.090		4065096	50.3		101	4492	
D 23 13C8 FOSA										
505.4 > 77.6	13.132	13.222	-0.090		5987305	52.9		106	4502	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.132	13.222	-0.090	1.000	2337995	21.3		107	2509	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.237	13.324	-0.087	1.000	559426	NC			1718	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.237	13.324	-0.087	1.000	559426	18.7		96.9		
D 26 13C2 PFUnA										
564.3 > 519.5	13.288	13.369	-0.081		3964757	51.4		103	3923	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.288	13.372	-0.084	1.000	1680391	19.3		96.5	1519	
29 Perfluorododecanoic acid										
612.4 > 568.6	13.864	13.937	-0.073	1.000	1514507	20.1		101	919	
D 28 13C2 PFDaA										
614.4 > 569.4	13.864	13.939	-0.075		4686949	55.0		110	3274	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.359	14.430	-0.071	1.000	1521555	20.7		103	1013	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.782	14.841	-0.059	1.000	655399	18.7		93.7	653	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.782	14.844	-0.062		3651029	52.9		106	2562	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_009.d

Injection Date: 26-Feb-2016 18:31:18

Instrument ID: A4

Lims ID: Std L4

Client ID:

Operator ID: JRB

ALS Bottle#: 5

Worklist Smp#: 5

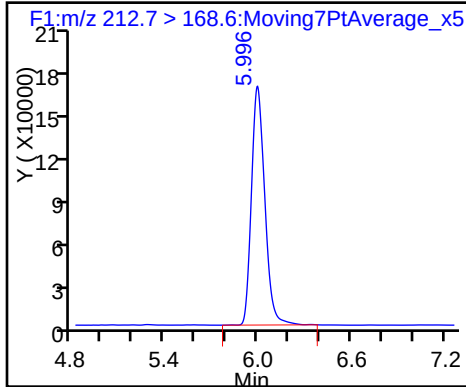
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

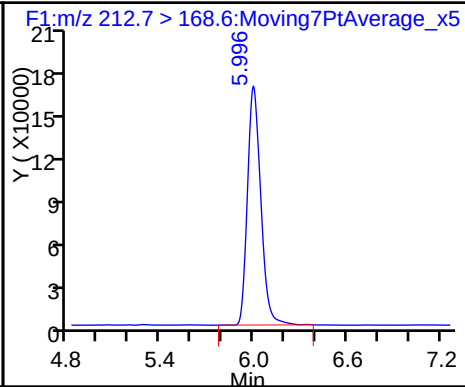
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

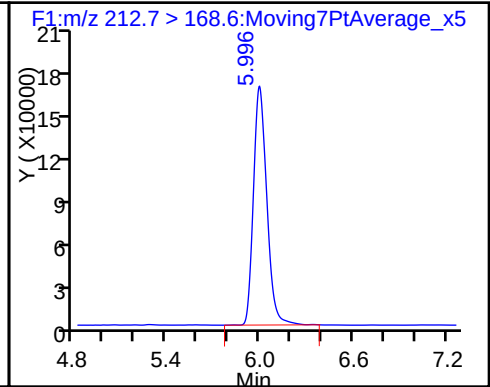
2 Perfluorobutyric acid



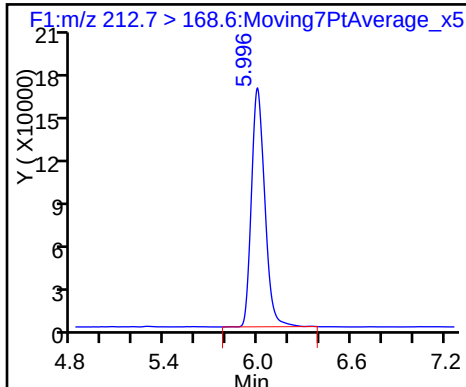
36 Perfluorooctadecanoic acid



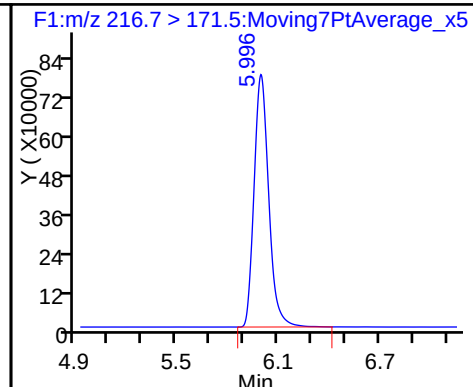
34 Perfluorohexadecanoic acid



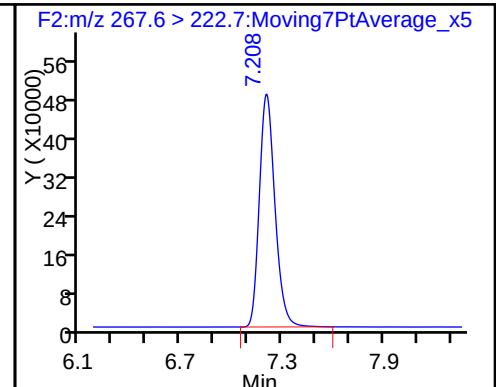
D 35 13C2-PFHxDA



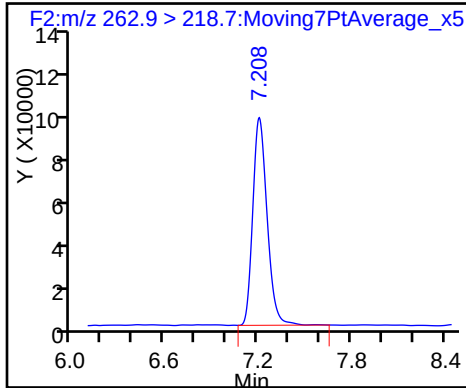
D 1 13C4 PFBA



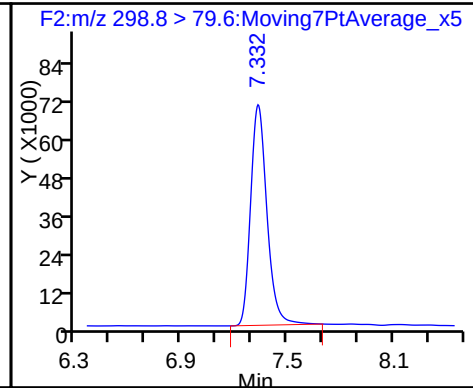
D 3 13C5-PFPeA



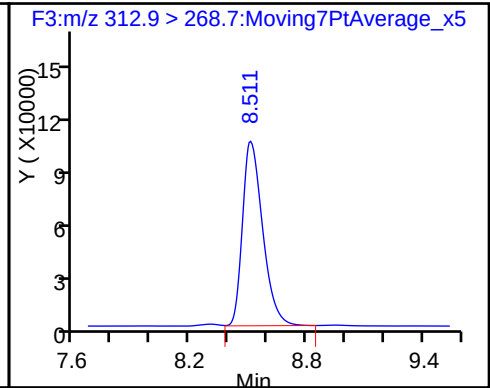
4 Perfluoropentanoic acid



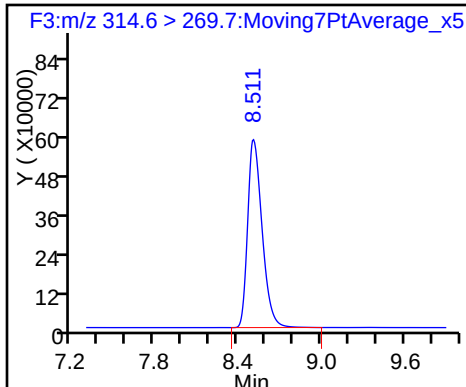
51 Perfluorobutanesulfonic acid



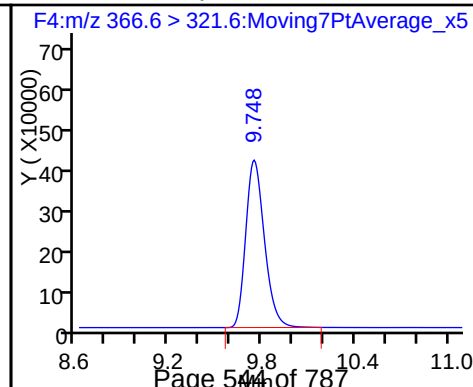
7 Perfluorohexanoic acid



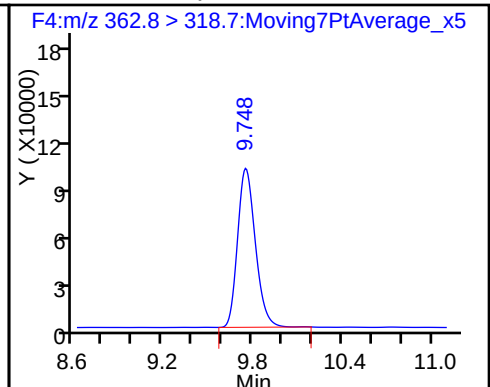
D 6 13C2 PFHxA



D 8 13C4-PFHpA



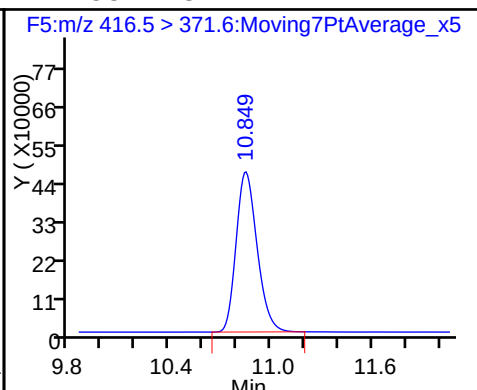
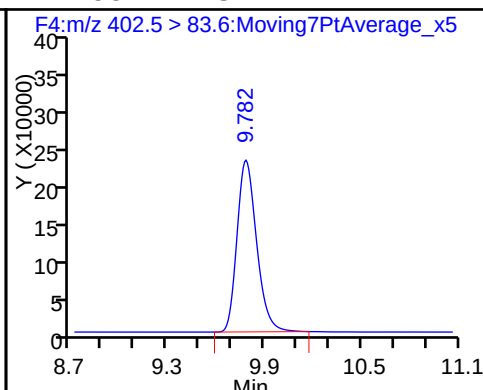
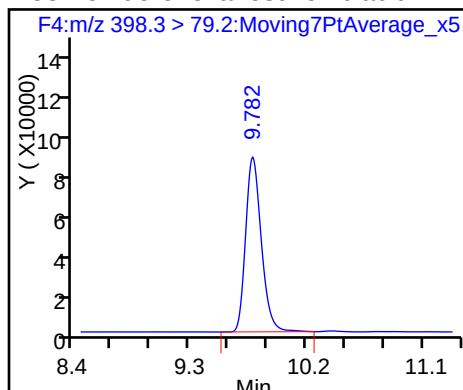
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

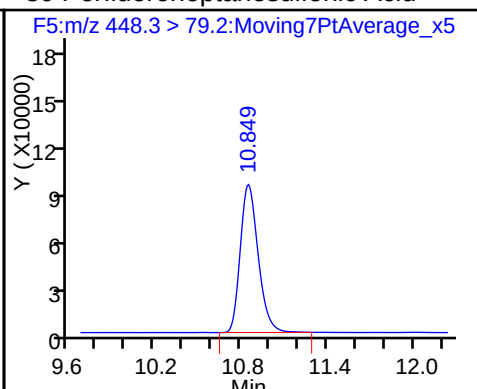
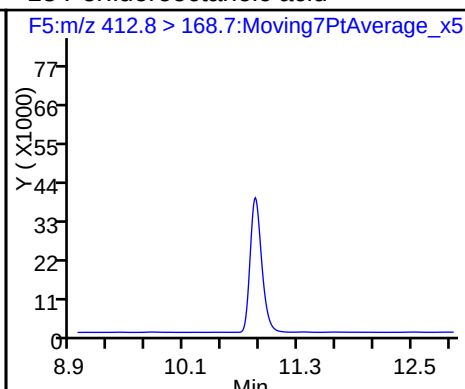
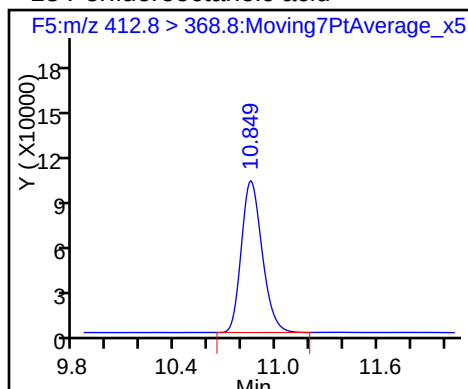
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

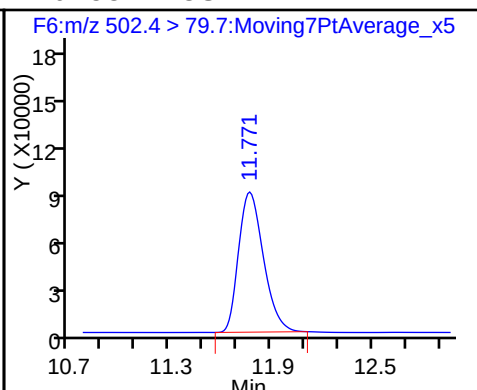
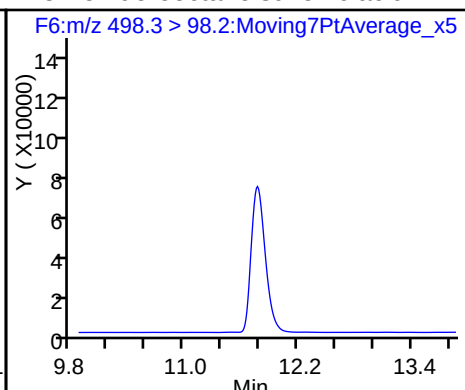
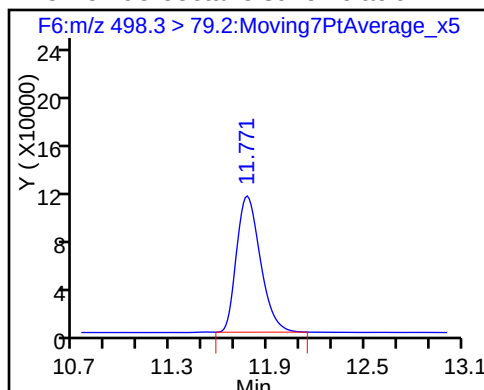
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

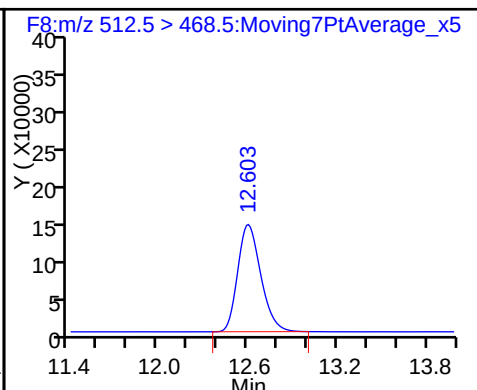
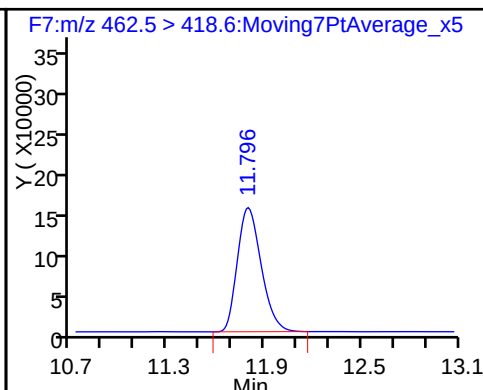
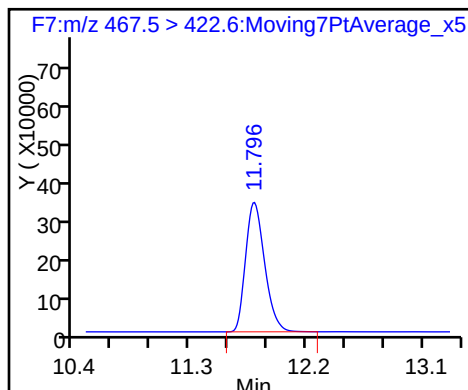
D 16 13C4 PFOS



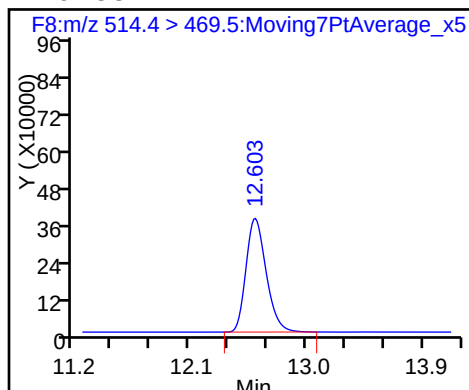
D 17 13C5 PFNA

18 Perfluorononanoic acid

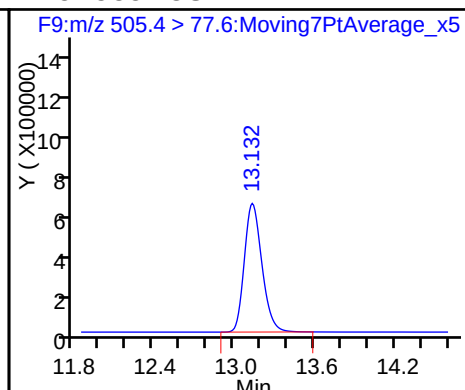
20 Perfluorodecanoic acid



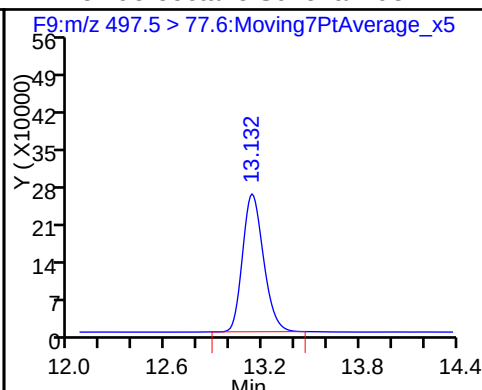
D 19 13C2 PFDA



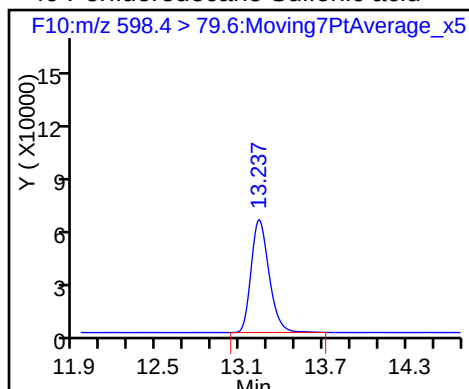
D 23 13C8 FOSA



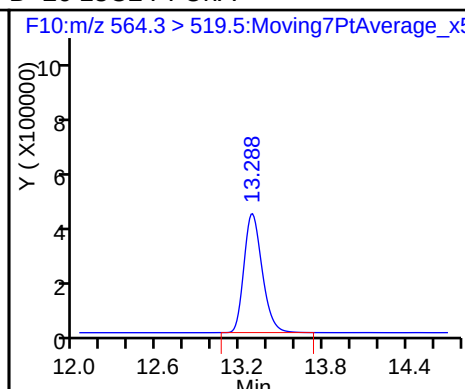
24 Perfluorooctane Sulfonamide



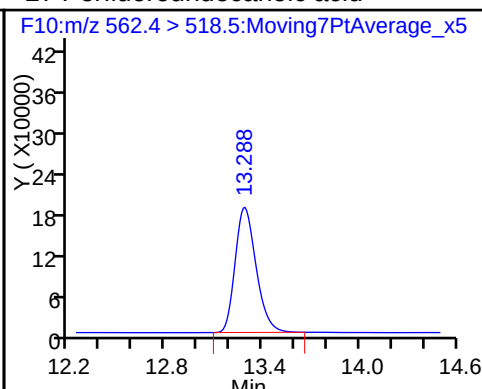
49 Perfluorodecane Sulfonic acid



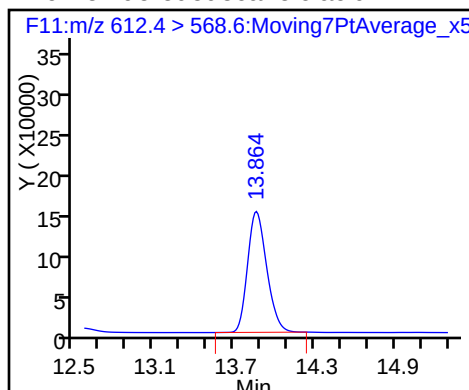
D 26 13C2 PFUnA



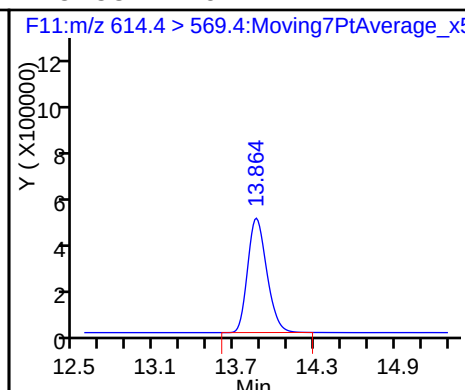
27 Perfluoroundecanoic acid



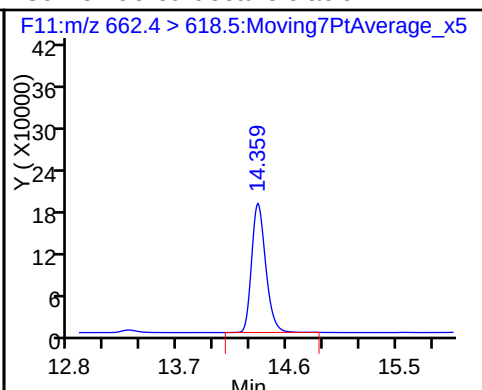
29 Perfluorododecanoic acid



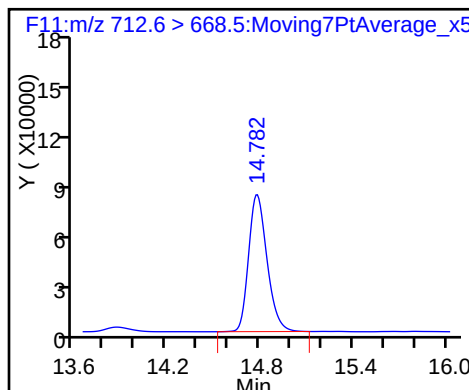
D 28 13C2 PFDoA



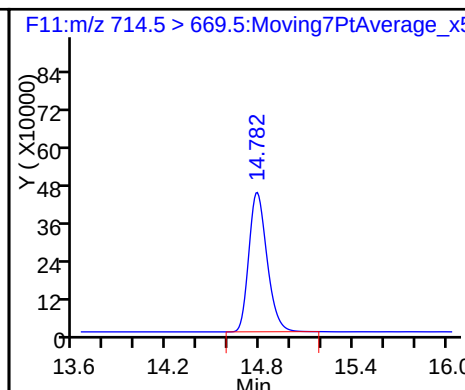
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_010.d
 Lims ID: Std L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 26-Feb-2016 18:52:29 ALS Bottle#: 6 Worklist Smp#: 6
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L5
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:17:41 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 10:57:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.020	6.043	-0.023	1.000	2232439	52.0		104	5205	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.020	6.043	-0.023	1.000	2232439	51.2		102	5205	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.020	6.043	-0.023	1.000	2232439	51.2		102	5205	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.020	6.043	-0.023		2232439	31.8		63.6	5205	
D 1 13C4 PFBA										
216.7 > 171.5	6.023	6.043	-0.020		4377513	47.5		95.1	12214	
D 3 13C5-PFPeA										
267.6 > 222.7	7.231	7.272	-0.041		2864710	47.5		95.0	6230	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.235	7.275	-0.040	1.000	1353041	47.7		95.4	703	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.360	7.404	-0.044	1.000	1024709	NC			1785	
298.8 > 98.6	7.360	7.404	-0.044	1.000	691916		1.48(0.00-0.00)		1413	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.360	7.404	-0.044	1.000	1024709	49.7		112		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.550	8.604	-0.054	1.000	1672408	48.1		96.2	1910	
D 6 13C2 PFHxA										
314.6 > 269.7	8.550	8.604	-0.054		3749550	46.5		93.0	6068	
D 8 13C4-PFHpA										
366.6 > 321.6	9.799	9.856	-0.057		3192543	47.0		94.0	4659	
9 Perfluoroheptanoic acid										
362.8 > 318.7	9.799	9.859	-0.060	1.000	1700245	49.6		99.2	3072	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	9.833	9.892	-0.059	1.000	1516565	43.5		91.9		
10 Perfluorohexane Sulfonate										
398.3 > 79.2	9.833	9.892	-0.059	1.000	1516565	NC			1742	
D 11 18O2 PFHxS										
402.5 > 83.6	9.833	9.892	-0.059		1627620	44.9		94.9	3669	
D 12 13C4 PFOA										
416.5 > 371.6	10.913	10.958	-0.045		3524417	45.0		89.9	4306	
13 Perfluorooctanoic acid										
412.8 > 368.8	10.913	10.958	-0.045	1.000	1877109	50.7		101	1377	
412.8 > 168.7	10.913	10.958	-0.045	1.000	738449		2.54(0.00-0.00)	101	1269	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	10.913	10.960	-0.047	1.000	1721565	NC			2310	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	10.913	10.960	-0.047	1.000	1721565	43.1		90.6		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	11.842	11.874	-0.032	1.000	2706389	43.9		91.8	2625	
498.3 > 98.2	11.842	11.874	-0.032	1.000	1592378		1.70(0.00-0.00)	91.8	2405	
D 16 13C4 PFOS										
502.4 > 79.7	11.842	11.876	-0.034		789734	48.4		101	1750	
D 17 13C5 PFNA										
467.5 > 422.6	11.855	11.898	-0.043		3328317	51.4		103	3398	
18 Perfluorononanoic acid										
462.5 > 418.6	11.867	11.899	-0.032	1.000	3318743	47.3		94.6	2817	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.666	12.693	-0.027	1.000	3407085	50.5		101	4085	
D 19 13C2 PFDA										
514.4 > 469.5	12.666	12.693	-0.027		3835429	47.5		95.0	4645	
D 23 13C8 FOSA										
505.4 > 77.6	13.194	13.222	-0.028		5528239	48.9		97.7	4338	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.194	13.222	-0.028	1.000	5313118	52.5		105	2734	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.299	13.324	-0.025	1.000	1220447	NC			1947	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.299	13.324	-0.025	1.000	1220447	46.6		96.6		
D 26 13C2 PFUnA										
564.3 > 519.5	13.350	13.369	-0.019		3509250	45.5		91.0	3548	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.350	13.372	-0.022	1.000	3787583	49.1		98.3	2260	
29 Perfluorododecanoic acid										
612.4 > 568.6	13.911	13.937	-0.026	1.000	3514546	50.9		102	1800	
D 28 13C2 PFDaA										
614.4 > 569.4	13.911	13.939	-0.028		4307574	50.5		101	2693	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.414	14.430	-0.016	1.000	3263831	48.3		96.6	1830	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.828	14.841	-0.013	1.000	1486647	46.3		92.5	1443	

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_010.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 33 13C2-PFTeDA

714.5 > 669.5 14.828 14.844 -0.016 3523231 51.0 102 2841

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_010.d

Injection Date: 26-Feb-2016 18:52:29

Instrument ID: A4

Lims ID: Std L5

Client ID:

Operator ID: JRB

ALS Bottle#: 6

Worklist Smp#: 6

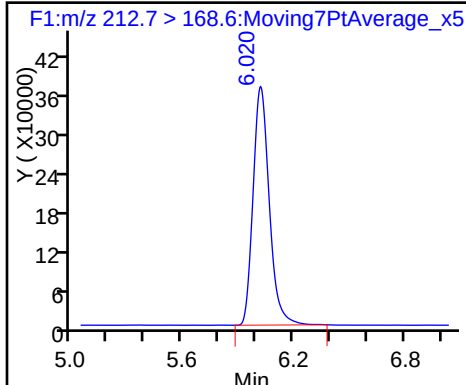
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

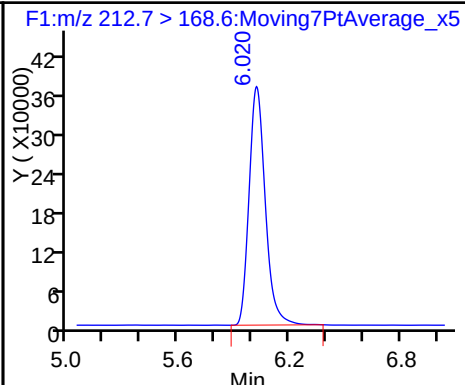
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

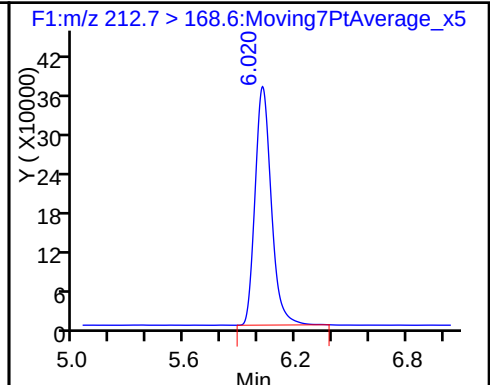
2 Perfluorobutyric acid



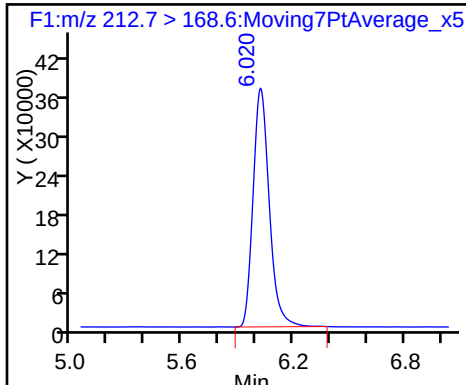
36 Perfluorooctadecanoic acid



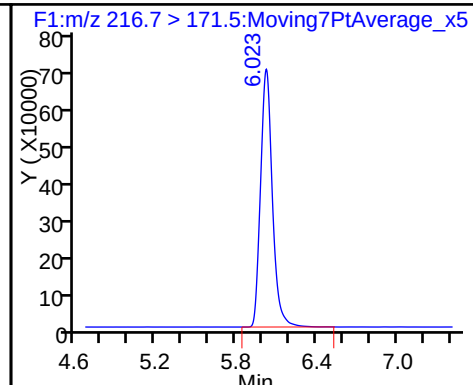
34 Perfluorohexadecanoic acid



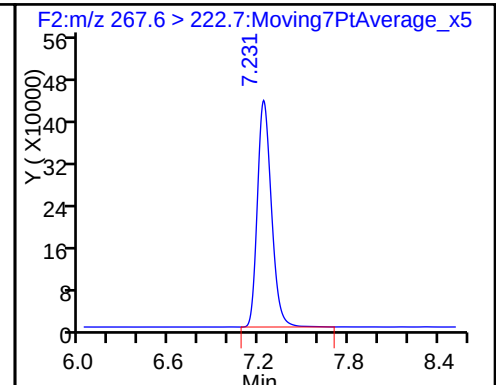
D 35 13C2-PFHxDA



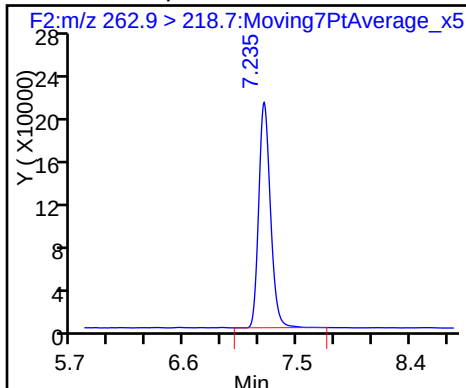
D 1 13C4 PFBA



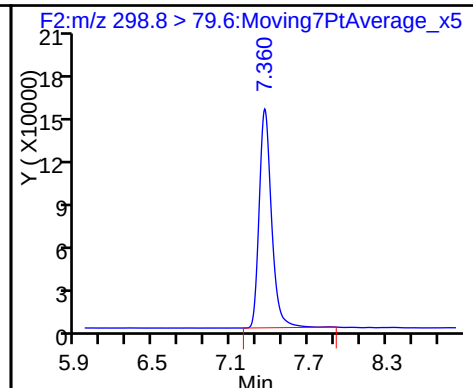
D 3 13C5-PFPeA



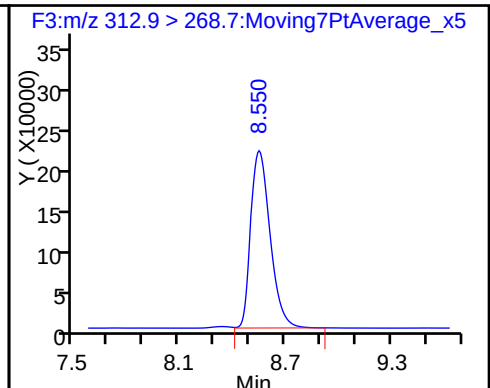
4 Perfluoropentanoic acid



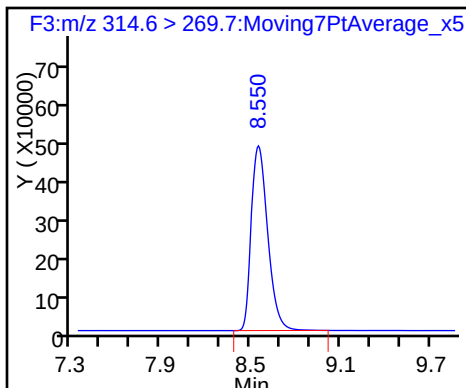
51 Perfluorobutanesulfonic acid



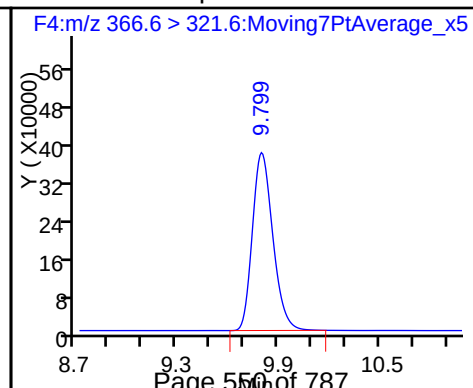
7 Perfluorohexanoic acid



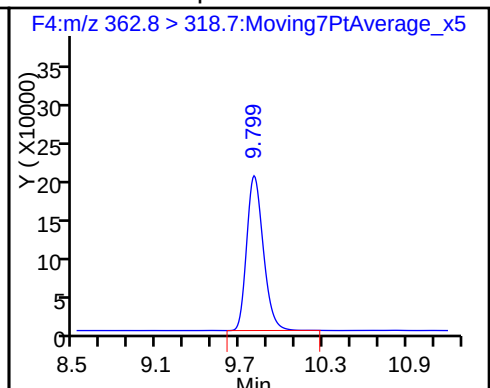
D 6 13C2 PFHxA



D 8 13C4-PFHpA



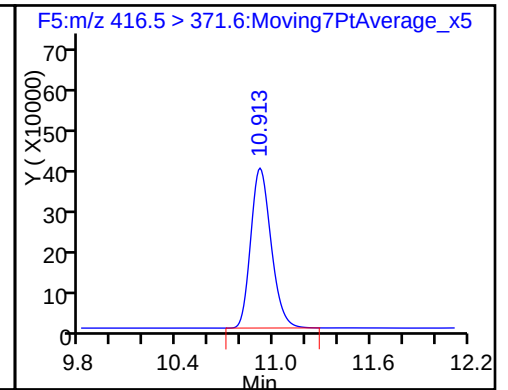
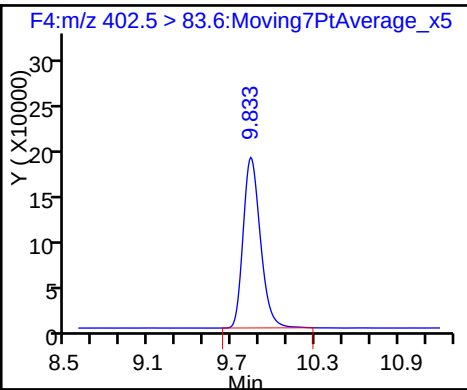
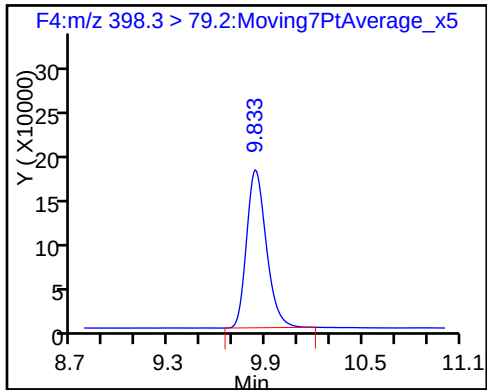
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

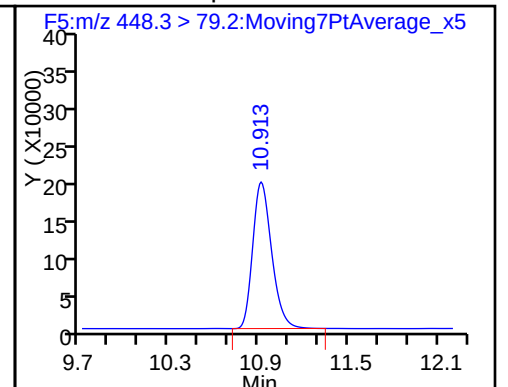
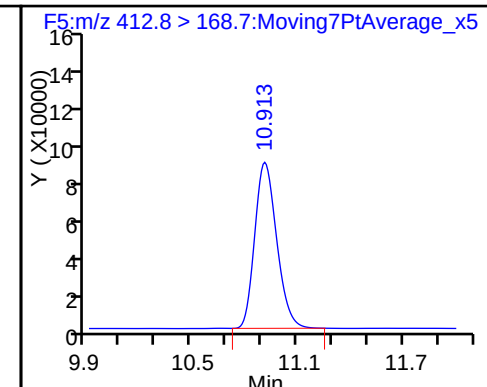
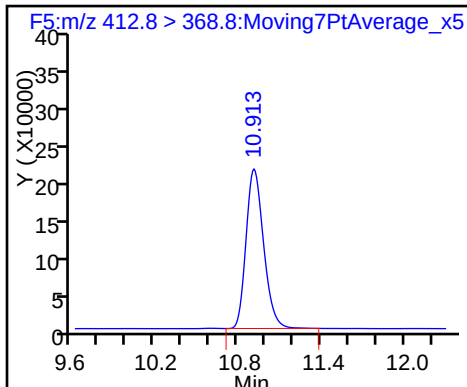
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

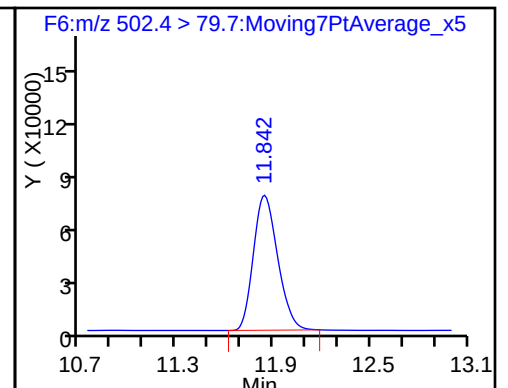
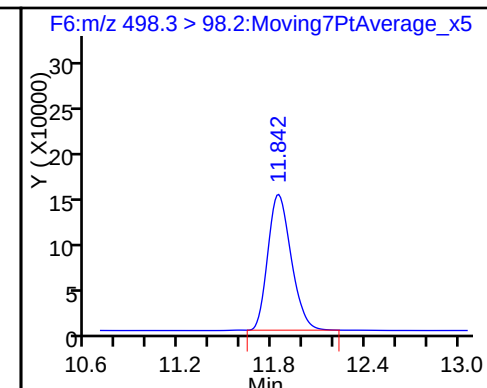
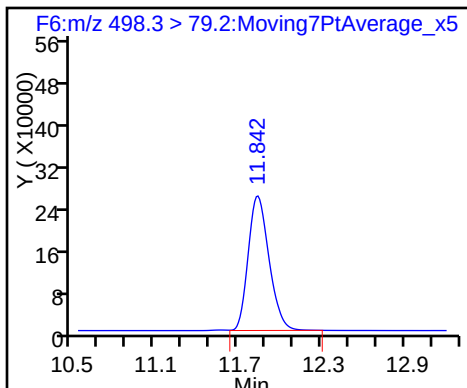
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

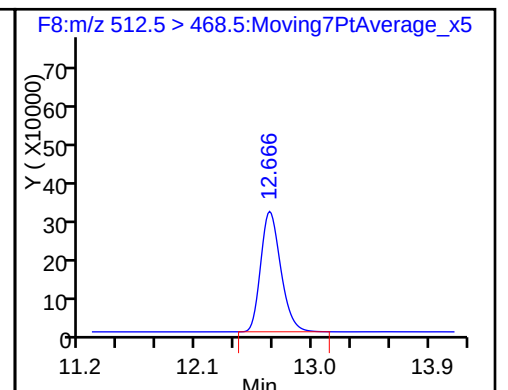
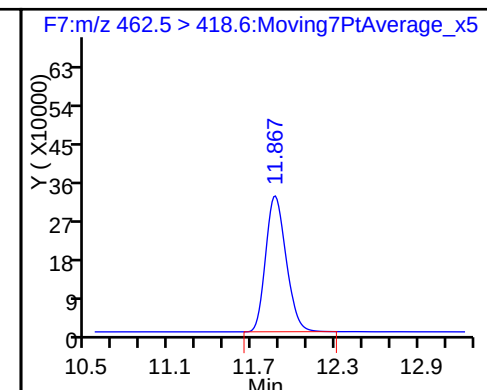
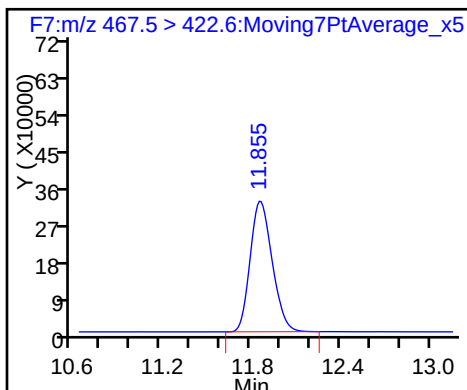
D 16 13C4 PFOS



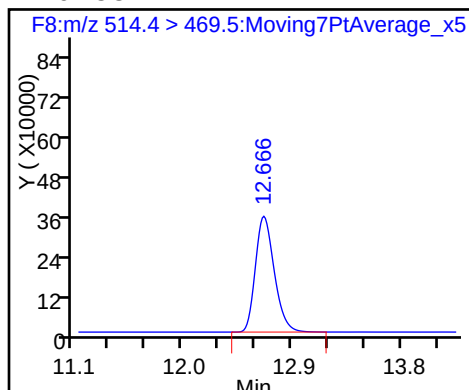
D 17 13C5 PFNA

18 Perfluorononanoic acid

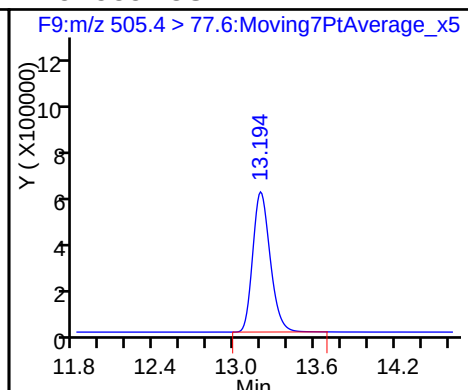
20 Perfluorodecanoic acid



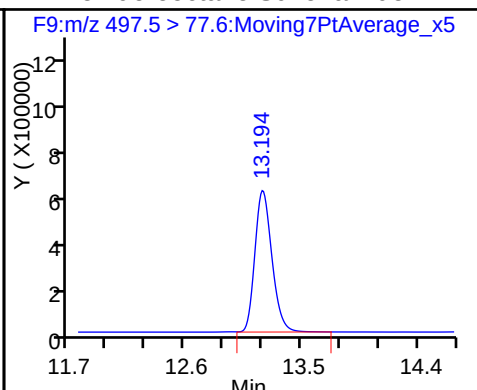
D 19 13C2 PFDA



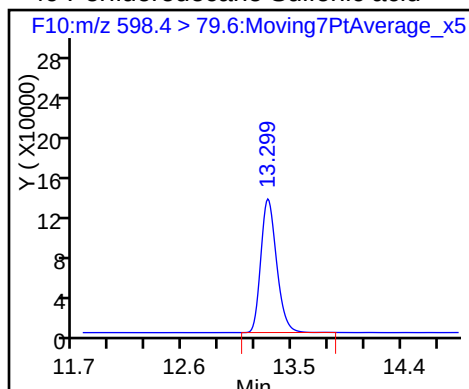
D 23 13C8 FOSA



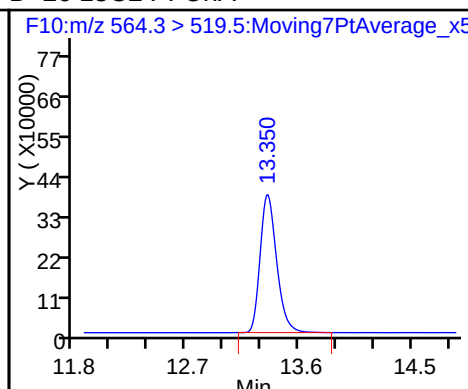
24 Perfluorooctane Sulfonamide



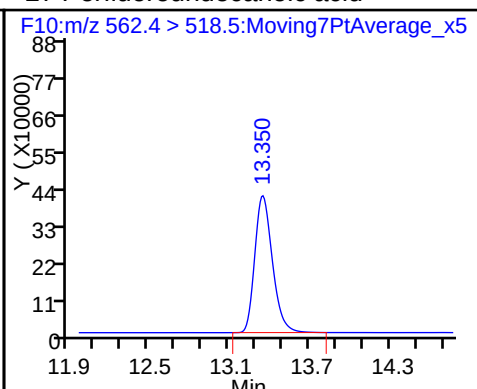
49 Perfluorodecane Sulfonic acid



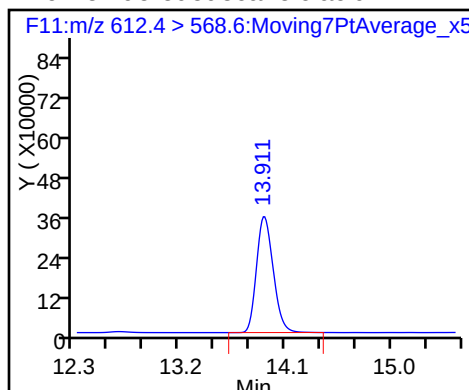
D 26 13C2 PFUnA



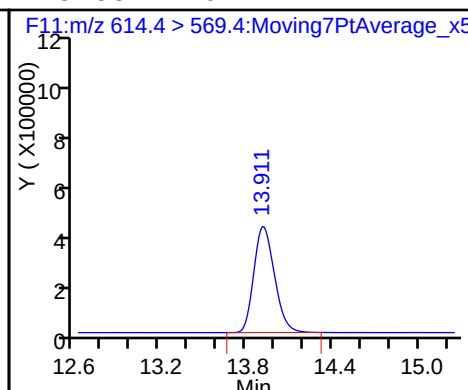
27 Perfluoroundecanoic acid



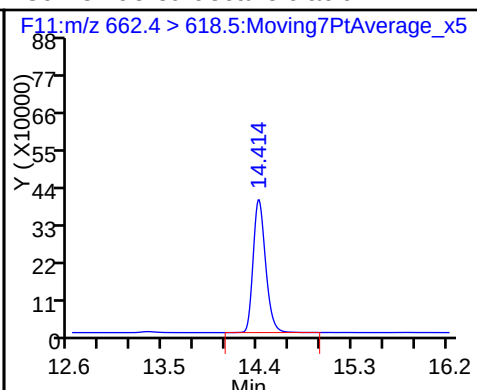
29 Perfluorododecanoic acid



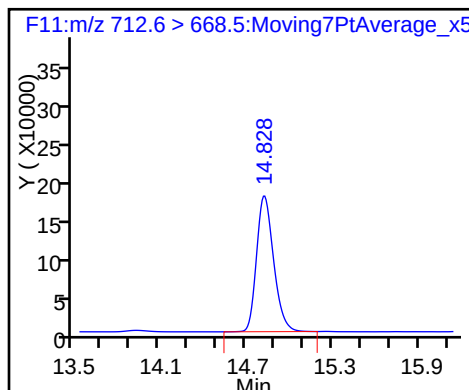
D 28 13C2 PFDaA



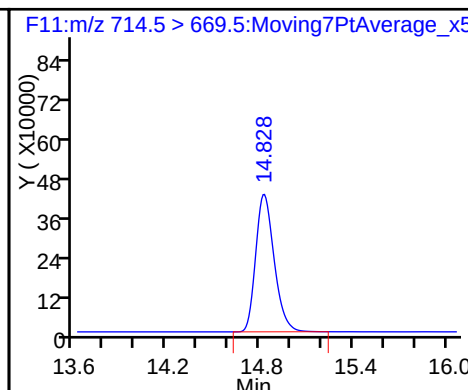
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_011.d
 Lims ID: Std L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 26-Feb-2016 19:13:41 ALS Bottle#: 7 Worklist Smp#: 7
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L6
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:17:52 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 10:57:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.085	6.043	0.042	1.000	8045132	218.6		109	15106	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.085	6.043	0.042	1.000	8045132	210.2		105	15106	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.085	6.043	0.042	1.000	8045132	210.2		105	15106	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.085	6.043	0.042		8045132	114.5		229	15106	
D 1 13C4 PFBA										
216.7 > 171.5	6.082	6.043	0.039		3756568	40.8		81.6	11348	
D 3 13C5-PFPeA										
267.6 > 222.7	7.332	7.272	0.060		2446599	40.6		81.1	5884	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.336	7.275	0.061	1.000	4712598	194.4		97.2	2025	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.465	7.404	0.061	1.000	3383263	NC			4399	
298.8 > 98.6	7.465	7.404	0.061	1.000	2174958		1.56(0.00-0.00)		2203	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.465	7.404	0.061	1.000	3383263	213.2		121		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.714	8.604	0.110	1.000	5881715	197.4		98.7	1986	
D 6 13C2 PFHxA										
314.6 > 269.7	8.706	8.604	0.102		3211197	39.8		79.7	5675	
D 8 13C4-PFHpA										
366.6 > 321.6	10.003	9.856	0.147		2626968	38.7		77.4	3107	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.003	9.859	0.144	1.000	5609888	198.7		99.4	6231	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.037	9.892	0.145	1.000	4975885	185.4		98.0		
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.037	9.892	0.145	1.000	4975885	NC			5118	
D 11 18O2 PFHxS										
402.5 > 83.6	10.046	9.892	0.154		1251868	34.5		73.0	2344	
D 12 13C4 PFOA										
416.5 > 371.6	11.116	10.958	0.158		2810804	35.9		71.7	4955	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.116	10.958	0.158	1.000	5881968	199.2		99.6	3535	
412.8 > 168.7	11.116	10.958	0.158	1.000	2072115		2.84(0.00-0.00)	99.6	3396	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.116	10.960	0.156	1.000	5031569	NC			5624	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.116	10.960	0.156	1.000	5031569	168.7		88.6		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.026	11.874	0.152	1.000	8547545	185.5		97.0	3208	
498.3 > 98.2	12.026	11.874	0.152	1.000	5055541		1.69(0.00-0.00)	97.0	3535	
D 16 13C4 PFOS										
502.4 > 79.7	12.026	11.876	0.150		589650	36.2		75.7	1058	
D 17 13C5 PFNA										
467.5 > 422.6	12.047	11.898	0.149		2692366	41.6		83.1	4296	
18 Perfluorononanoic acid										
462.5 > 418.6	12.047	11.899	0.148	1.000	11320855	198.7		99.3	7127	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.831	12.693	0.138	1.000	10612845	206.5		103	4859	
D 19 13C2 PFDA										
514.4 > 469.5	12.831	12.693	0.138		2921349	36.2		72.4	3674	
D 23 13C8 FOSA										
505.4 > 77.6	13.349	13.222	0.127		4413928	39.0		78.0	3936	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.349	13.222	0.127	1.000	16377419	202.7		101	2857	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.443	13.324	0.119	1.000	3313244	NC			3200	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.443	13.324	0.119	1.000	3313244	169.3		87.8		
D 26 13C2 PFUnA										
564.3 > 519.5	13.485	13.369	0.116		2903023	37.6		75.3	3376	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.485	13.372	0.113	1.000	11973923	187.8		93.9	4039	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.047	13.937	0.110	1.000	12725838	210.0		105	2435	
D 28 13C2 PFDaA										
614.4 > 569.4	14.047	13.939	0.108		3778672	44.3		88.7	2428	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.524	14.430	0.094	1.000	10701081	180.5		90.2	2845	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.929	14.841	0.088	1.000	5351613	189.8		94.9	2191	

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_011.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 33 13C2-PFTeDA

714.5 > 669.5 14.929 14.844 0.085 3106370 45.0 90.0 2017

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_011.d

Injection Date: 26-Feb-2016 19:13:41

Instrument ID: A4

Lims ID: Std L6

Client ID:

Operator ID: JRB

ALS Bottle#: 7

Worklist Smp#: 7

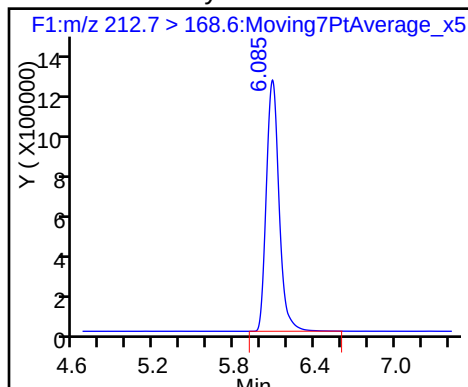
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

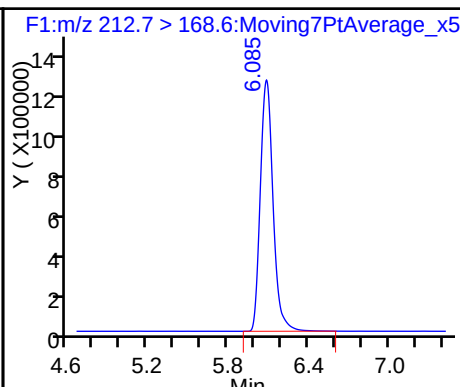
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

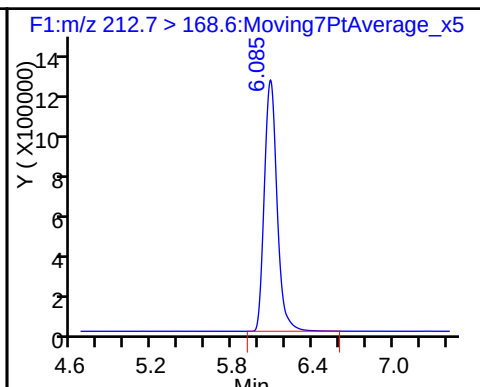
2 Perfluorobutyric acid



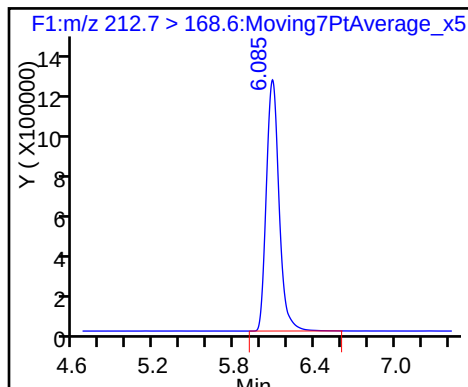
36 Perfluorooctadecanoic acid



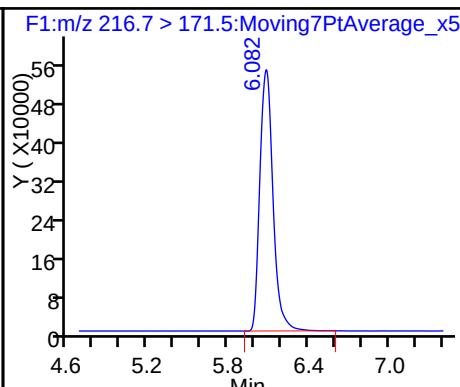
34 Perfluorohexadecanoic acid



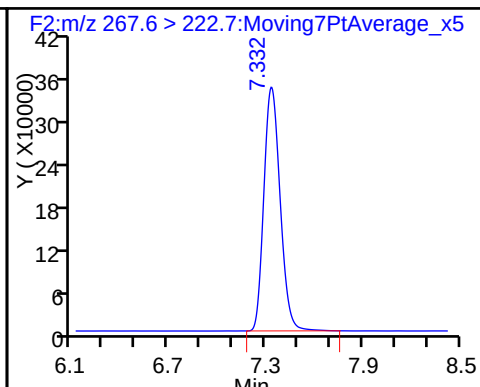
D 35 13C2-PFHxDA



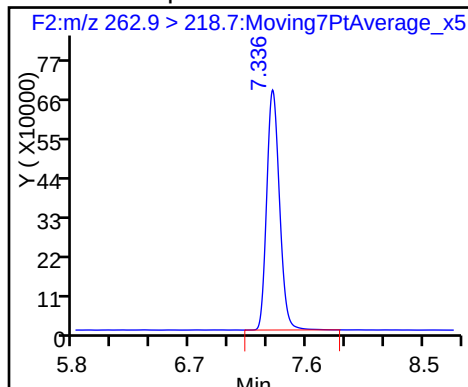
D 1 13C4 PFBA



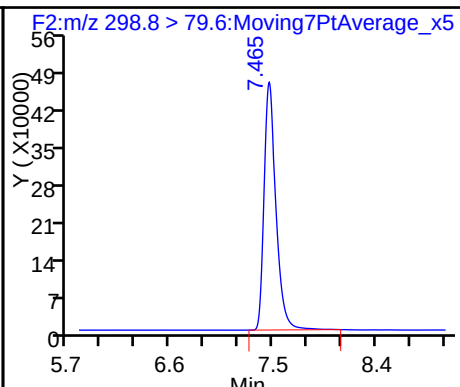
D 3 13C5-PFPeA



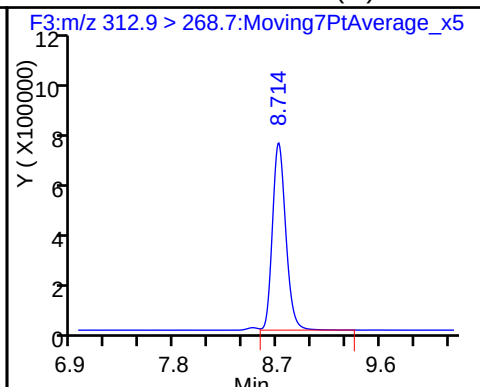
4 Perfluoropentanoic acid



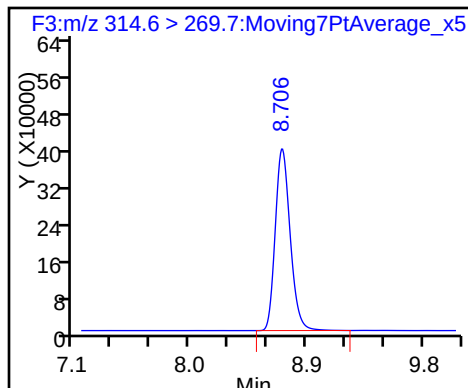
51 Perfluorobutanesulfonic acid



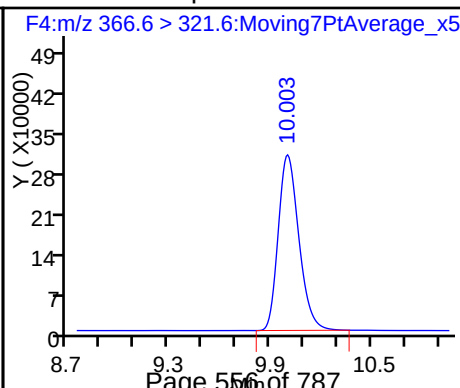
7 Perfluorohexanoic acid (M)



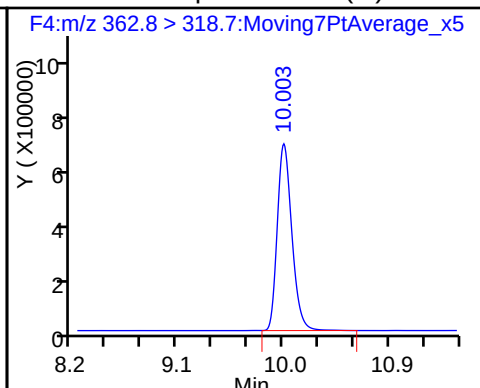
D 6 13C2 PFHxA



D 8 13C4-PFHpA



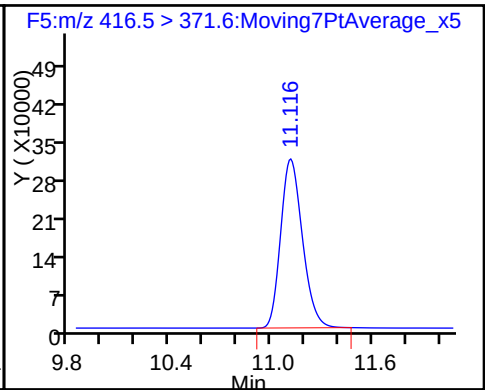
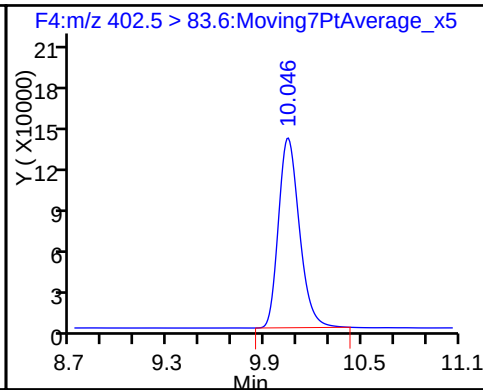
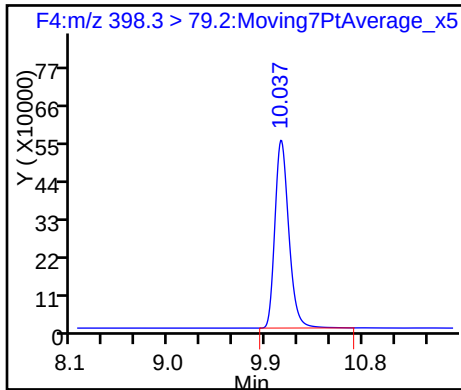
9 Perfluoroheptanoic acid (M)



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

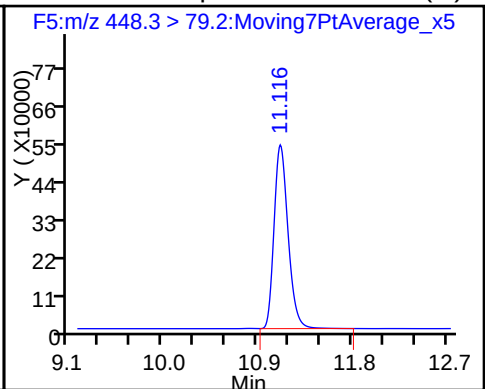
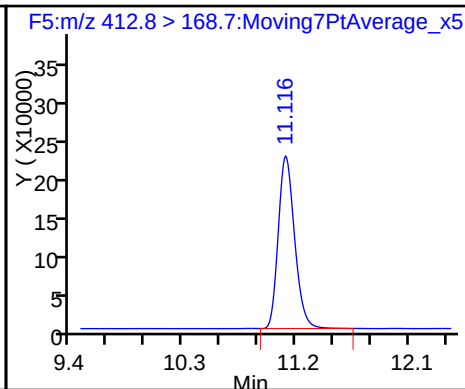
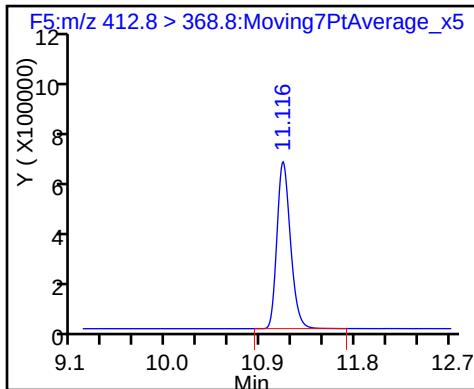
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

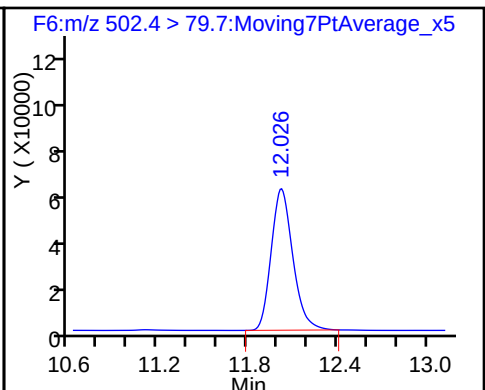
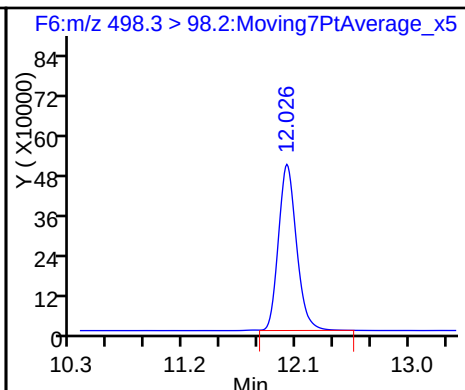
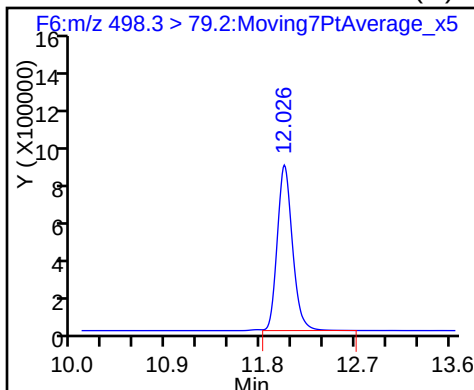
39 Perfluoroheptanesulfonic Acid (M)



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

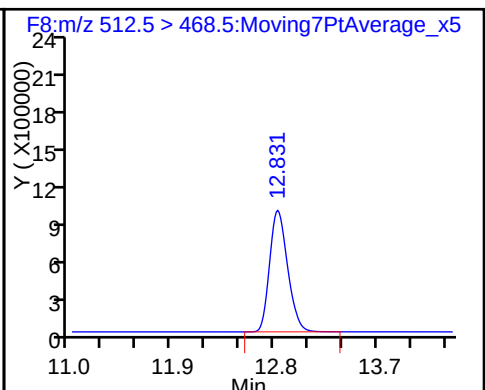
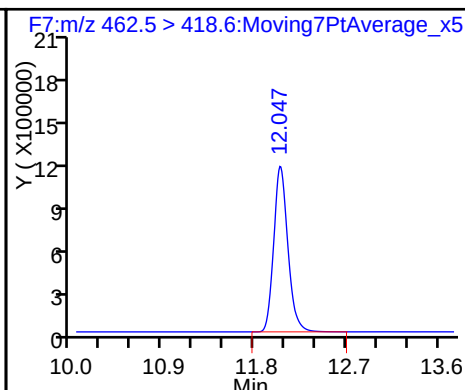
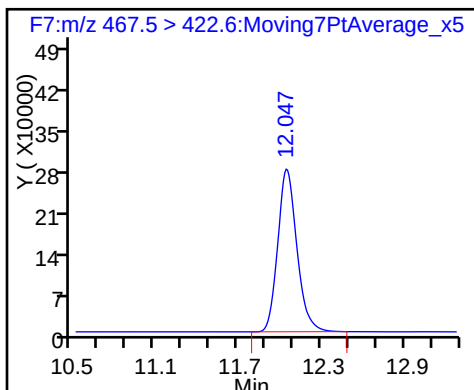
D 16 13C4 PFOS



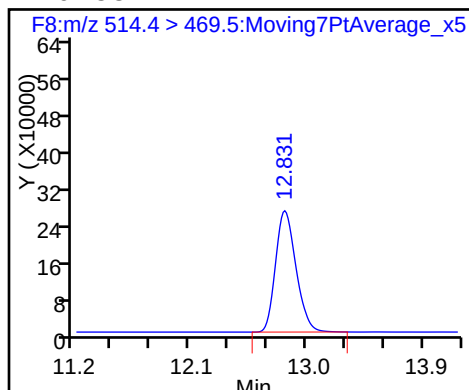
D 17 13C5 PFNA

18 Perfluorononanoic acid

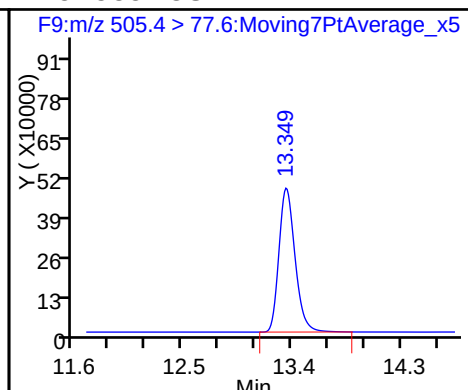
20 Perfluorodecanoic acid



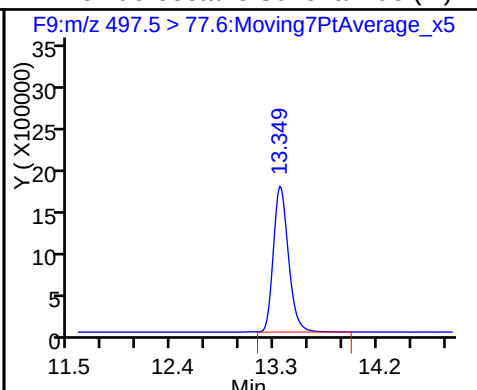
D 19 13C2 PFDA



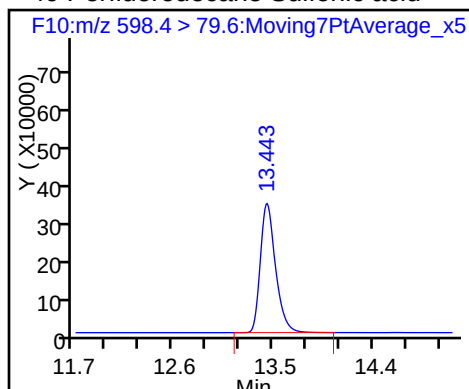
D 23 13C8 FOSA



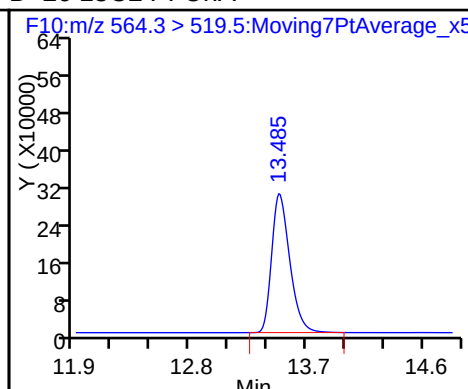
24 Perfluorooctane Sulfonamide (M)



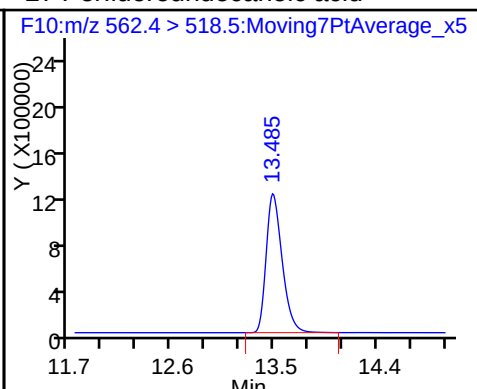
49 Perfluorodecane Sulfonic acid



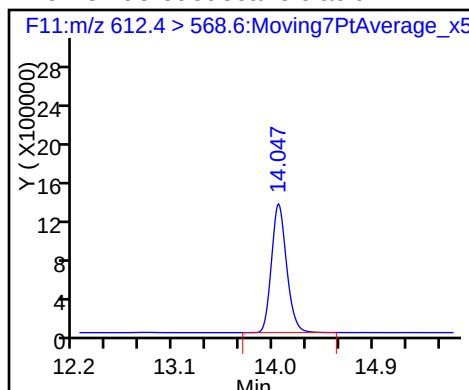
D 26 13C2 PFUnA



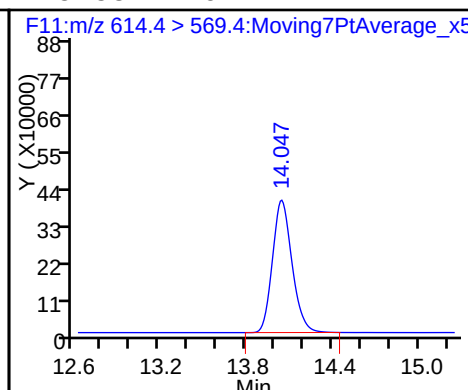
27 Perfluoroundecanoic acid



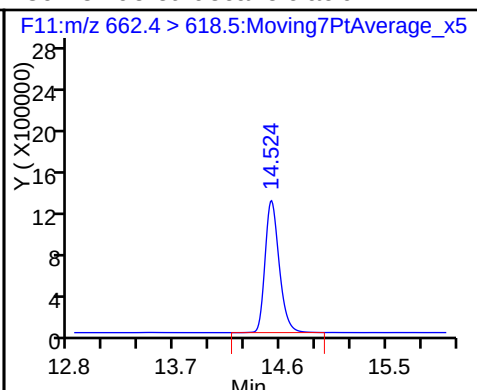
29 Perfluorododecanoic acid



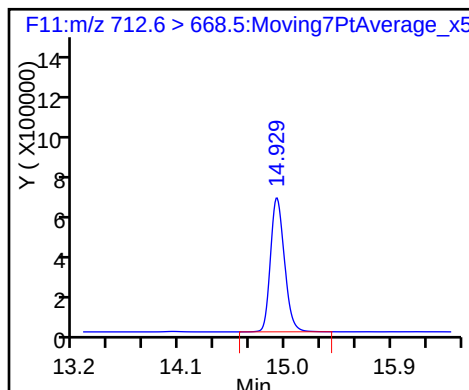
D 28 13C2 PFDaA



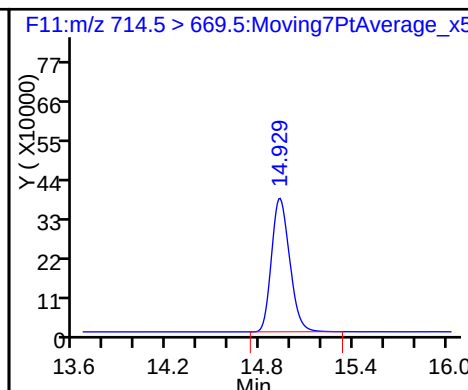
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Lims ID: Std L7
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 26-Feb-2016 19:34:51 ALS Bottle#: 8 Worklist Smp#: 8
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L7
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:18:02 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj Date: 27-Feb-2016 11:05:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.192	6.043	0.149	1.000	13019404	444.8		111	20839	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.192	6.043	0.149	1.000	13019404	399.2		99.8	20839	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.192	6.043	0.149	1.000	13019404	399.2		99.8	20839	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.192	6.043	0.149		13019404	185.3		371	20839	
D 1 13C4 PFBA										
216.7 > 171.5	6.192	6.043	0.149		2987145	32.4		64.9	8072	
D 3 13C5-PFPeA										
267.6 > 222.7	7.493	7.272	0.221		1975114	32.8		65.5	3595	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.497	7.275	0.222	1.000	7659075	391.5		97.9	2796	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.640	7.404	0.236	1.000	5017537	NC			4823	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.640	7.404	0.236	1.000	5017537	409.2		116		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.878	8.604	0.274	1.000	9456149	396.3		99.1	2271	
D 6 13C2 PFHxA										
314.6 > 269.7	8.878	8.604	0.274		2572389	31.9		63.8	5436	
D 8 13C4-PFHpA										
366.6 > 321.6	10.122	9.856	0.266		2186109	32.2		64.4	3667	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.122	9.859	0.263	1.000	8628695	367.2		91.8	5526	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.165	9.892	0.273	1.000	7989673	385.2		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.165	9.892	0.273	1.000	7989673	NC			5939	
D 11 18O2 PFHxS										
402.5 > 83.6	10.165	9.892	0.273		967433	26.7		56.4	1667	
D 12 13C4 PFOA										
416.5 > 371.6	11.208	10.958	0.250		2337137	29.8		59.6	3071	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.208	10.958	0.250	1.000	9108302	370.9		92.7	4732	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.208	10.960	0.248	1.000	7750764	NC			5723	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.208	10.960	0.248	1.000	7750764	347.7		91.3		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.095	11.874	0.221	1.000	13988180	406.2		106	3269	
D 16 13C4 PFOS										
502.4 > 79.7	12.105	11.876	0.229		440790	27.0		56.6	672	
D 17 13C5 PFNA										
467.5 > 422.6	12.126	11.898	0.228		2366713	36.5		73.1	3671	
18 Perfluorononanoic acid										
462.5 > 418.6	12.126	11.899	0.227	1.000	19197306	383.0		95.8	7006	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.895	12.693	0.202	1.000	18831586	425.5		106	4841	
D 19 13C2 PFDA										
514.4 > 469.5	12.895	12.693	0.202		2515187	31.1		62.3	3552	
D 23 13C8 FOSA										
505.4 > 77.6	13.421	13.222	0.199		3744575	33.1		66.2	2891	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.421	13.222	0.199	1.000	28457057	415.1		104	3000	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.505	13.324	0.181	1.000	4978145	NC			2582	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.505	13.324	0.181	1.000	4978145	340.2		88.2		
D 26 13C2 PFUnA										
564.3 > 519.5	13.553	13.369	0.184		2553333	33.1		66.2	2499	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.553	13.372	0.181	1.000	20407183	363.9		91.0	3490	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.099	13.937	0.162	1.000	20258578	392.4		98.1	2532	
D 28 13C2 PFDoA										
614.4 > 569.4	14.099	13.939	0.160		3219090	37.8		75.5	2504	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.579	14.430	0.149	1.000	17988306	356.1		89.0	2727	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.975	14.841	0.134	1.000	8769485	365.1		91.3	2381	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.975	14.844	0.131		2632793	38.1		76.3	2313	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L7_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Injection Date: 26-Feb-2016 19:34:51

Instrument ID: A4

Lims ID: Std L7

Client ID:

Operator ID: JRB

ALS Bottle#: 8

Worklist Smp#: 8

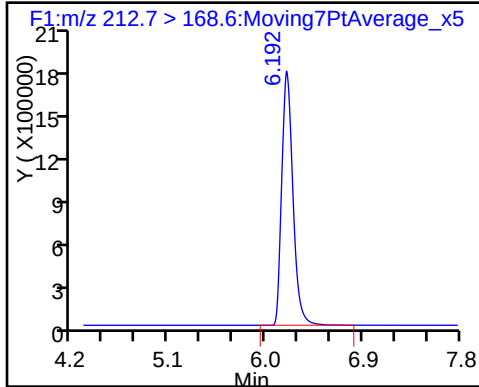
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

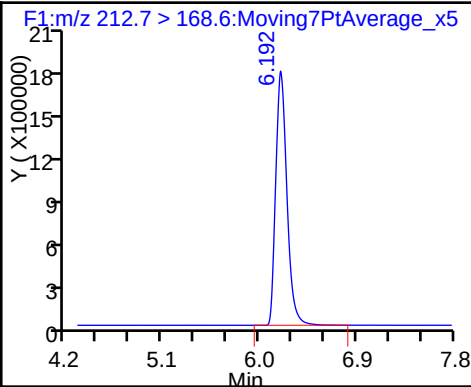
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

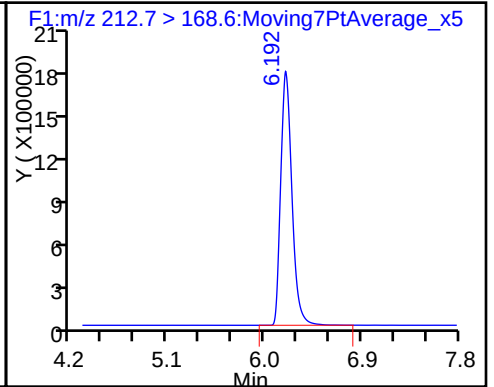
2 Perfluorobutyric acid



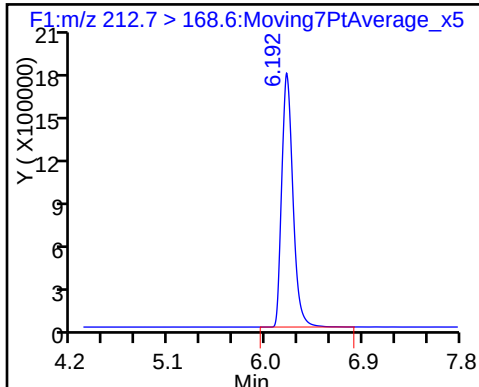
36 Perfluorooctadecanoic acid



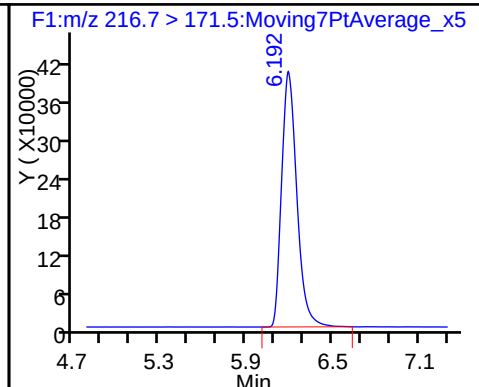
34 Perfluorohexadecanoic acid



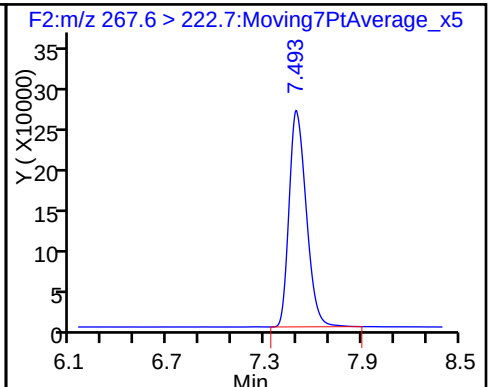
D 35 13C2-PFHxDA



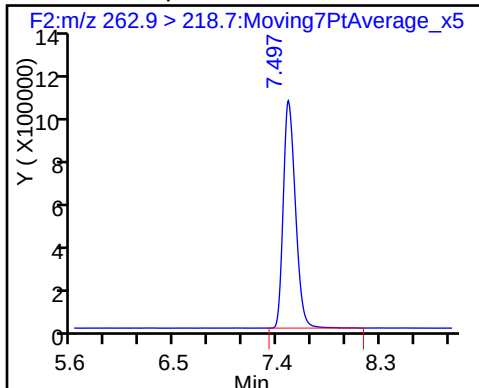
D 1 13C4 PFBA



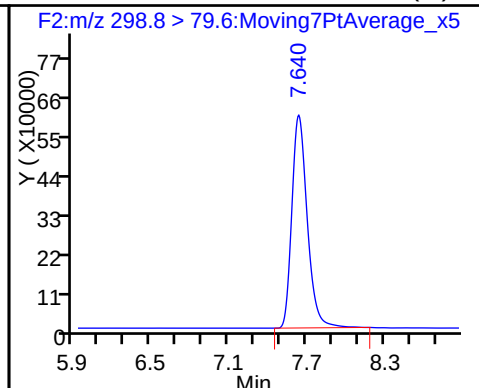
D 3 13C5-PFPeA



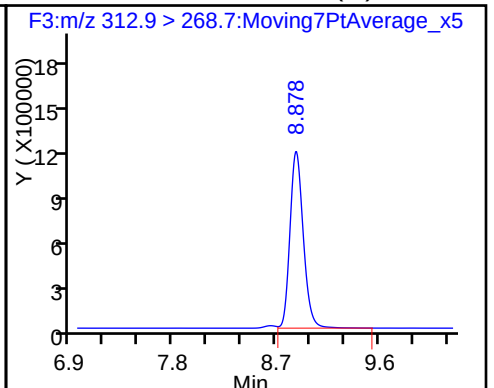
4 Perfluoropentanoic acid



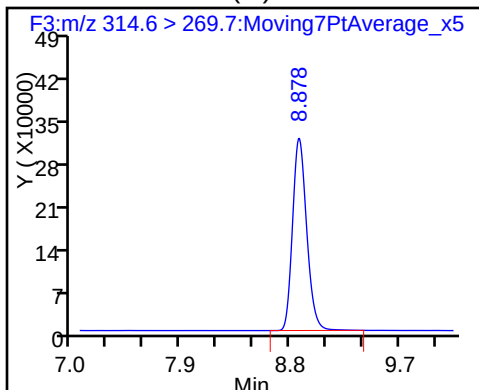
51 Perfluorobutanesulfonic acid (M)



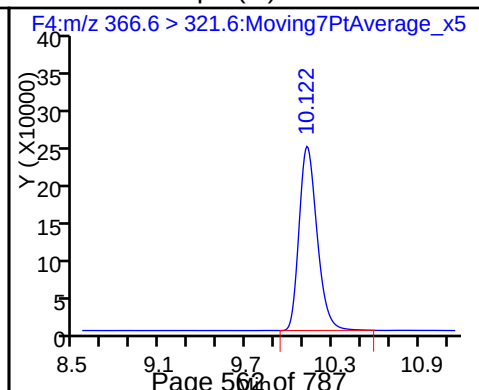
7 Perfluorohexanoic acid (M)



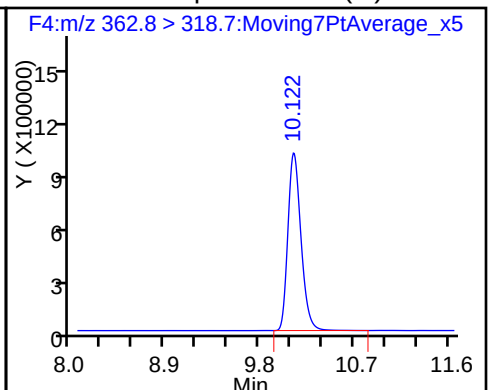
D 6 13C2 PFHxA (M)



D 8 13C4-PFHpA (M)



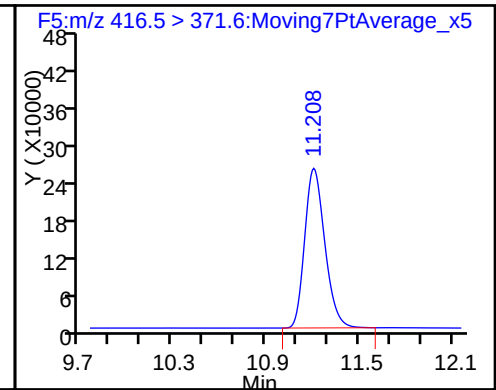
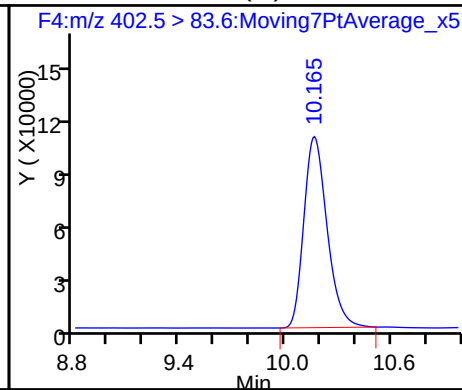
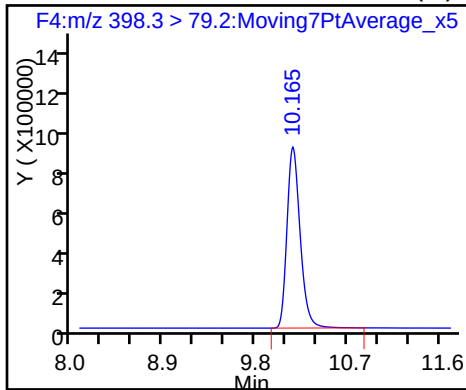
9 Perfluoroheptanoic acid (M)



58 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS (M)

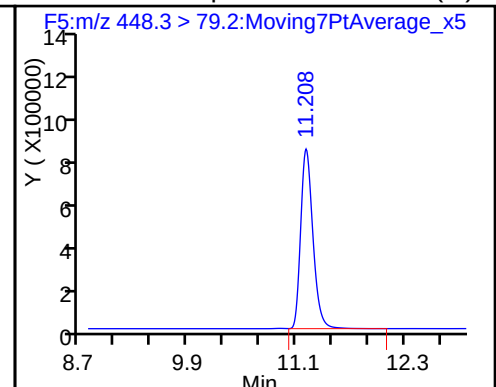
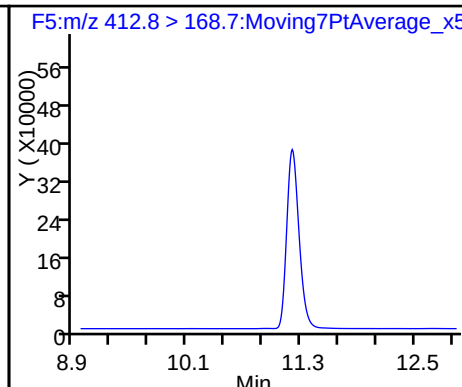
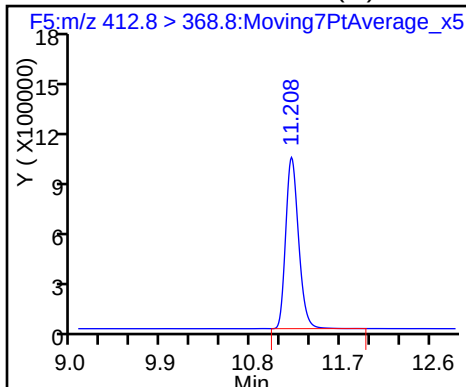
D 12 13C4 PFOA



13 Perfluorooctanoic acid (M)

13 Perfluorooctanoic acid

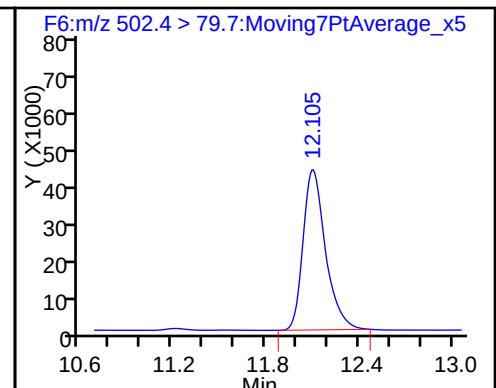
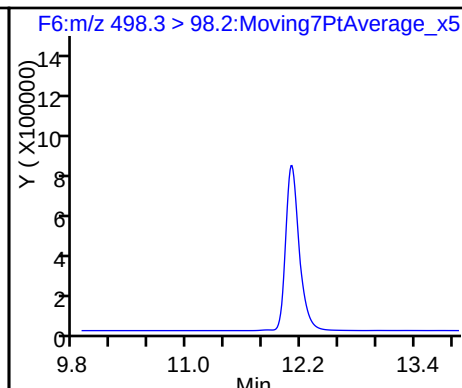
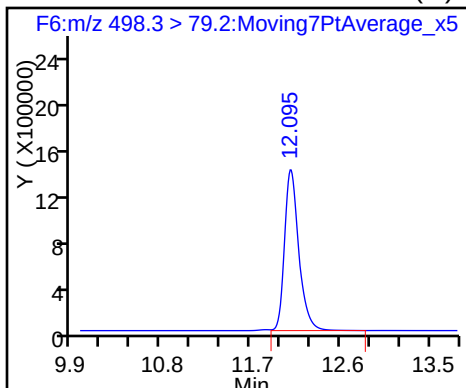
39 Perfluoroheptanesulfonic Acid (M)



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

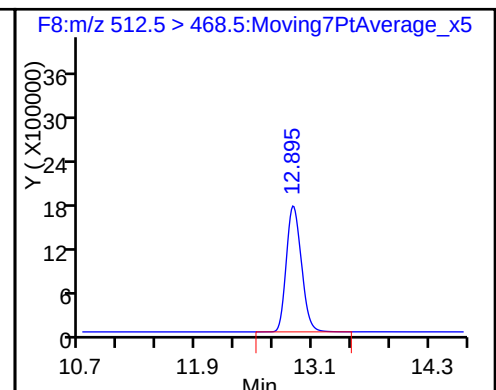
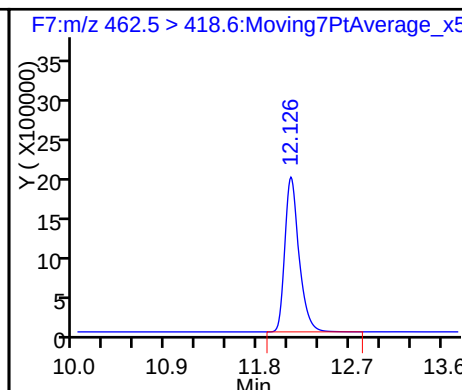
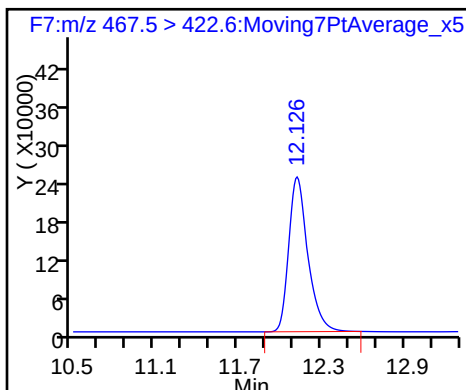
D 16 13C4 PFOS



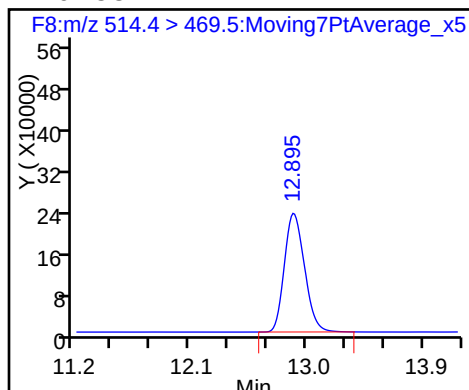
D 17 13C5 PFNA

18 Perfluorononanoic acid

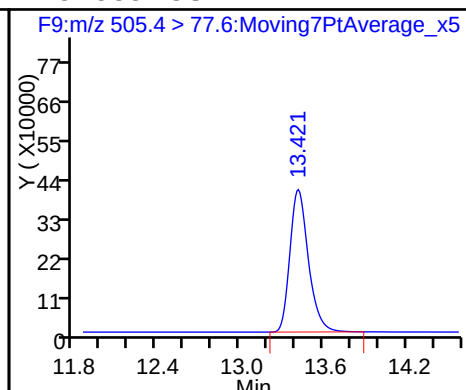
20 Perfluorodecanoic acid



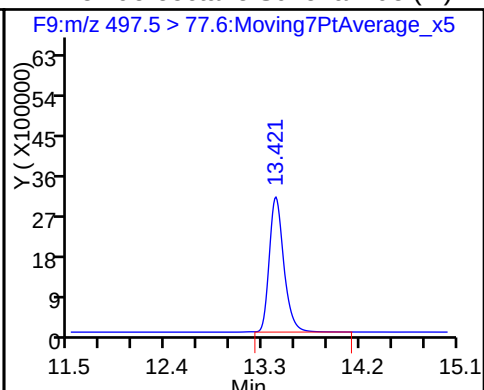
D 19 13C2 PFDA



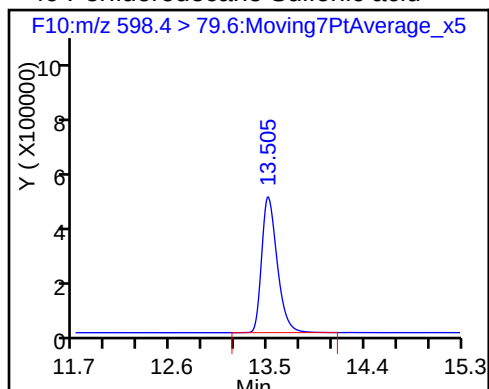
D 23 13C8 FOSA



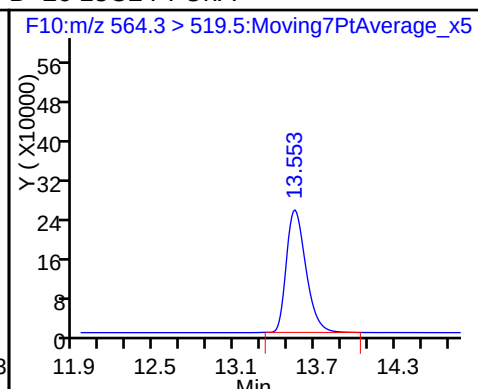
24 Perfluorooctane Sulfonamide (M)



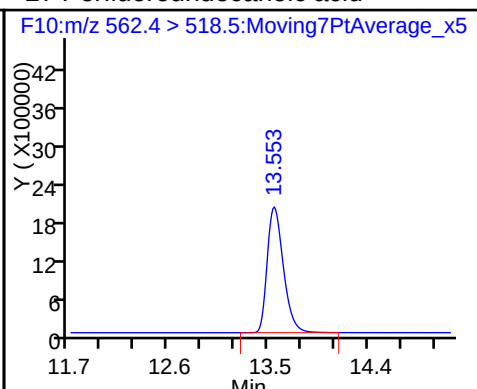
49 Perfluorodecane Sulfonic acid



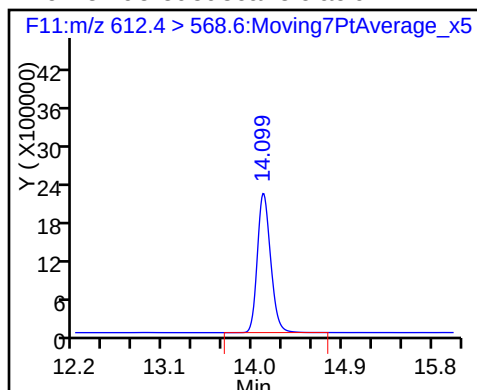
D 26 13C2 PFUnA



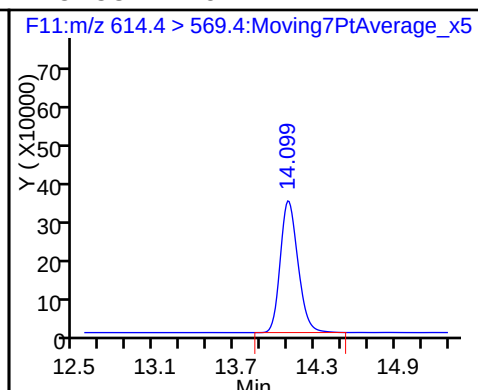
27 Perfluoroundecanoic acid



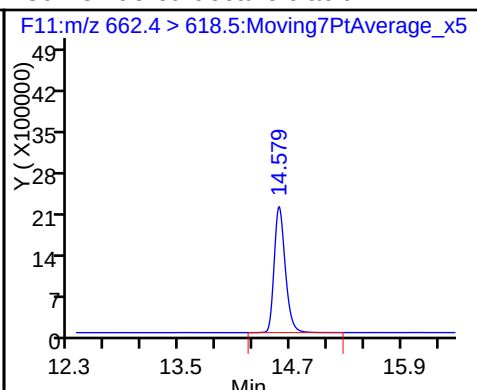
29 Perfluorododecanoic acid



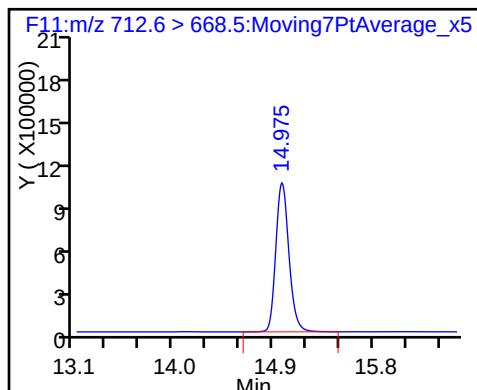
D 28 13C2 PFDaA



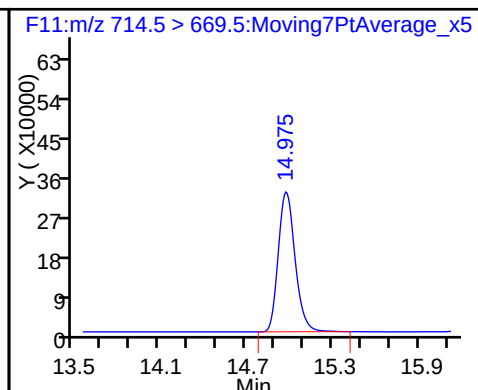
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101853

SDG No.: _____

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

Calibration Start Date: 02/28/2016 14:34 Calibration End Date: 02/28/2016 16:42 Calibration ID: 19421

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101853/3	28FEB2016A6A_004.d
Level 2	STD 320-101853/4	28FEB2016A6A_005.d
Level 3	STD 320-101853/5	28FEB2016A6A_006.d
Level 4	STD 320-101853/6	28FEB2016A6A_007.d
Level 5	STD 320-101853/7	28FEB2016A6A_008.d
Level 6	STD 320-101853/8	28FEB2016A6A_009.d
Level 7	STD 320-101853/9	28FEB2016A6A_010.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	++++	5.694	5.696	5.690	5.684	5.687	++++				5.441 - 5.941	5.690
Perfluoropentanoic acid (PFPeA)	++++	6.795	6.794	6.786	6.785	6.785	++++				6.540 - 7.040	6.789
Perfluorobutanesulfonic acid (PFBS)	++++	6.914	6.914	6.896	6.896	6.896	++++				6.655 - 7.155	6.903
Perfluorohexanoic acid (PFHxA)	8.056	8.045	8.045	8.029	8.029	8.029	8.029				7.787 - 8.287	8.037
Perfluoroheptanoic acid (PFHpA)	++++	9.270	9.269	9.258	9.252	9.252	++++				9.012 - 9.512	9.260
Perfluorohexanesulfonic acid (PFHxS)	9.311	9.299	9.305	9.293	9.287	9.287	++++				9.046 - 9.546	9.297
Perfluorooctanoic acid (PFOA)	10.398	10.398	10.398	10.384	10.384	10.377	++++				10.138 - 10.638	10.390
Perfluoroheptanesulfonic Acid (PFHpS)	10.412	10.405	10.398	10.391	10.384	10.384	++++				10.144 - 10.644	10.396
Perfluorooctanesulfonic acid (PFOS)	++++	11.356	11.355	11.348	11.341	11.341	++++				11.100 - 11.600	11.348
Perfluorononanoic acid (PFNA)	++++	11.386	11.378	11.364	11.364	11.357	++++				11.120 - 11.620	11.370
Perfluorodecanoic acid (PFDA)	++++	12.225	12.214	12.204	12.204	12.203	++++				11.963 - 12.463	12.210
Perfluorooctane Sulfonamide (FOSA)	++++	12.764	12.763	12.753	12.752	12.753	12.757				12.509 - 13.009	12.757
Perfluorodecane Sulfonic acid	12.898	12.889	12.888	12.889	12.888	12.878	++++				12.638 - 13.138	12.888
Perfluoroundecanoic acid (PFUnA)	++++	12.951	12.940	12.930	12.930	12.930	++++				12.688 - 13.188	12.936
Perfluorododecanoic acid (PFDoA)	++++	13.561	13.551	13.552	13.542	13.542	++++				13.302 - 13.802	13.550
Perfluorotridecanoic Acid (PFTriA)	++++	14.087	14.079	14.071	14.071	14.063	++++				13.825 - 14.325	14.074
Perfluorotetradecanoic acid (PFTeA)	++++	14.527	14.520	14.514	14.513	14.507	++++				14.267 - 14.767	14.516
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	15.171	15.170	15.166	15.165	15.161	++++				14.916 - 15.416	15.167
Perfluoro-n-octadecanoic acid (PFODA)	15.504	15.497	15.502	15.497	15.492	15.492	++++				15.246 - 15.746	15.497
13C4 PFBA	5.699	5.694	5.696	5.687	5.690	5.687	++++				5.441 - 5.941	5.692
13C5-PFPeA	6.799	6.795	6.794	6.786	6.785	6.785	++++				6.541 - 7.041	6.791
13C2 PFHxA	8.045	8.045	8.040	8.029	8.029	8.029	8.029				7.785 - 8.285	8.035
13C4-PFHpA	9.276	9.270	9.269	9.258	9.252	9.246	++++				9.011 - 9.511	9.262
18O2 PFHxS	9.311	9.305	9.305	9.293	9.287	9.287	++++				9.047 - 9.547	9.298
13C4 PFOA	10.405	10.398	10.398	10.384	10.384	10.377	++++				10.139 - 10.639	10.391
13C4 PFOS	11.363	11.356	11.355	11.348	11.341	11.341	++++				11.100 - 11.600	11.351
13C5 PFNA	11.386	11.379	11.371	11.364	11.364	11.357	++++				11.118 - 11.618	11.370
13C2 PFDA	12.224	12.225	12.214	12.204	12.204	12.203	++++				11.962 - 12.462	12.212
13C8 FOSA	12.772	12.764	12.763	12.753	12.752	12.753	12.757				12.509 - 13.009	12.759
13C2 PFUnA	12.950	12.941	12.940	12.930	12.930	12.930	++++				12.686 - 13.186	12.937
13C2 PFDoA	13.560	13.561	13.551	13.552	13.542	13.542	++++				13.300 - 13.800	13.551
13C2-PFTeDA	14.526	14.521	14.520	14.514	14.513	14.507	14.509				14.266 - 14.766	14.516
13C2-PFHxDA	15.173	15.171	15.170	15.166	15.165	15.161	15.158				14.916 - 15.416	15.166

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

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101853

SDG No.: _____

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

Calibration Start Date: 02/28/2016 14:34 Calibration End Date: 02/28/2016 16:42 Calibration ID: 19421

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101853/3	28FEB2016A6A_004.d
Level 2	STD 320-101853/4	28FEB2016A6A_005.d
Level 3	STD 320-101853/5	28FEB2016A6A_006.d
Level 4	STD 320-101853/6	28FEB2016A6A_007.d
Level 5	STD 320-101853/7	28FEB2016A6A_008.d
Level 6	STD 320-101853/8	28FEB2016A6A_009.d
Level 7	STD 320-101853/9	28FEB2016A6A_010.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	19584 17011	19689 16355	19219 ++++	16924	Ave		18130.4900				8.4		50.0			
13C5-PFPeA	40731 33309	39071 31642	36253 ++++	33213	Ave		35703.1400				10.1		50.0			
13C2 PFHxA	33240 28165	33862 27231	29964 20738	28430	Ave		28804.2771				15.2		50.0			
13C4-PFHpA	36513 31210	38322 30163	33864 ++++	30901	Ave		33495.5033				10.0		50.0			
18O2 PFHxS	16401 14006	16340 13512	14010 ++++	12885	Ave		14525.5144				10.2		50.0			
13C4 PFOA	39410 34073	40826 29973	38466 ++++	32714	Ave		35910.5167				11.9		50.0			
13C4 PFOS	18748 15044	18226 13866	17471 ++++	16151	Ave		16584.5572				11.5		50.0			
13C5 PFNA	34115 28173	34006 27405	31632 ++++	29361	Ave		30781.8100				9.5		50.0			
13C2 PFDA	31514 23913	32247 24853	28434 ++++	26188	Ave		27858.0667				12.5		50.0			
13C8 FOSA	43867 39416	44528 41934	43773 29580	38542	Ave		40234.2314				13.0		50.0			
13C2 PFUnA	42494 32914	41041 32883	37801 ++++	35662	Ave		37132.3067				10.9		50.0			
13C2 PFDoA	46523 38048	44316 36620	44032 ++++	37974	Ave		41252.0067				10.1		50.0			
13C2-PFTeDA	39810 33252	38383 32983	35566 24541	32546	Ave		33868.6343				14.7		50.0			
13C2-PFHxDA	46076 37274	43990 39995	42295 27573	34399	Ave		38800.3429				16.3		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-17406-1Analy Batch No.: 101853

SDG No.: _____

Instrument ID: A6GC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 02/28/2016 14:34Calibration End Date: 02/28/2016 16:42Calibration ID: 19421

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	++++ 23423	18822 ++++	25703	22648	24301	L2ID	-0.459	1.4155							0.9990		0.9900
Perfluoropentanoic acid (PFPeA)	++++ 31373	29109 ++++	34745	33245	32783	AveID		0.9360				11.5		35.0			
Perfluorobutanesulfonic acid (PFBS)	++++ 15050	13583 ++++	15023	15121	15312	L2ID	-0.266	1.1334							0.9990		0.9900
Perfluorohexanoic acid (PFHxA)	31836 31014	27522 21989	31265	31682	31524	AveID		1.0353				11.2		35.0			
Perfluoroheptanoic acid (PFHpA)	++++ 31351	28605 ++++	32917	38494	33547	L2ID	-0.369	1.1099							0.9920		0.9900
Perfluorohexanesulfonic acid (PFHxS)	9657.5 9837.6	8818.2 ++++	10329	9854.4	10611	L2ID	-0.094	0.7405							0.9930		0.9900
Perfluorooctanoic acid (PFOA)	34612 29292	41404 ++++	33316	31940	32004	AveID		0.9419				6.3		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	7275.2 10000. 0	9998.9 ++++	11212	9772.3	10903	L2ID	-0.140	0.6853							0.9950		0.9900
Perfluorooctanesulfonic acid (PFOS)	++++ 14178	14361 ++++	16568	14871	15351	L2ID	-0.199	0.9930							0.9980		0.9900
Perfluorononanoic acid (PFNA)	++++ 22768	27262 ++++	26650	25299	23805	AveID		0.8363				2.7		35.0			
Perfluorodecanoic acid (PFDA)	++++ 23259	26600 ++++	30254	25652	24097	L2ID	-0.161	1.0035							0.9960		0.9900
Perfluorooctane Sulfonamide (FOSA)	++++ 35709	36190 25947	34656	33315	34626	AveID		0.8460				4.2		35.0			
Perfluorodecane Sulfonic acid	3971.0 8157.0	7715.8 ++++	10657	9617.9	9594.3	L2ID	-0.195	0.6217							0.9980		0.9900
Perfluoroundecanoic acid (PFUnA)	++++ 26512	46155 ++++	34175	32008	28182	L2ID	0.2805	0.8462							0.9990		0.9900
Perfluorododecanoic acid (PFDoA)	++++ 28529	32071 ++++	32832	29597	29906	AveID		0.7628				3.5		35.0			
Perfluorotridecanoic Acid (PFTriA)	++++ 31435	37470 ++++	40311	38165	39160	AveID		0.9307				9.0		50.0			
Perfluorotetradecanoic acid (PFTeA)	++++ 21301	33855 ++++	28949	21822	22994	AveID		0.6364				12.3		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 37118	158240 ++++	63604	39437	38973	L2ID	2.6104	0.9527							0.9980		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	50924 39059	38954 ++++	42009	36123	39466	AveID		0.9971				8.3		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101853

SDG No.: _____

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

Calibration Start Date: 02/28/2016 14:34 Calibration End Date: 02/28/2016 16:42 Calibration ID: 19421

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101853/3	28FEB2016A6A_004.d
Level 2	STD 320-101853/4	28FEB2016A6A_005.d
Level 3	STD 320-101853/5	28FEB2016A6A_006.d
Level 4	STD 320-101853/6	28FEB2016A6A_007.d
Level 5	STD 320-101853/7	28FEB2016A6A_008.d
Level 6	STD 320-101853/8	28FEB2016A6A_009.d
Level 7	STD 320-101853/9	28FEB2016A6A_010.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4 PFBA	Ave	979200 817767	984450 +++++	960959	846208	850563	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C5-PFPeA	Ave	2036563 1582076	1953543 +++++	1812658	1660631	1665471	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C2 PFHxA	Ave	1661989 1361540	1693096 1036911	1498182	1421506	1408273	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	1825664 1508133	1916114 +++++	1693190	1545072	1560478	50.0 50.0	50.0 +++++	50.0	50.0	50.0
18O2 PFHxS	Ave	775761 639112	772880 +++++	662651	609473	662464	47.3 47.3	47.3 +++++	47.3	47.3	47.3
13C4 PFOA	Ave	1970490 1498665	2041318 +++++	1923297	1635713	1703672	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C4 PFOS	Ave	896171 662814	871222 +++++	835130	772004	719110	47.8 47.8	47.8 +++++	47.8	47.8	47.8
13C5 PFNA	Ave	1705734 1370227	1700277 +++++	1581593	1468067	1408645	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C2 PFDA	Ave	1575702 1242628	1612362 +++++	1421698	1309393	1195637	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C8 FOSA	Ave	2193351 2096682	2226420 1478994	2188642	1927096	1970796	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	2124692 1644138	2052045 +++++	1890050	1783076	1645691	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C2 PFDoA	Ave	2326165 1831012	2215785 +++++	2201586	1898678	1902376	50.0 50.0	50.0 +++++	50.0	50.0	50.0
13C2-PFTeDA	Ave	1990501 1649127	1919146 1227060	1778317	1627294	1662577	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	2303819 1999742	2199518 1378626	2114742	1719958	1863715	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101853

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 02/28/2016 14:34 Calibration End Date: 02/28/2016 16:42 Calibration ID: 19421

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-101853/3	28FEB2016A6A_004.d
Level 2	STD 320-101853/4	28FEB2016A6A_005.d
Level 3	STD 320-101853/5	28FEB2016A6A_006.d
Level 4	STD 320-101853/6	28FEB2016A6A_007.d
Level 5	STD 320-101853/7	28FEB2016A6A_008.d
Level 6	STD 320-101853/8	28FEB2016A6A_009.d
Level 7	STD 320-101853/9	28FEB2016A6A_010.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		L2ID	++++ 4684543	18822 ++++	128513	452955	1215058	++++ 200	1.00 ++++	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	++++ 6274584	29109 ++++	173723	664899	1639138	++++ 200	1.00 ++++	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		L2ID	++++ 2660905	12007 ++++	66400	267339	676781	++++ 177	0.884 ++++	4.42	17.7	44.2
Perfluorohexanoic acid (PFHxA)		AveID	15918 6202725	27522 8795496	156327	633646	1576176	0.500 200	1.00 400	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		L2ID	++++ 6270226	28605 ++++	164583	769876	1677365	++++ 200	1.00 ++++	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		L2ID	4568 1861271	8342 ++++	48857	186445	501905	0.473 189	0.946 ++++	4.73	18.9	47.3
Perfluorooctanoic acid (PFOA)		AveID	17306 5858438	41404 ++++	166578	638806	1600202	0.500 200	1.00 ++++	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		L2ID	3463 1903998	9519 ++++	53368	186064	518970	0.476 190	0.952 ++++	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		L2ID	++++ 2710883	13729 ++++	79196	284335	733760	++++ 191	0.956 ++++	4.78	19.1	47.8
Perfluorononanoic acid (PFNA)		AveID	++++ 4553684	27262 ++++	133249	505984	1190255	++++ 200	1.00 ++++	5.00	20.0	50.0
Perfluorodecanoic acid (PFDA)		L2ID	++++ 4651727	26600 ++++	151269	513040	1204845	++++ 200	1.00 ++++	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	++++ 7141798	36190 10378766	173281	666290	1731319	++++ 200	1.00 400	5.00	20.0	50.0
Perfluorodecane Sulfonic acid		L2ID	1914 1572661	7438 ++++	51368	185433	462443	0.482 193	0.964 ++++	4.82	19.3	48.2
Perfluoroundecanoic acid (PFUnA)		L2ID	++++ 5302451	46155 ++++	170873	640155	1409118	++++ 200	1.00 ++++	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	++++ 5705818	32071 ++++	164160	591948	1495316	++++ 200	1.00 ++++	5.00	20.0	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1 Analy Batch No.: 101853

SDG No.: _____

Instrument ID: A6 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 02/28/2016 14:34 Calibration End Date: 02/28/2016 16:42 Calibration ID: 19421

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorotridecanoic Acid (PFTriA)		AveID	+++++ 6287027	37470 +++++	201553	763304	1957986	+++++ 200	1.00 +++++	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	+++++ 4260180	33855 +++++	144744	436448	1149682	+++++ 200	1.00 +++++	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 7423561	158240 +++++	318020	788743	1948669	+++++ 200	1.00 +++++	5.00	20.0	50.0
Perfluoro-n-octandecanoic acid (PFODA)		AveID	25462 7811741	38954 +++++	210043	722452	1973299	0.500 200	1.00 +++++	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
 L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_004.d
 Lims ID: Std L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 28-Feb-2016 14:34:53 ALS Bottle#: 9 Worklist Smp#: 3
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L1
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:04 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.699	5.691	0.008	1.000	10187	0.6917		138	425	
D 1 13C4 PFBA										
217.0 > 172.0	5.699	5.691	0.008		979200	54.0		108	94796	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.799	6.790	0.009	1.000	21447	0.5625		113	4.0	
D 3 13C5-PFPeA										
267.9 > 223.0	6.799	6.791	0.008		2036563	57.0		114	57860	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.919	6.905	0.014	1.000	5924	NC			1.1	
298.9 > 99.0	6.910	6.905	0.005	0.999	1974		3.00(0.00-0.00)		0.8	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.919	6.905	0.014	1.000	5924	0.5530		125		
D 6 13C2 PFHxA										
315.0 > 270.0	8.045	8.035	0.010		1661989	57.7		115	24546	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.056	8.037	0.019	1.000	15918	0.4626		92.5	1328	
D 8 13C4-PFHpA										
367.0 > 322.0	9.276	9.261	0.015		1825664	54.5		109	147614	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.281	9.262	0.019	1.000	25384	0.9592		192	220	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.311	9.296	0.015	1.000	4568	0.5036		106		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.311	9.296	0.015	1.000	4568	NC			212	
D 11 18O2 PFHxS										
403.0 > 84.0	9.311	9.297	0.014		775761	53.4		113	24863	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.398	10.388	0.010	1.000	17306	0.4662		93.2	72.8	
413.0 > 169.0	10.398	10.388	0.010	1.000	4464		3.88(0.00-0.00)	93.2	42.8	
D 12 13C4 PFOA										
417.0 > 372.0	10.405	10.389	0.016		1970490	54.9		110	145488	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.412	10.394	0.018	1.000	3463	NC			295	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.412	10.394	0.018	1.000	3463	0.4742		99.6		
D 16 13C4 PFOS										
503.0 > 80.0	11.363	11.350	0.013		896171	54.0		113	11090	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.363	11.350	0.013	1.000	6925	0.5722		120	500	
499.0 > 99.0	11.355	11.350	0.005	0.999	4864		1.42(0.00-0.00)	120	421	
D 17 13C5 PFNA										
468.0 > 423.0	11.386	11.368	0.018		1705734	55.4		111	12067	
18 Perfluorononanoic acid										
463.0 > 419.0	11.386	11.370	0.016	1.000	9377	0.3287		65.7	617	
D 19 13C2 PFDA										
515.0 > 470.0	12.224	12.212	0.012		1575702	56.6		113	98212	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.234	12.213	0.021	1.000	27562	1.03		206	1745	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.772	12.759	0.013	1.000	8823	0.2377		47.5	497	
D 23 13C8 FOSA										
506.0 > 78.0	12.772	12.759	0.013		2193351	54.5		109	3639	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.898	12.888	0.010	1.000	1914	NC			123	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.898	12.888	0.010	1.000	1914	0.4783		99.2		
D 26 13C2 PFUnA										
565.0 > 520.0	12.950	12.936	0.014		2124692	57.2		114	128842	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.950	12.938	0.012	1.000	38013	0.7257		145	2355	
D 28 13C2 PFDaA										
615.0 > 570.0	13.560	13.550	0.010		2326165	56.4		113	60910	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.569	13.552	0.017	1.000	15114	0.4259		85.2	16.7	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.086	14.075	0.011	1.000	26383	0.6093		122	50.1	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.526	14.516	0.010		1990501	58.8		118	81674	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.532	14.517	0.015	1.000	27934	0.9435		189	23.8	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.173	15.166	0.007		2303819	59.4		119	17642	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.173	15.166	0.007	1.000	180377	1.33		266	321	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_004.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.504	15.496	0.008	1.000	25462	0.5489		110	35.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L1_00018

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_004.d

Injection Date: 28-Feb-2016 14:34:53

Instrument ID: A6

Lims ID: Std L1

Client ID:

Operator ID: JRB

ALS Bottle#: 9

Worklist Smp#: 3

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

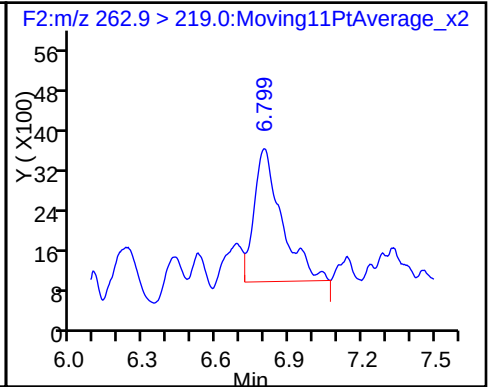
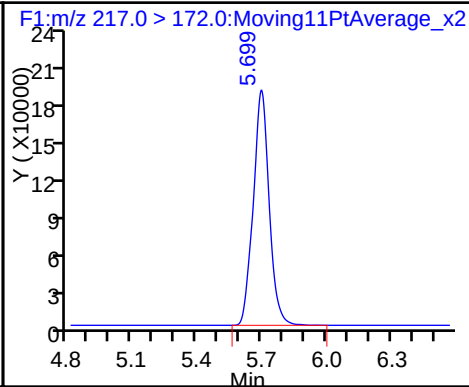
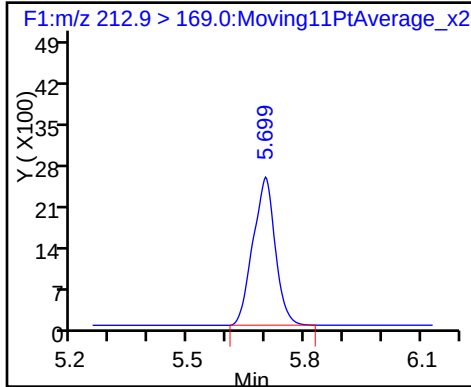
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

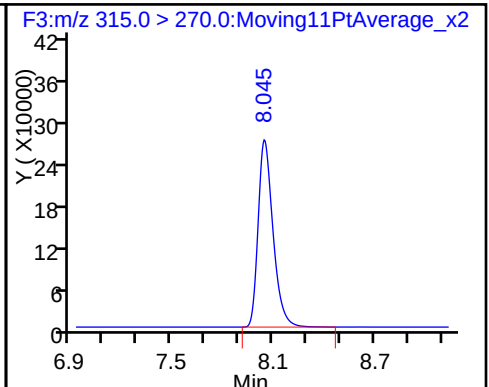
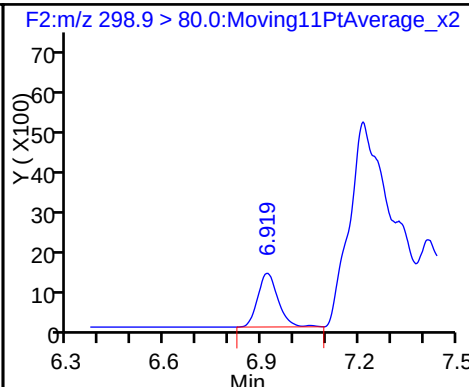
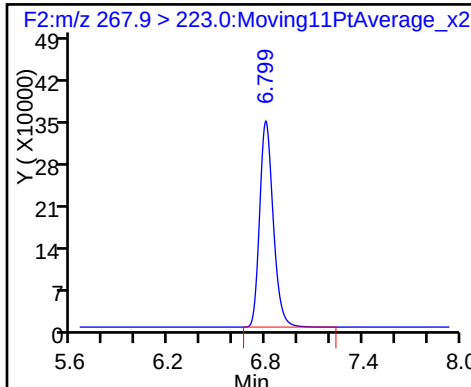
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

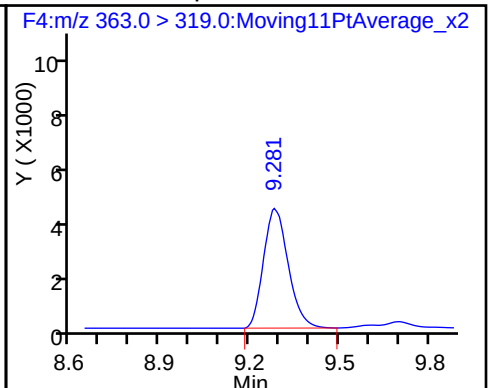
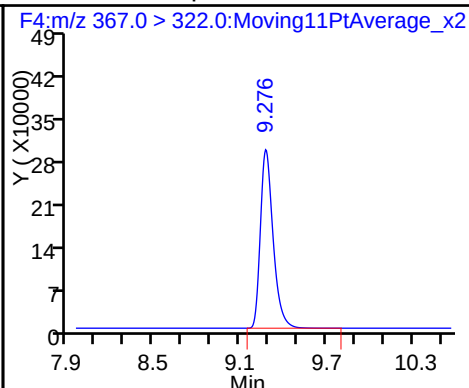
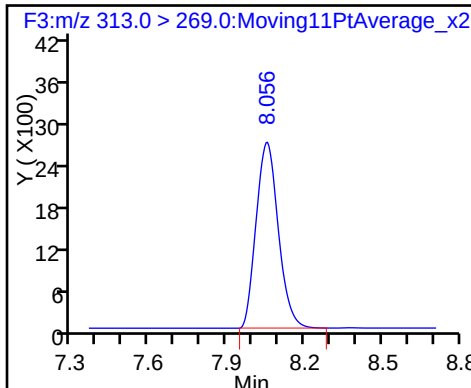
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

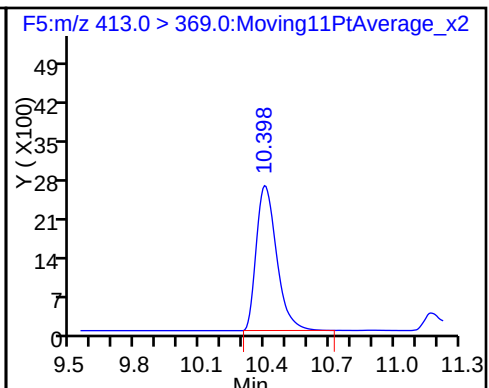
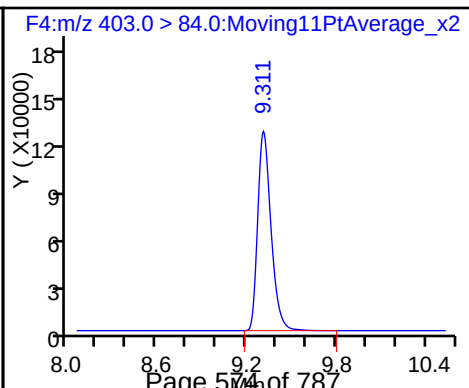
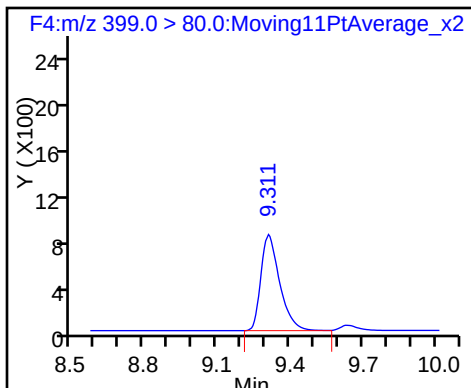
9 Perfluoroheptanoic acid



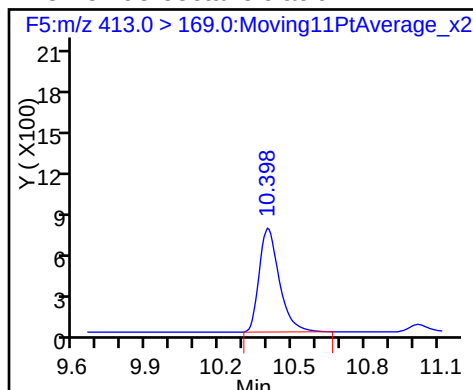
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

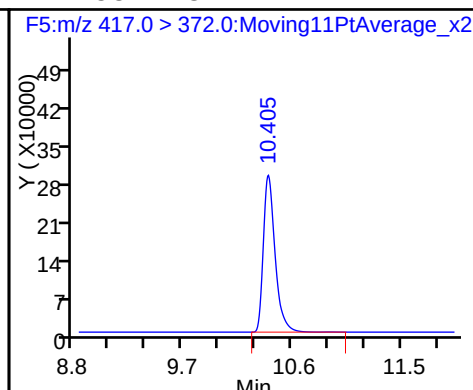
13 Perfluorooctanoic acid



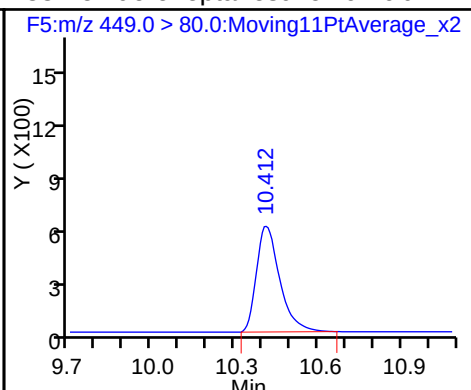
13 Perfluorooctanoic acid



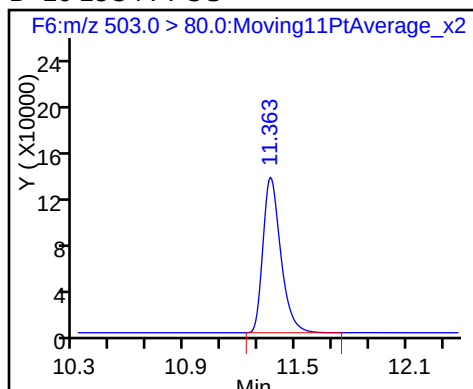
D 12 13C4 PFOA



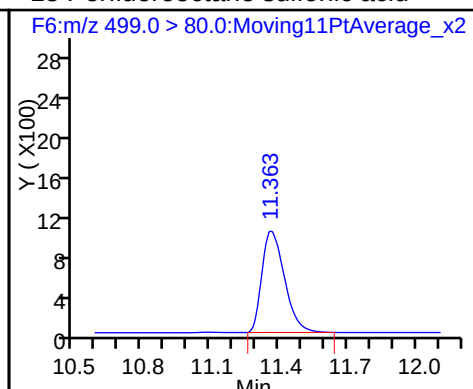
38 Perfluoroheptanesulfonic Acid



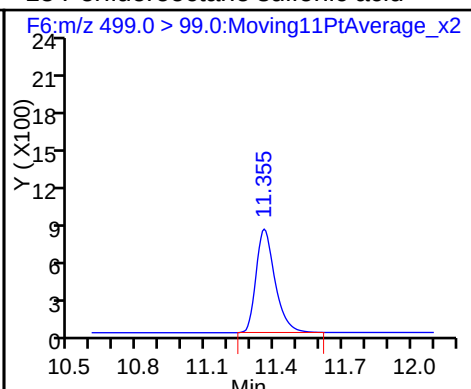
D 16 13C4 PFOS



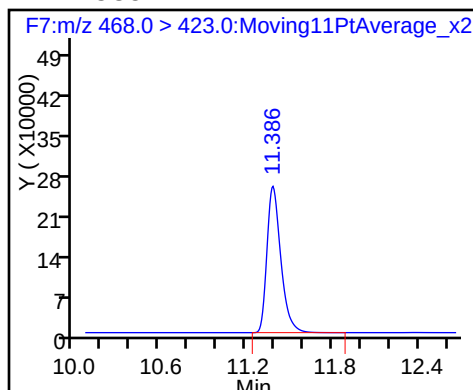
15 Perfluorooctane sulfonic acid



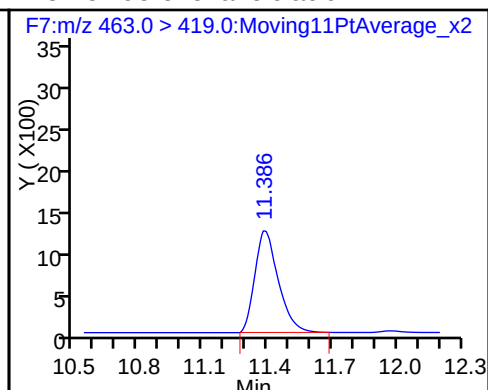
15 Perfluorooctane sulfonic acid



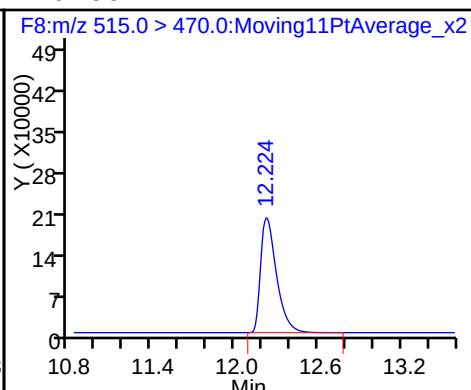
D 17 13C5 PFNA



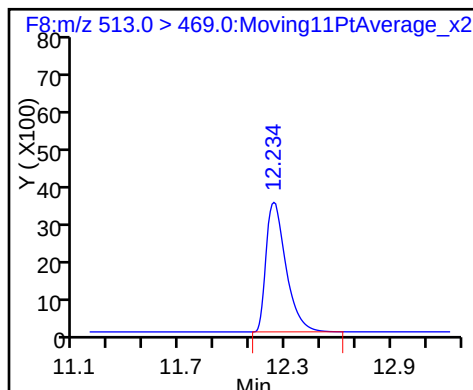
18 Perfluorononanoic acid



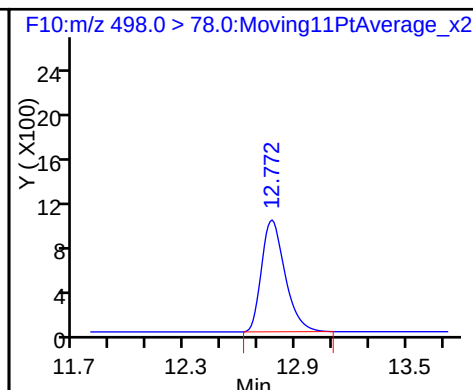
D 19 13C2 PFDA



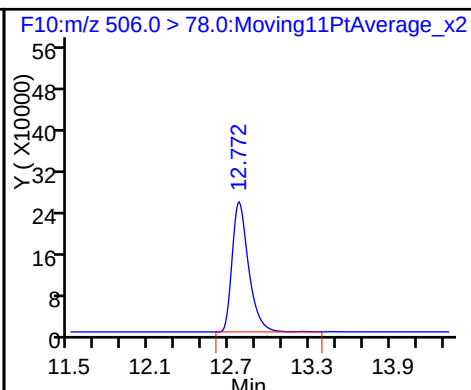
20 Perfluorodecanoic acid



24 Perfluorooctane Sulfonamide



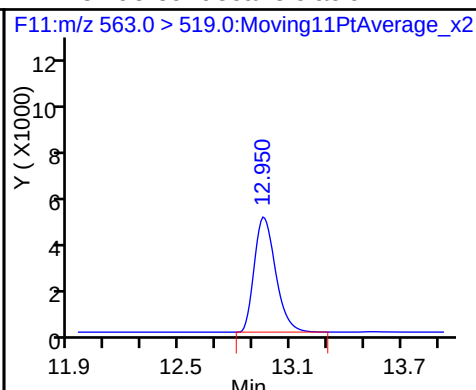
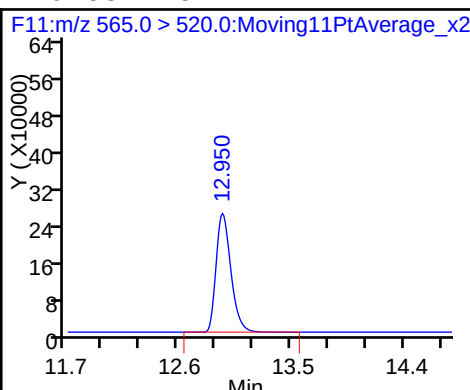
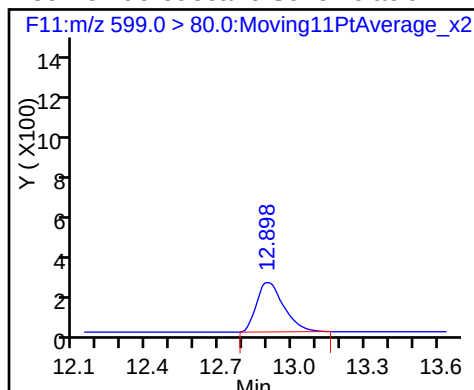
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

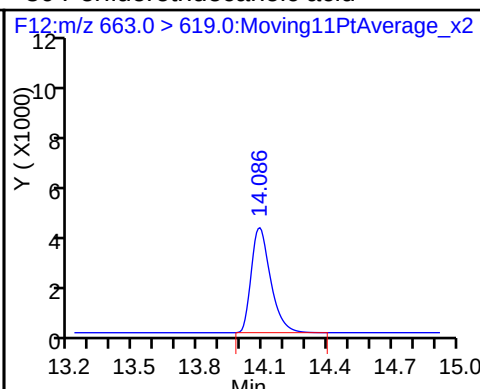
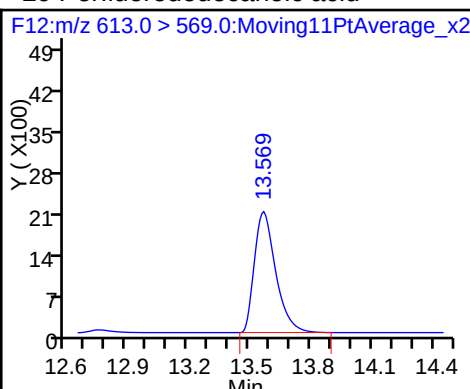
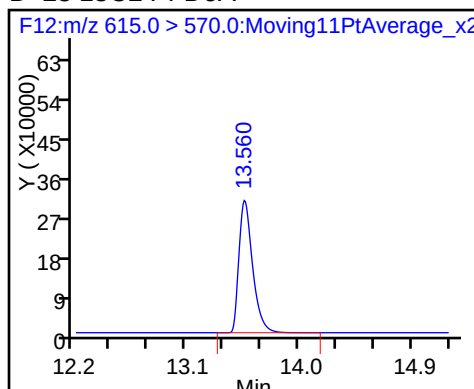
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

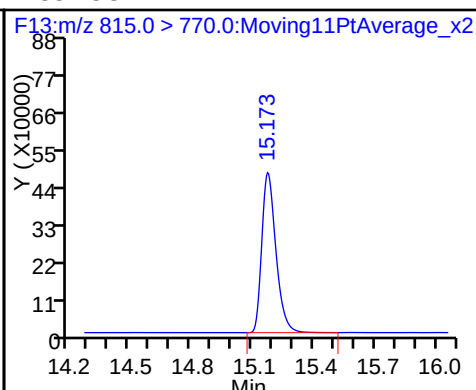
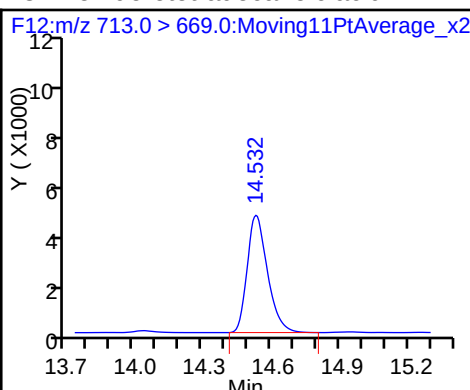
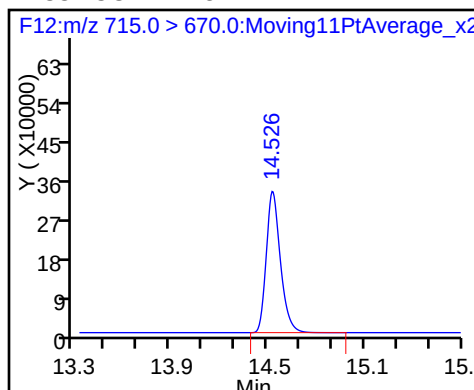
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

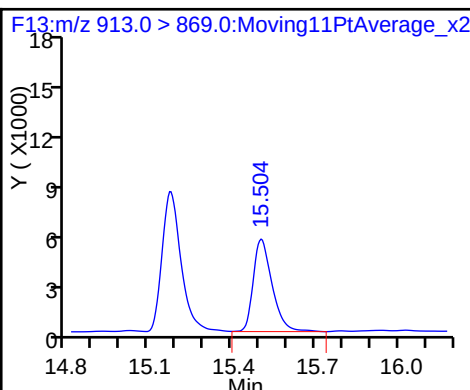
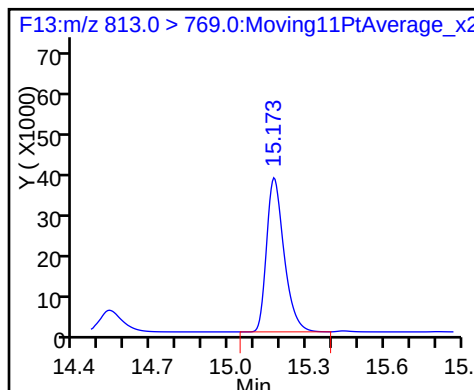
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_005.d
 Lims ID: Std L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 28-Feb-2016 14:56:05 ALS Bottle#: 10 Worklist Smp#: 4
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:06 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.694	5.691	0.003	1.000	18822	1.00		100.0	2078	
D 1 13C4 PFBA										
217.0 > 172.0	5.694	5.691	0.003		984450	54.3		109	61819	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.795	6.790	0.005	1.000	29109	0.7960		79.6	6.8	
D 3 13C5-PFPeA										
267.9 > 223.0	6.795	6.791	0.004		1953543	54.7		109	67053	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.914	6.905	0.009	1.000	12007	NC			4.8	
298.9 > 99.0	6.910	6.905	0.005	0.999	4745		2.53(0.00-0.00)		4.9	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.914	6.905	0.009	1.000	12007	0.8826		99.8		
D 6 13C2 PFHxA										
315.0 > 270.0	8.045	8.035	0.010		1693096	58.8		118	69199	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.045	8.037	0.008	1.000	27522	0.7851		78.5	2370	
D 8 13C4-PFHpA										
367.0 > 322.0	9.270	9.261	0.009		1916114	57.2		114	19508	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.270	9.262	0.008	1.000	28605	1.01		101	85.6	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.299	9.296	0.003	1.000	8342	0.8169		86.4		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.299	9.296	0.003	1.000	8342	NC			253	
D 11 18O2 PFHxS										
403.0 > 84.0	9.305	9.297	0.008		772880	53.2		112	61921	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.398	10.388	0.010	1.000	41404	1.08		108	129	
413.0 > 169.0	10.398	10.388	0.010	1.000	11762		3.52(0.00-0.00)	108	276	
D 12 13C4 PFOA										
417.0 > 372.0	10.398	10.389	0.009		2041318	56.8		114	151024	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.405	10.394	0.011	1.000	9519	NC			812	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.405	10.394	0.011	1.000	9519	0.9668		102		
D 16 13C4 PFOS										
503.0 > 80.0	11.356	11.350	0.006		871222	52.5		110	15963	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.356	11.350	0.006	1.000	13729	0.9588		100	1055	
499.0 > 99.0	11.370	11.350	0.020	1.001	7112		1.93(0.00-0.00)	100	588	
D 17 13C5 PFNA										
468.0 > 423.0	11.379	11.368	0.011		1700277	55.2		110	27824	
18 Perfluorononanoic acid										
463.0 > 419.0	11.386	11.370	0.016	1.000	27262	0.9586		95.9	1401	
D 19 13C2 PFDA										
515.0 > 470.0	12.225	12.212	0.013		1612362	57.9		116	25604	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.225	12.213	0.012	1.000	26600	0.9825		98.2	1645	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.764	12.759	0.005	1.000	36190	0.9607		96.1	2105	
D 23 13C8 FOSA										
506.0 > 78.0	12.764	12.759	0.005		2226420	55.3		111	1698	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.889	12.888	0.001	1.000	7438	NC			470	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.889	12.888	0.001	1.000	7438	0.9706		101		
D 26 13C2 PFUnA										
565.0 > 520.0	12.941	12.936	0.005		2052045	55.3		111	49339	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.951	12.938	0.013	1.000	46155	1.00		99.8	2894	
D 28 13C2 PFDaA										
615.0 > 570.0	13.561	13.550	0.011		2215785	53.7		107	8752	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.561	13.552	0.009	1.000	32071	0.9488		94.9	6.5	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.087	14.075	0.012	1.000	37470	0.9084		90.8	62.2	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.521	14.516	0.005		1919146	56.7		113	39138	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.527	14.517	0.010	1.000	33855	1.20		120	48.1	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.171	15.166	0.005		2199518	56.7		113	27027	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.171	15.166	0.005	1.000	158240	1.01		101	302	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_005.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid

913.0 > 869.0 15.497 15.496 0.001 1.000 38954 0.8815 88.2 70.3

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00019

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_005.d

Injection Date: 28-Feb-2016 14:56:05

Instrument ID: A6

Lims ID: Std L2

Client ID:

Operator ID: JRB

ALS Bottle#: 10

Worklist Smp#: 4

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

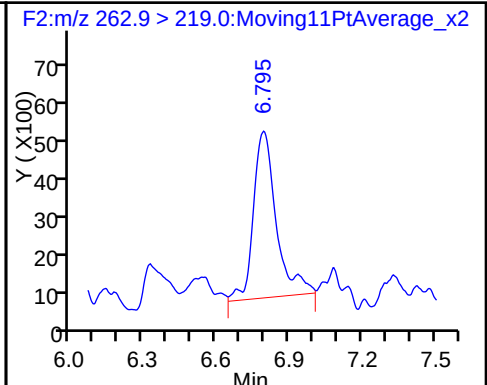
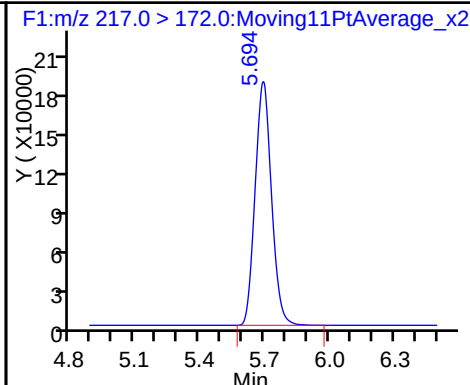
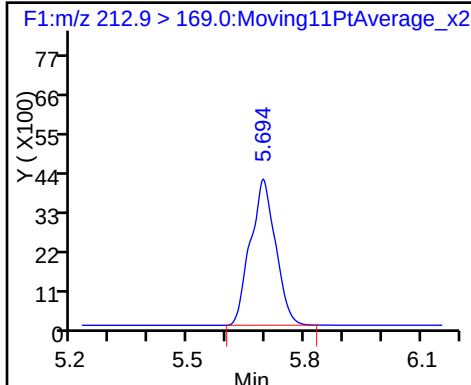
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

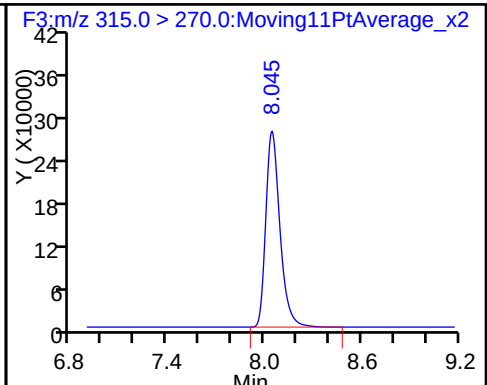
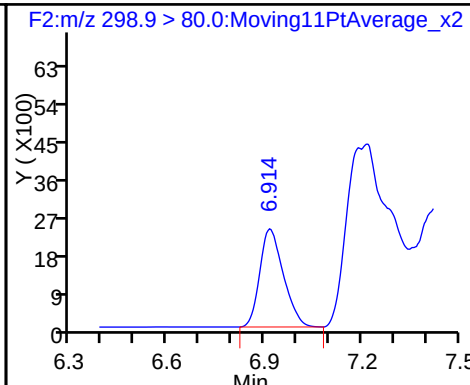
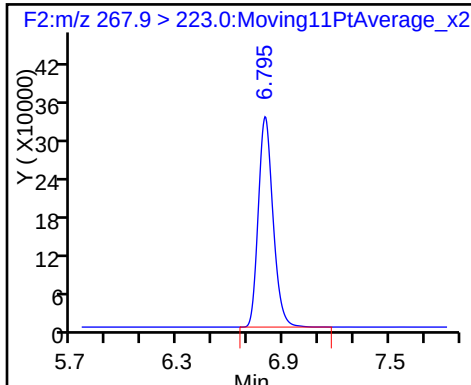
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

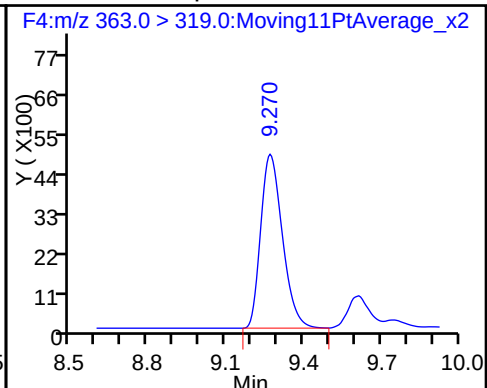
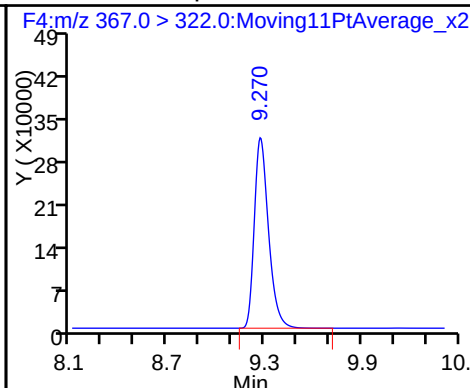
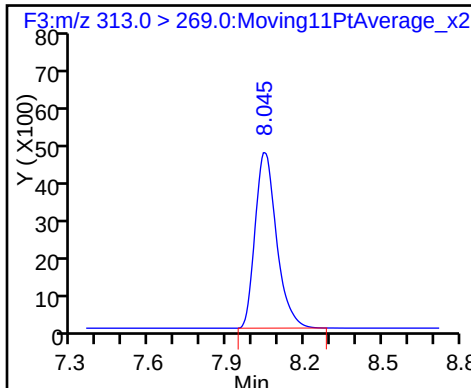
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

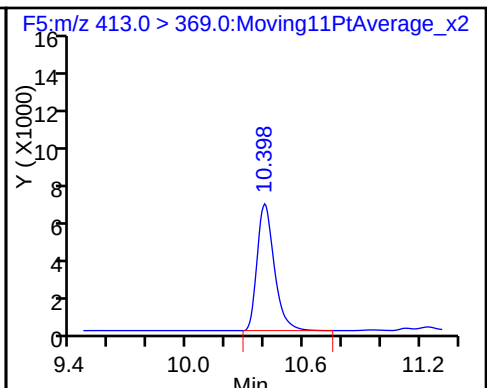
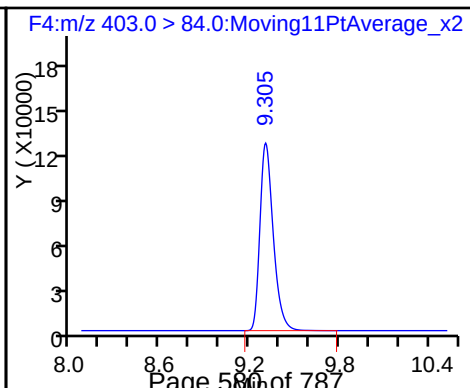
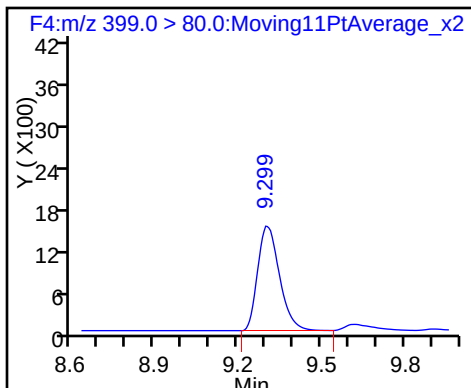
9 Perfluoroheptanoic acid



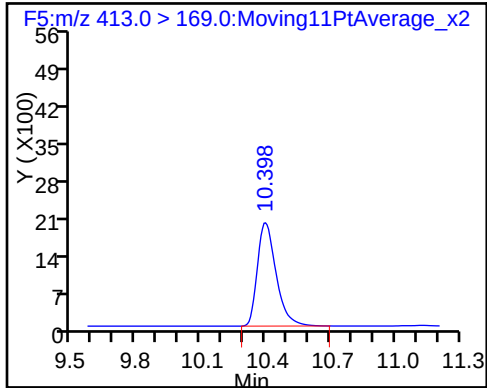
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

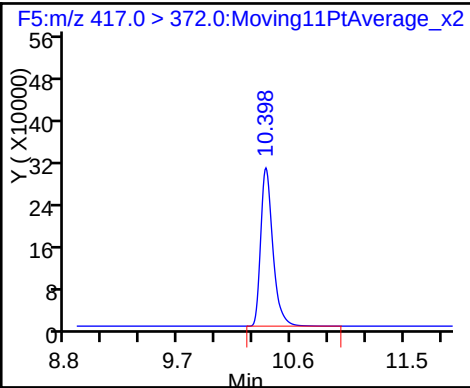
13 Perfluorooctanoic acid



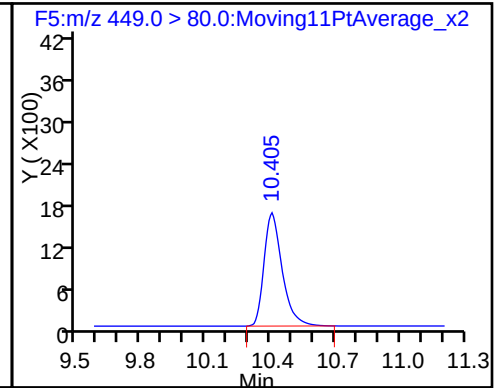
13 Perfluorooctanoic acid



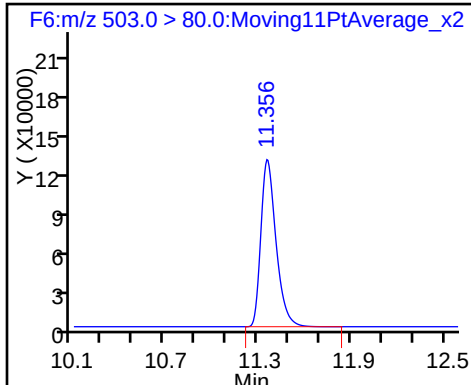
D 12 13C4 PFOA



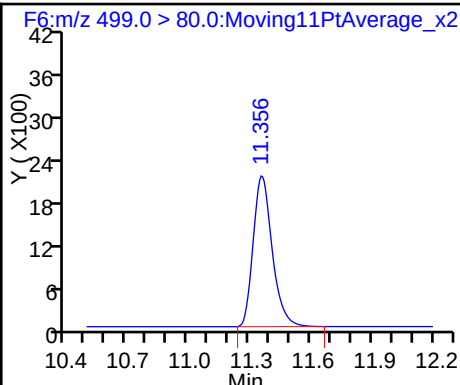
38 Perfluoroheptanesulfonic Acid



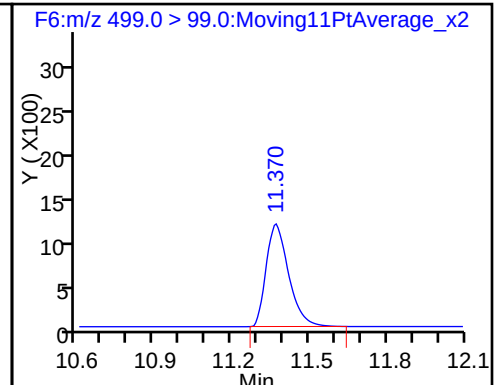
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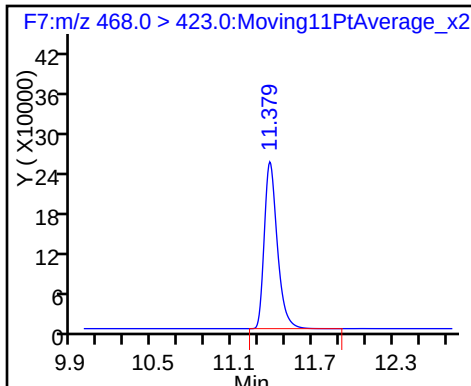
15 Perfluorooctane sulfonic acid



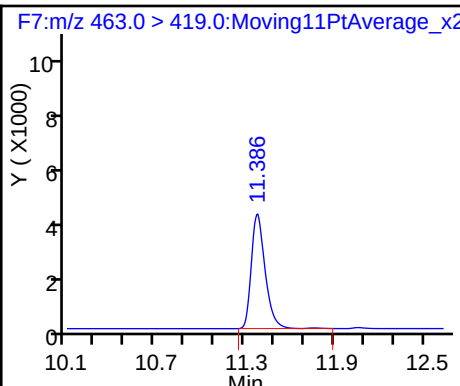
15 Perfluorooctane sulfonic acid



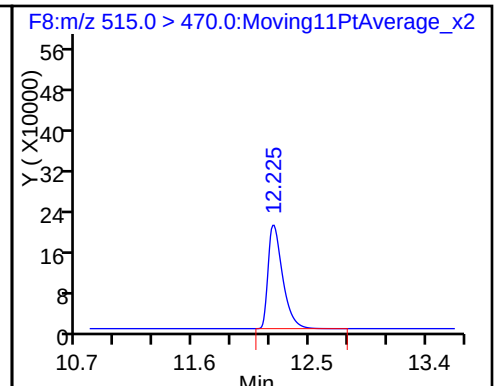
D 17 13C5 PFNA



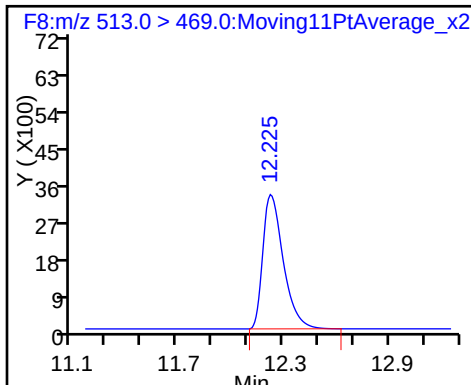
18 Perfluorononanoic acid



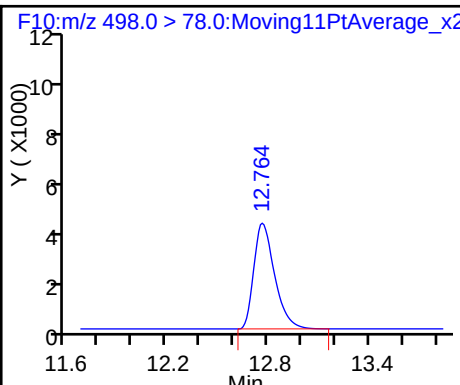
D 19 13C2 PFDA



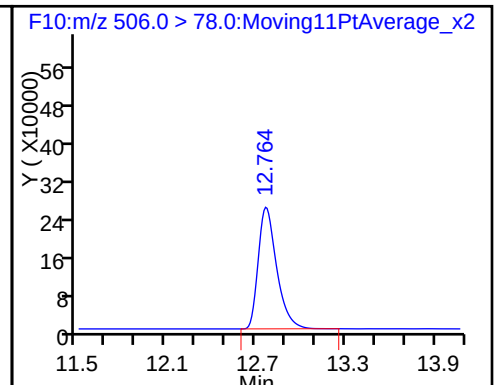
20 Perfluorodecanoic acid



24 Perfluorooctane Sulfonamide



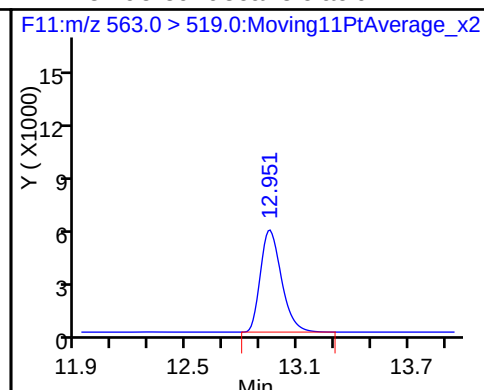
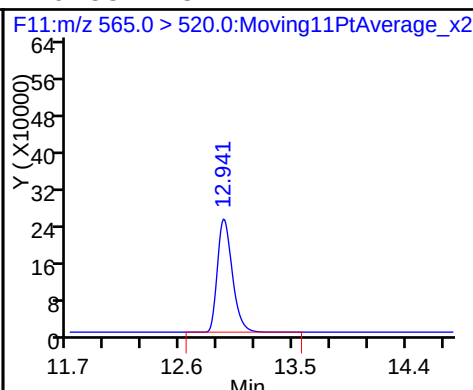
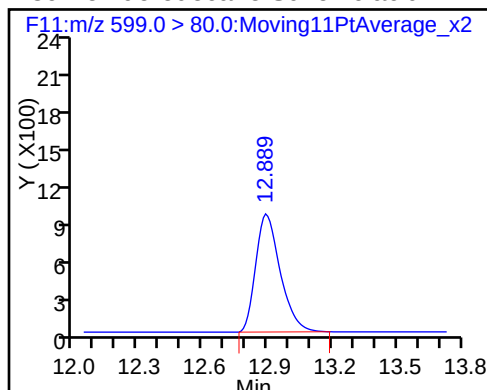
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

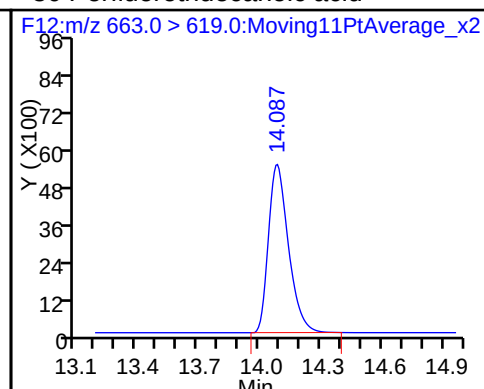
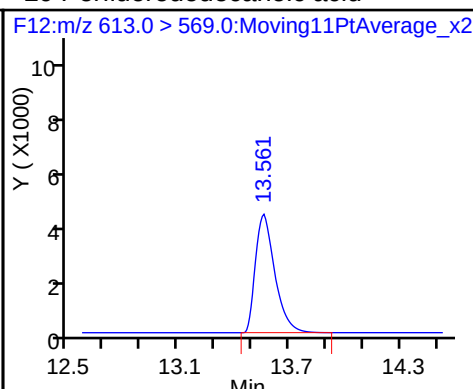
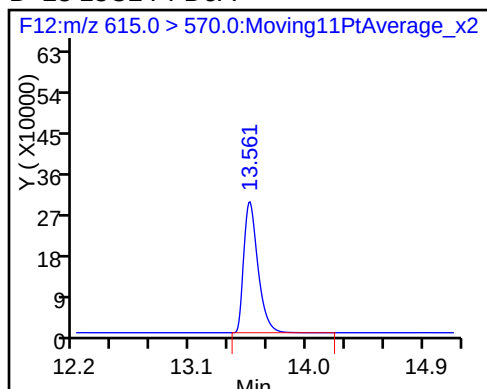
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

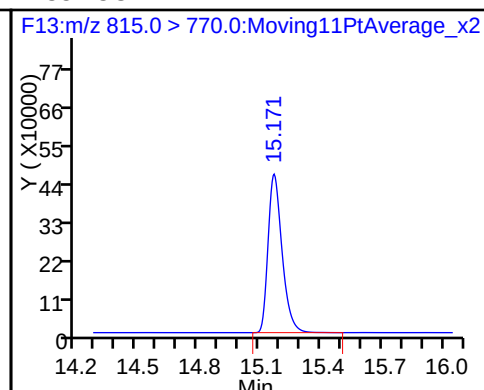
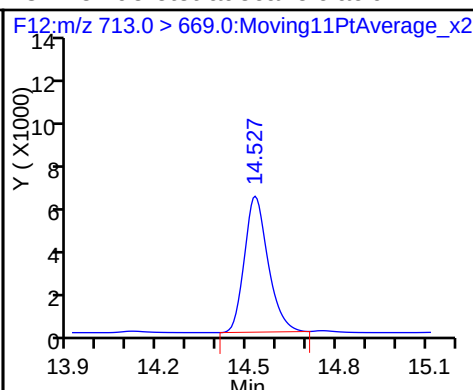
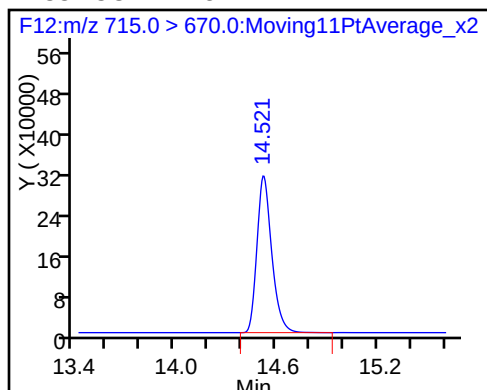
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

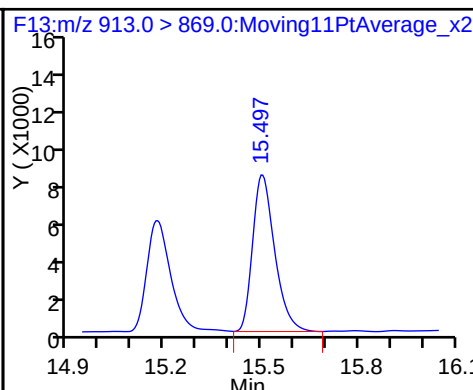
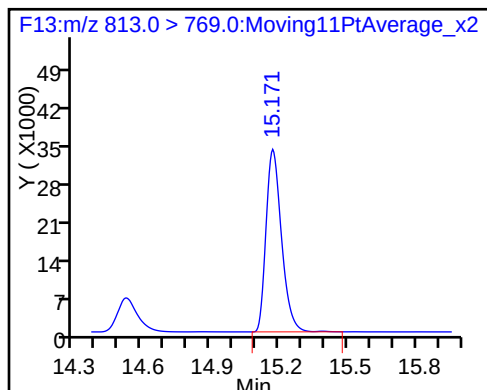
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_006.d
 Lims ID: Std L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 28-Feb-2016 15:17:18 ALS Bottle#: 11 Worklist Smp#: 5
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L3
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:09 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.696	5.691	0.005	1.000	128513	5.05		101	6222	
D 1 13C4 PFBA										
217.0 > 172.0	5.696	5.691	0.005		960959	53.0		106	18237	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.794	6.790	0.004	1.000	173723	5.12		102	44.9	
D 3 13C5-PFPeA										
267.9 > 223.0	6.794	6.791	0.003		1812658	50.8		102	17142	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.914	6.905	0.009	1.000	66400	NC			10.9	
298.9 > 99.0	6.905	6.905	0.0	0.999	31559		2.10(0.00-0.00)		22.9	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.914	6.905	0.009	1.000	66400	4.42		99.9		
D 6 13C2 PFHxA										
315.0 > 270.0	8.040	8.035	0.005		1498182	52.0		104	81823	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.045	8.037	0.008	1.000	156327	5.04		101	8363	
D 8 13C4-PFHpA										
367.0 > 322.0	9.269	9.261	0.008		1693190	50.5		101	274535	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.269	9.262	0.007	1.000	164583	4.71		94.2	763	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.305	9.296	0.009	1.000	48857	4.84		102		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.305	9.296	0.009	1.000	48857	NC			452	
D 11 18O2 PFHxS										
403.0 > 84.0	9.305	9.297	0.008		662651	45.6		96.4	52315	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.398	10.388	0.010	1.000	166578	4.60		92.0	172	
413.0 > 169.0	10.398	10.388	0.010	1.000	48063		3.47(0.00-0.00)	92.0	1183	
D 12 13C4 PFOA										
417.0 > 372.0	10.398	10.389	0.009		1923297	53.6		107	71196	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.398	10.394	0.004	1.000	53368	NC			8226	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.398	10.394	0.004	1.000	53368	4.66		97.9		
D 16 13C4 PFOS										
503.0 > 80.0	11.355	11.350	0.005		835130	50.4		105	61397	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.355	11.350	0.005	1.000	79196	4.77		99.7	330	
499.0 > 99.0	11.355	11.350	0.005	1.000	38724		2.05(0.00-0.00)	99.7	2918	
D 17 13C5 PFNA										
468.0 > 423.0	11.371	11.368	0.003		1581593	51.4		103	116108	
18 Perfluorononanoic acid										
463.0 > 419.0	11.378	11.370	0.008	1.000	133249	5.04		101	9732	
D 19 13C2 PFDA										
515.0 > 470.0	12.214	12.212	0.002		1421698	51.0		102	89672	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.214	12.213	0.001	1.000	151269	5.46		109	9953	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.763	12.759	0.004	1.000	173281	4.68		93.6	10168	
D 23 13C8 FOSA										
506.0 > 78.0	12.763	12.759	0.004		2188642	54.4		109	3923	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.888	12.888	0.0	1.000	51368	NC			3154	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.888	12.888	0.0	1.000	51368	5.04		105		
D 26 13C2 PFUnA										
565.0 > 520.0	12.940	12.936	0.004		1890050	50.9		102	114081	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.940	12.938	0.002	1.000	170873	5.01		100	3407	
D 28 13C2 PFDaA										
615.0 > 570.0	13.551	13.550	0.001		2201586	53.4		107	31982	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.551	13.552	-0.001	1.000	164160	4.89		97.8	57.0	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.079	14.075	0.004	1.000	201553	4.92		98.4	353	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.520	14.516	0.004		1778317	52.5		105	20671	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.520	14.517	0.003	1.000	144744	5.17		103	72.2	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.170	15.166	0.004		2114742	54.5		109	15040	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.170	15.166	0.004	1.000	318020	4.84		96.8	546	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_006.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid
913.0 > 869.0 15.502 15.496 0.006 1.000 210043 4.78 95.7 398

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L3_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_006.d

Injection Date: 28-Feb-2016 15:17:18

Instrument ID: A6

Lims ID: Std L3

Client ID:

Operator ID: JRB

ALS Bottle#: 11

Worklist Smp#: 5

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

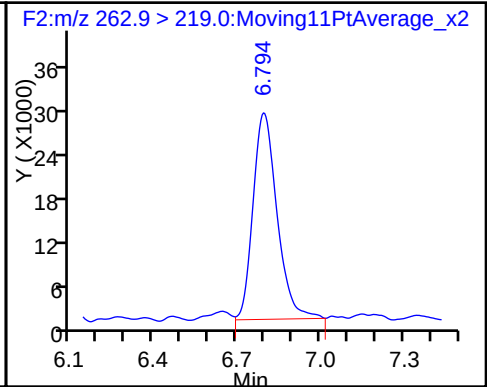
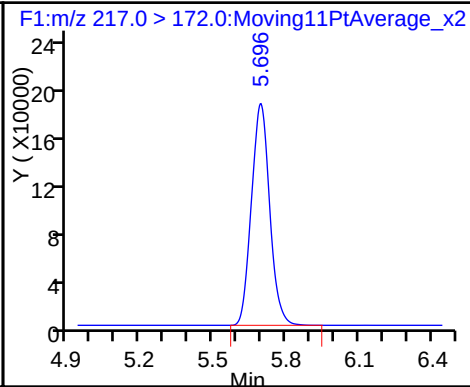
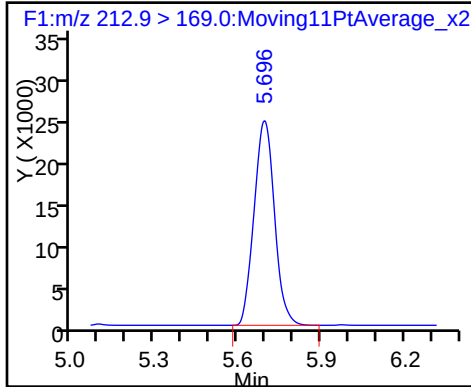
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

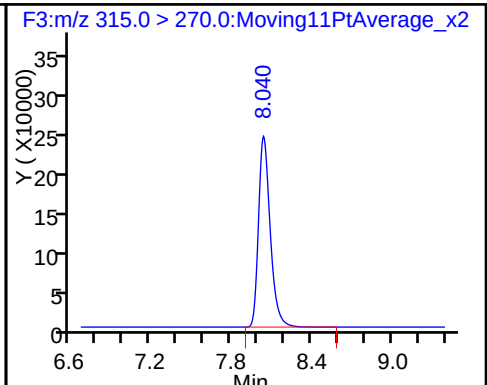
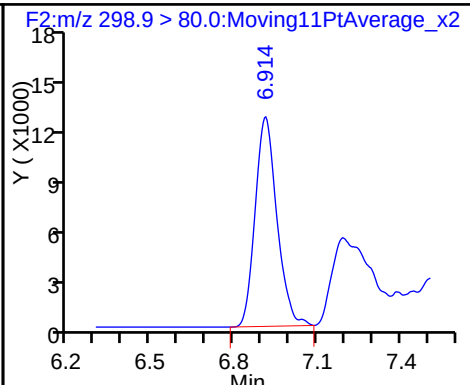
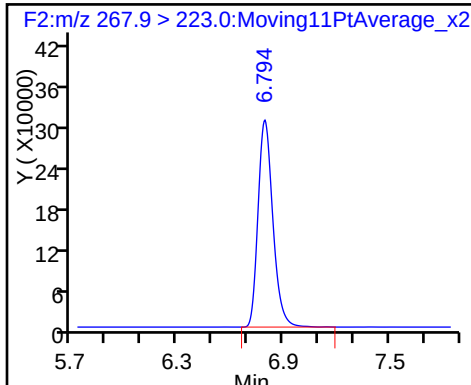
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

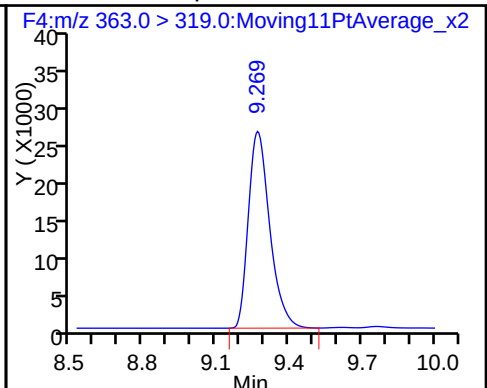
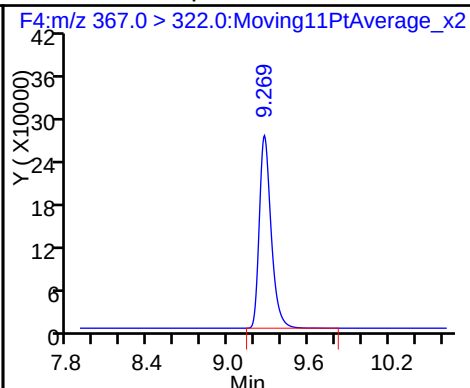
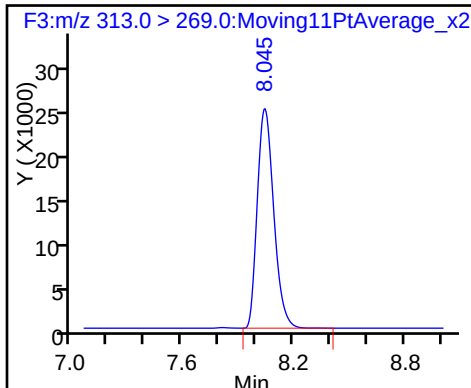
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

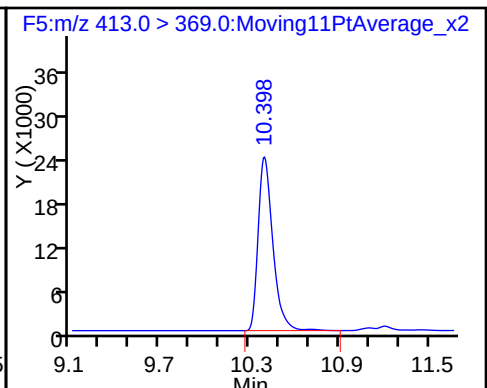
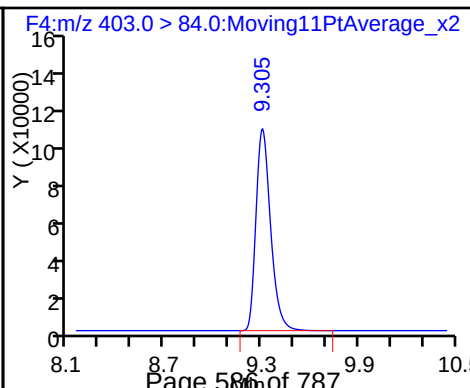
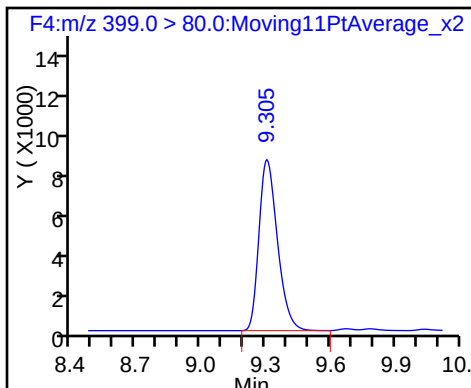
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

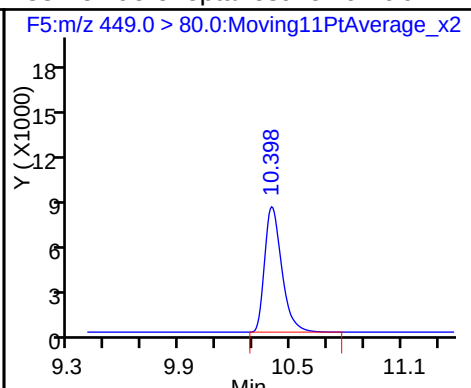
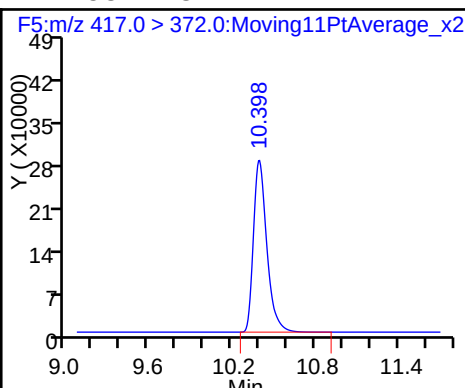
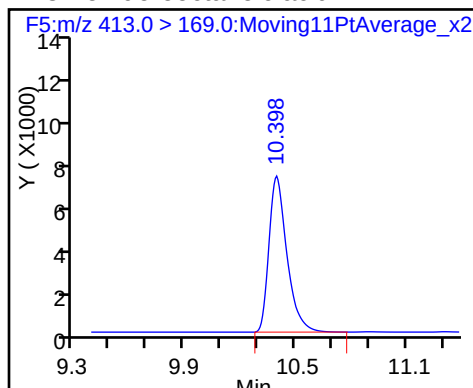
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

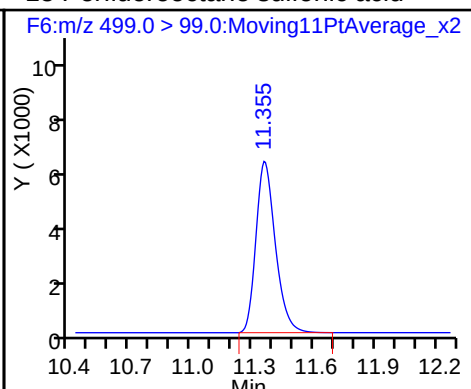
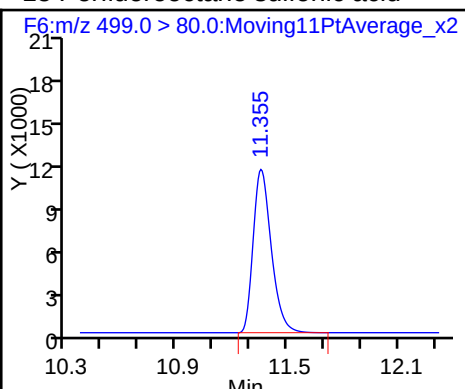
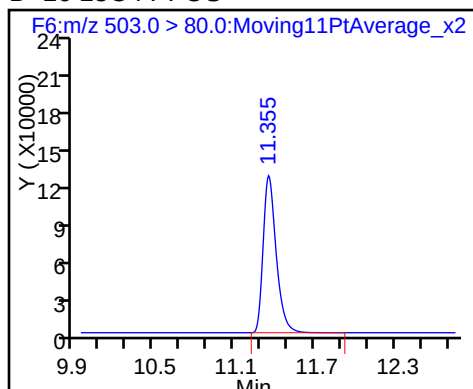
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

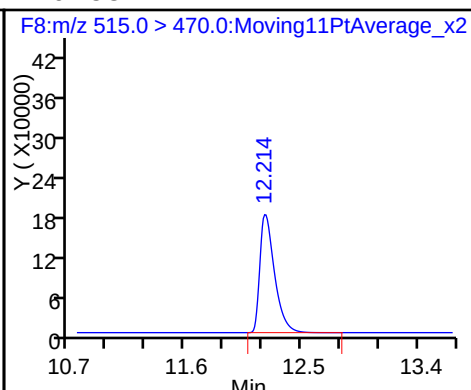
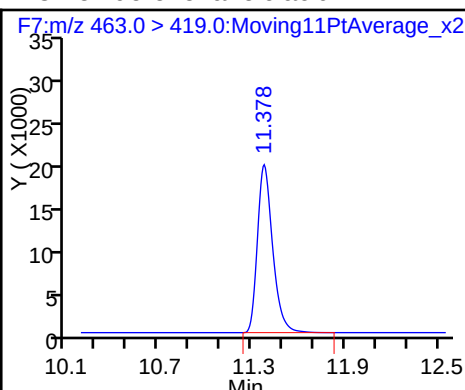
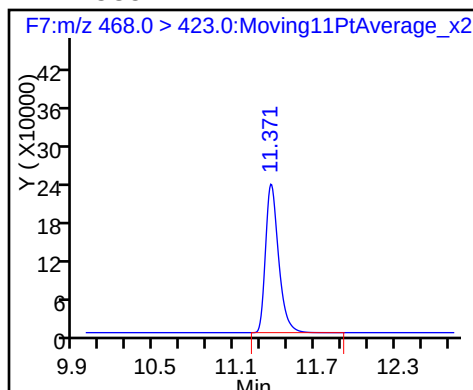
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

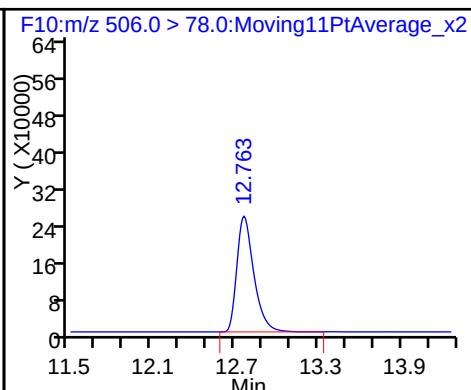
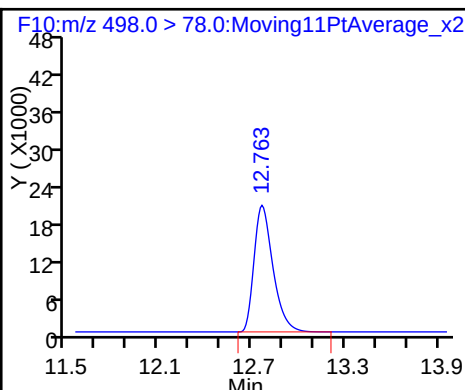
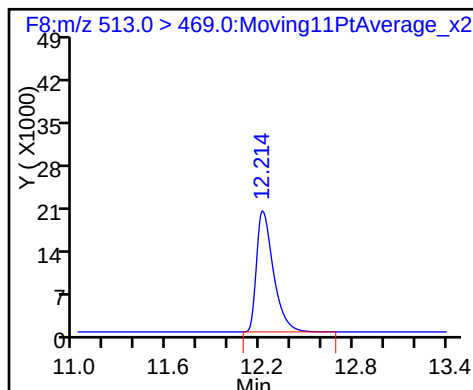
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

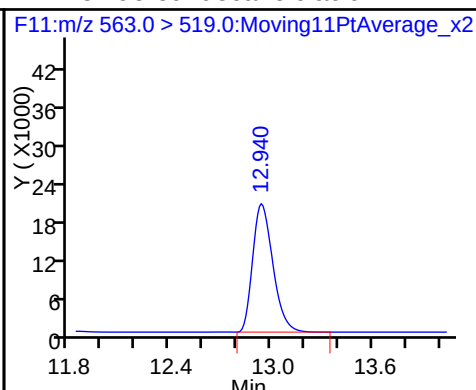
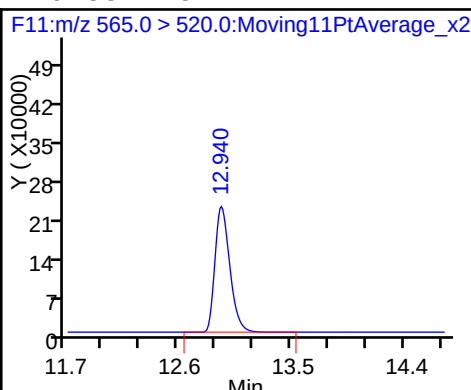
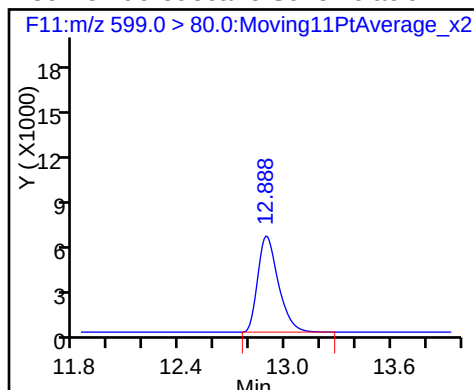
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

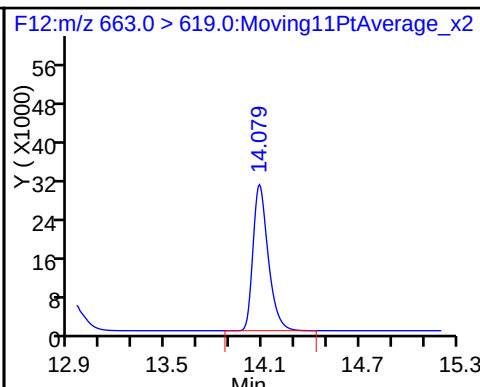
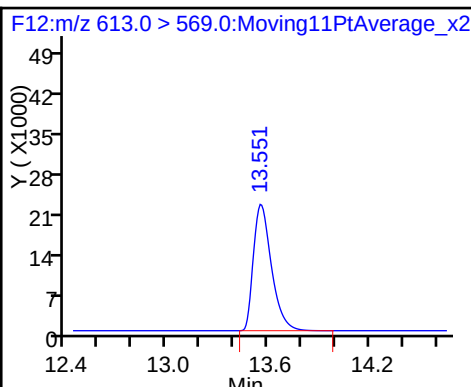
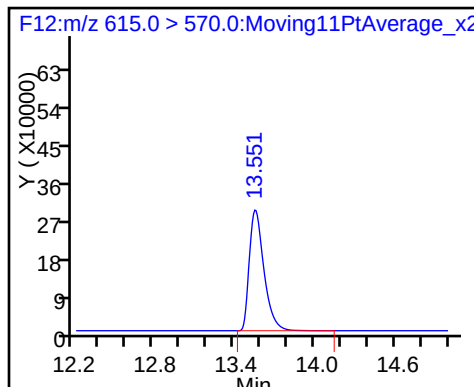
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

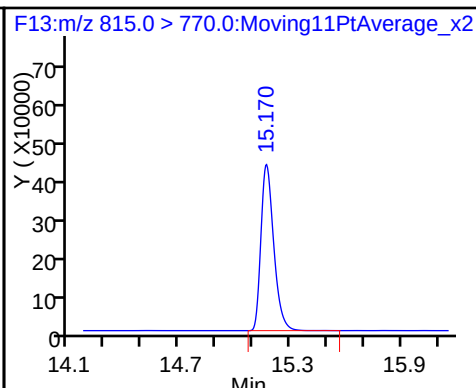
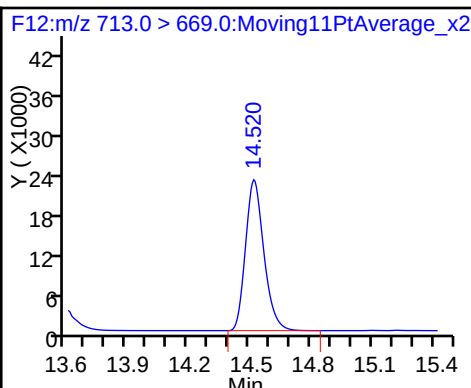
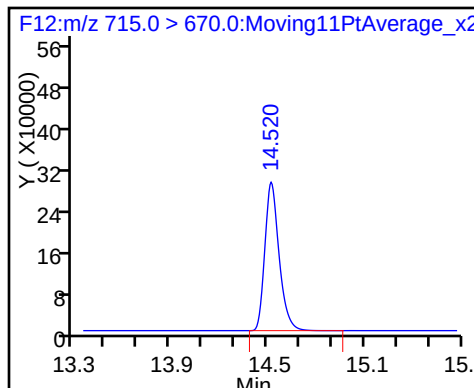
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

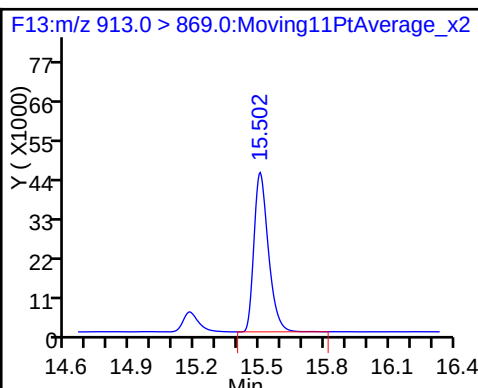
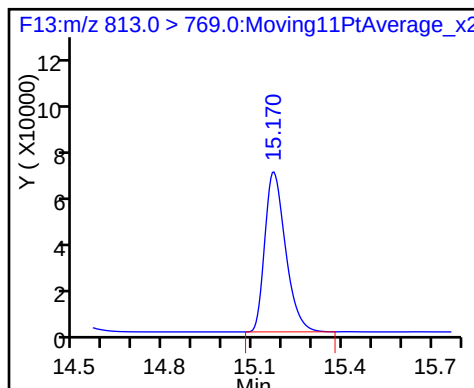
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_007.d
 Lims ID: Std L4
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 28-Feb-2016 15:38:32 ALS Bottle#: 12 Worklist Smp#: 6
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:11 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 29-Feb-2016 08:23:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.690	5.691	-0.001	1.000	452955	19.2		96.2	45445	
D 1 13C4 PFBA										
217.0 > 172.0	5.687	5.691	-0.004		846208	46.7		93.3	85721	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.786	6.790	-0.004	1.000	664899	21.4		107	188	
D 3 13C5-PFPeA										
267.9 > 223.0	6.786	6.791	-0.005		1660631	46.5		93.0	48827	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.896	6.905	-0.009	1.000	267339	NC			70.3	
298.9 > 99.0	6.900	6.905	-0.005	1.001	128119		2.09(0.00-0.00)		89.4	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.896	6.905	-0.009	1.000	267339	18.5		105		
D 6 13C2 PFHxA										
315.0 > 270.0	8.029	8.035	-0.006		1421506	49.4		98.7	33609	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.029	8.037	-0.008	1.000	633646	21.5		108	20654	
D 8 13C4-PFHpA										
367.0 > 322.0	9.258	9.261	-0.003		1545072	46.1		92.3	41084	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.258	9.262	-0.004	1.000	769876	22.8		114	2516	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.293	9.296	-0.003	1.000	186445	19.7		104		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.293	9.296	-0.003	1.000	186445	NC			1962	
D 11 18O2 PFHxS										
403.0 > 84.0	9.293	9.297	-0.004		609473	42.0		88.7	48793	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.384	10.388	-0.004	1.000	638806	20.7		104	1378	
413.0 > 169.0	10.384	10.388	-0.004	1.000	228925		2.79(0.00-0.00)	104	2284	
D 12 13C4 PFOA										
417.0 > 372.0	10.384	10.389	-0.005		1635713	45.5		91.1	121686	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.391	10.394	-0.003	1.000	186064	NC			13810	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.391	10.394	-0.003	1.000	186064	17.0		89.4		
D 16 13C4 PFOS										
503.0 > 80.0	11.348	11.350	-0.002		772004	46.5		97.4	11175	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.348	11.350	-0.002	1.000	284335	17.9		93.8	219	
499.0 > 99.0	11.348	11.350	-0.002	1.000	165063		1.72(0.00-0.00)	93.8	12039	
D 17 13C5 PFNA										
468.0 > 423.0	11.364	11.368	-0.004		1468067	47.7		95.4	108462	
18 Perfluorononanoic acid										
463.0 > 419.0	11.364	11.370	-0.006	1.000	505984	20.6		103	37315	
D 19 13C2 PFDA										
515.0 > 470.0	12.204	12.212	-0.008		1309393	47.0		94.0	83585	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.204	12.213	-0.009	1.000	513040	19.7		98.4	21719	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.753	12.759	-0.006	1.000	666290	20.4		102	13010	
D 23 13C8 FOSA										
506.0 > 78.0	12.753	12.759	-0.006		1927096	47.9		95.8	2545	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.889	12.888	0.001	1.000	185433	NC			11223	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.889	12.888	0.001	1.000	185433	18.8		97.4		
D 26 13C2 PFUnA										
565.0 > 520.0	12.930	12.936	-0.006		1783076	48.0		96.0	19304	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.930	12.938	-0.008	1.000	640155	20.9		104	19138	
D 28 13C2 PFDaA										
615.0 > 570.0	13.552	13.550	0.002		1898678	46.0		92.1	83279	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.552	13.552	0.0	1.000	591948	20.4		102	747	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.071	14.075	-0.004	1.000	763304	21.6		108	2290	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.514	14.516	-0.002		1627294	48.0		96.1	32371	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.514	14.517	-0.003	1.000	436448	18.1		90.3	573	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.166	15.166	0.0		1719958	44.3		88.7	23470	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.166	15.166	0.0	1.000	788743	19.1		95.3	1576	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_007.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.497	15.496	0.001	1.000	722452	19.1		95.4	1345	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_007.d

Injection Date: 28-Feb-2016 15:38:32

Instrument ID: A6

Lims ID: Std L4

Client ID:

Operator ID: JRB

ALS Bottle#: 12

Worklist Smp#: 6

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

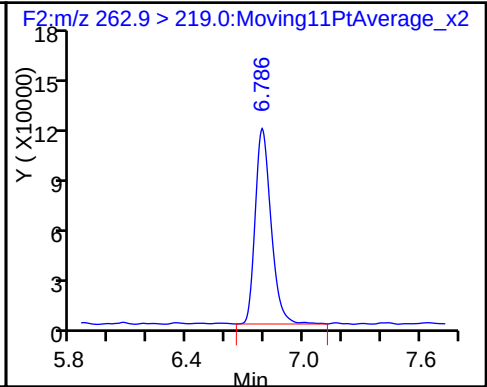
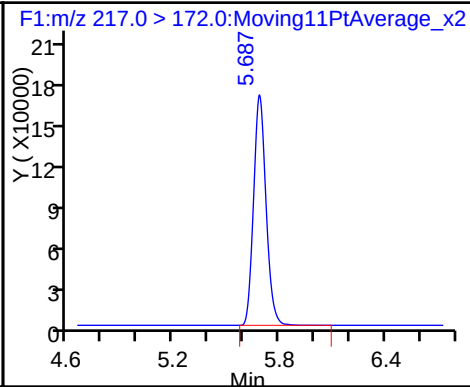
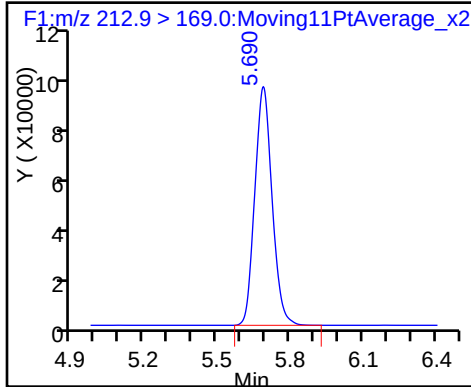
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

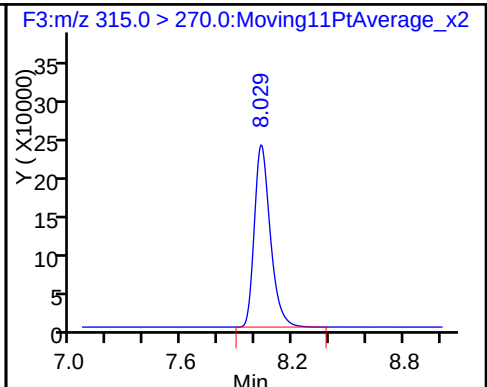
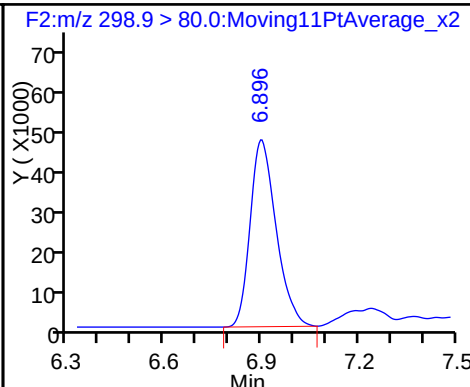
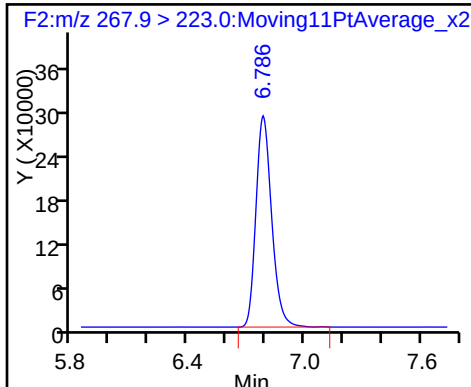
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

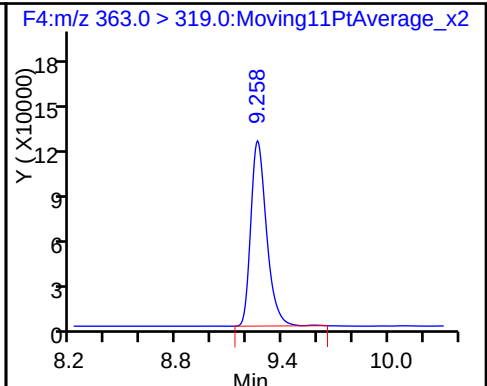
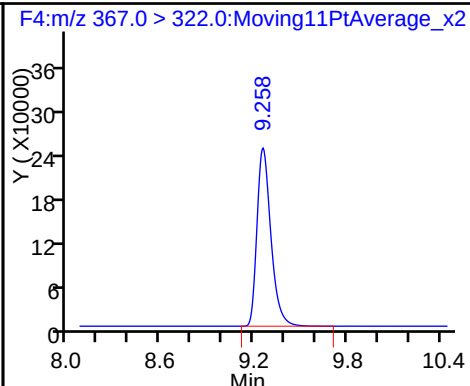
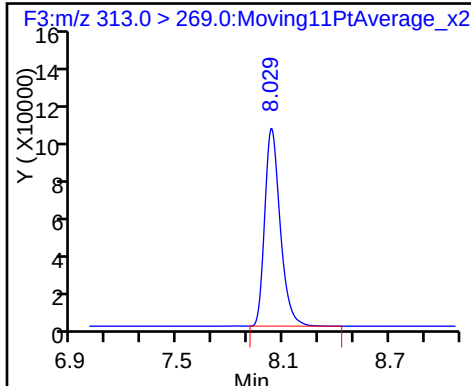
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

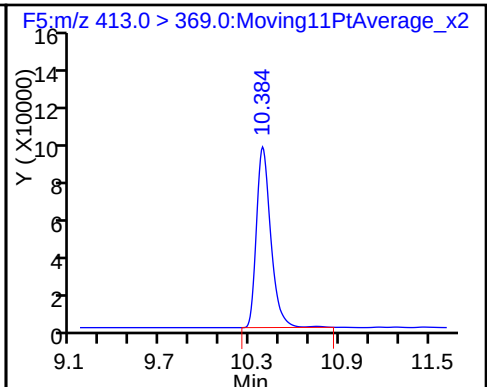
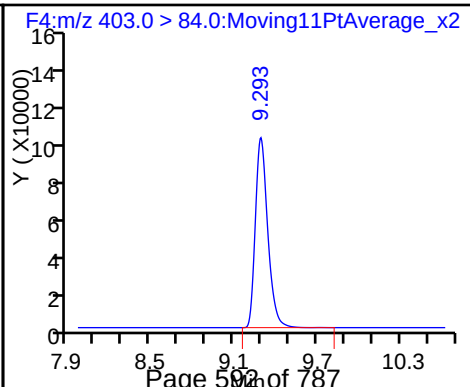
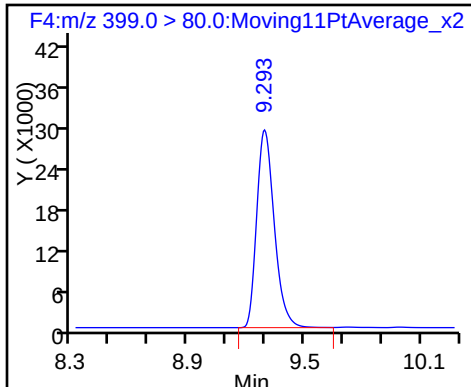
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

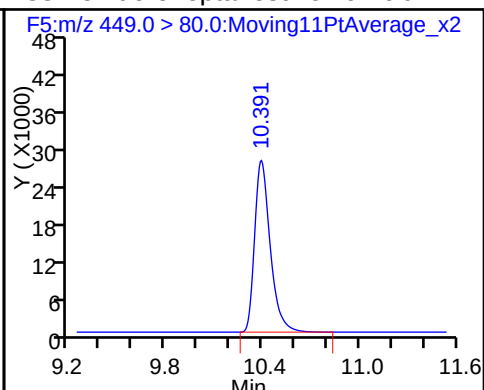
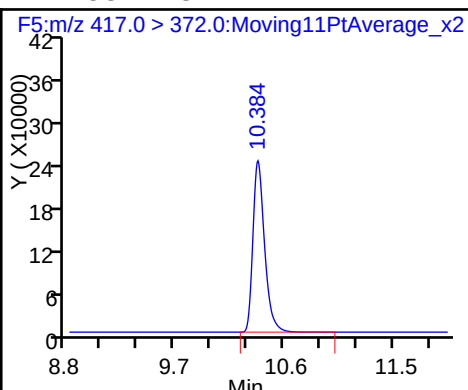
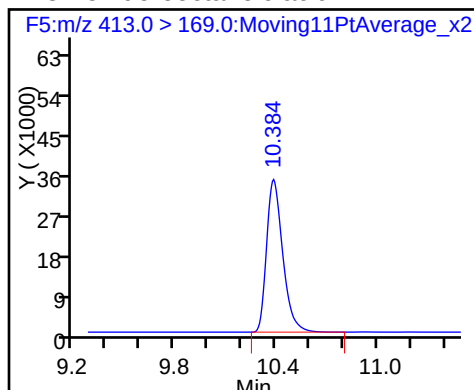
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

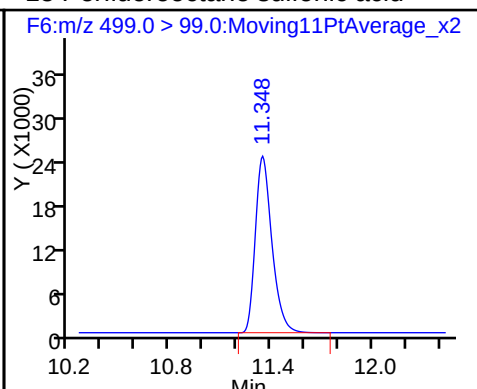
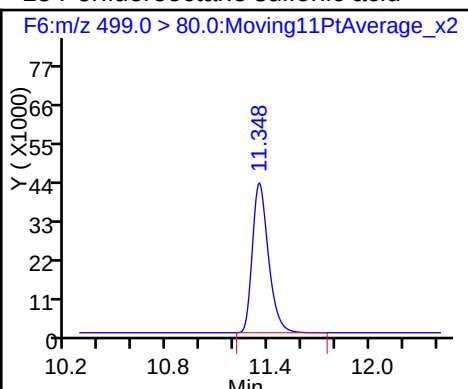
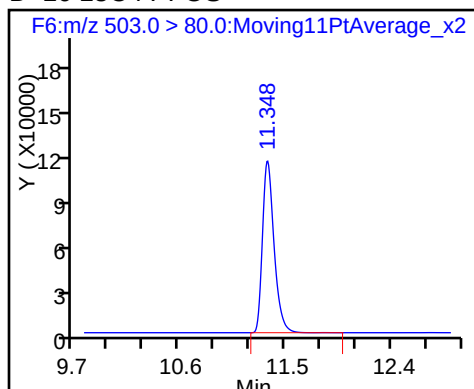
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

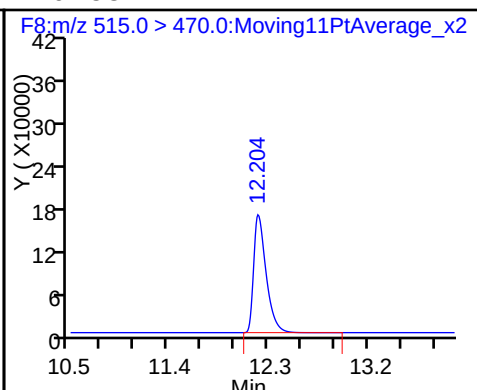
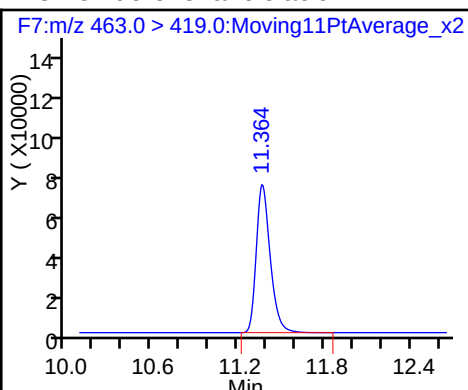
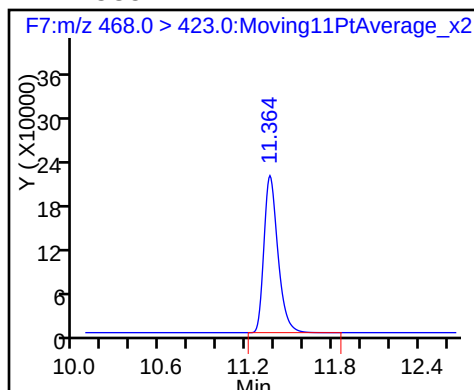
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

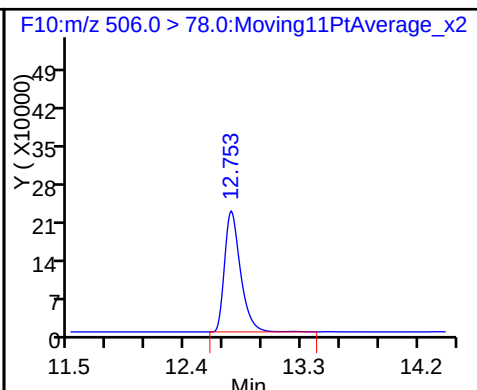
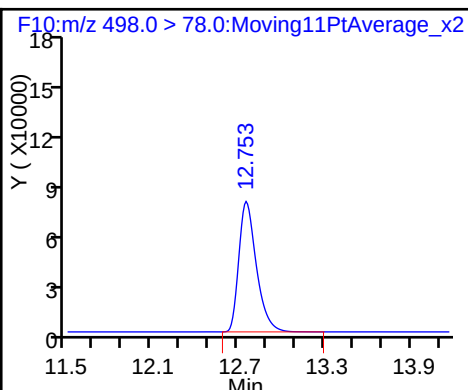
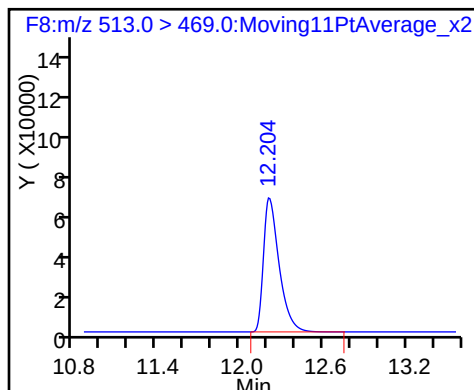
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

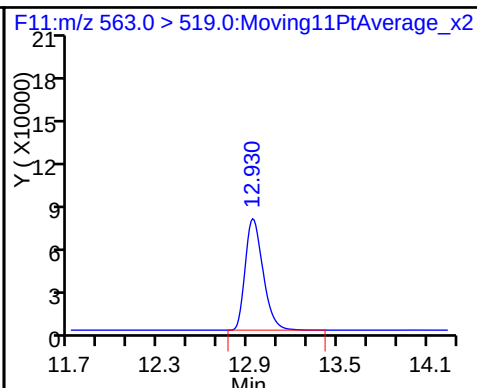
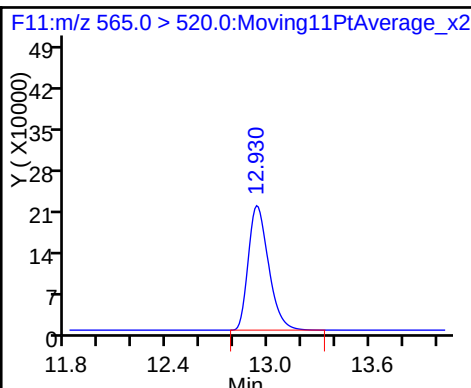
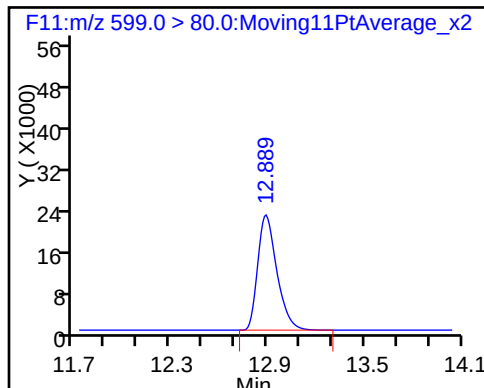
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

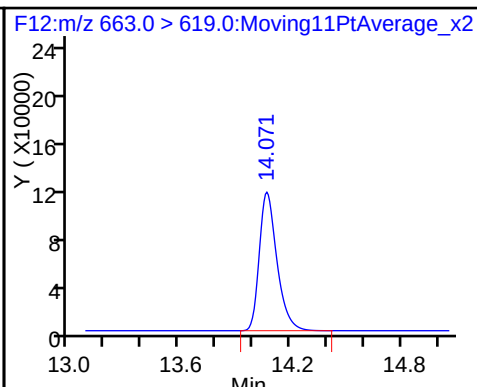
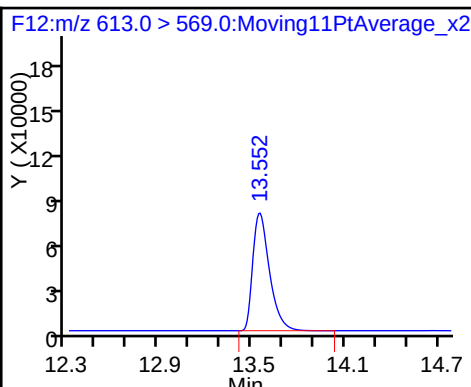
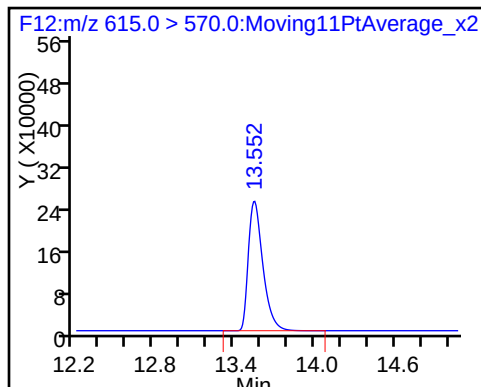
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

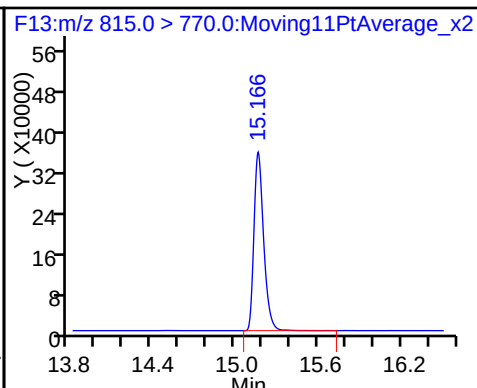
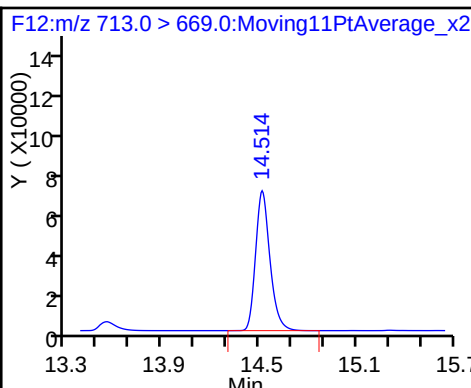
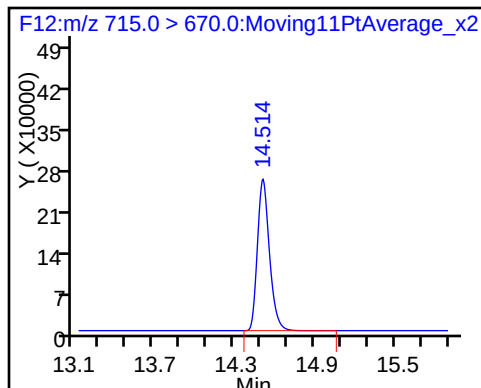
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

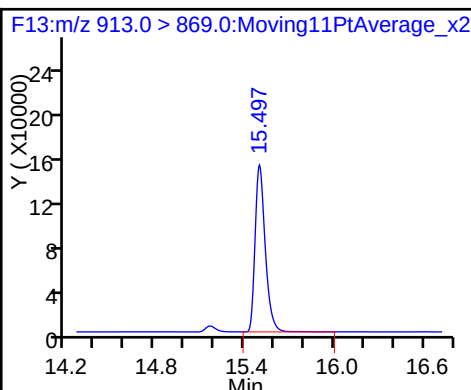
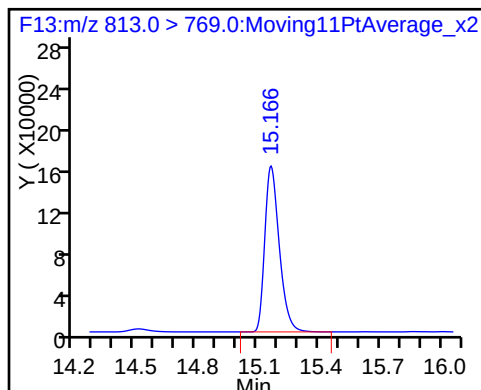
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_008.d
 Lims ID: Std L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 28-Feb-2016 15:59:45 ALS Bottle#: 13 Worklist Smp#: 7
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:14 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 29-Feb-2016 14:46:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.684	5.691	-0.007	1.000	1215058	50.8		102	112927	
D 1 13C4 PFBA										
217.0 > 172.0	5.690	5.691	-0.001		850563	46.9		93.8	160155	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.785	6.790	-0.005	1.000	1639138	52.6		105	442	
D 3 13C5-PFPeA										
267.9 > 223.0	6.785	6.791	-0.006		1665471	46.6		93.3	23632	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.896	6.905	-0.009	1.000	676781	NC			84.1	
298.9 > 99.0	6.896	6.905	-0.009	1.000	356056		1.90(0.00-0.00)		230	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.896	6.905	-0.009	1.000	676781	42.9		97.0		
D 6 13C2 PFHxA										
315.0 > 270.0	8.029	8.035	-0.006		1408273	48.9		97.8	22955	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.029	8.037	-0.008	1.000	1576176	54.1		108	3197	
D 8 13C4-PFHpA										
367.0 > 322.0	9.252	9.261	-0.009		1560478	46.6		93.2	83223	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.252	9.262	-0.010	1.000	1677365	48.8		97.5	4306	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.287	9.296	-0.009	1.000	501905	48.5		103		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.287	9.296	-0.009	1.000	501905	NC			39632	
D 11 18O2 PFHxS										
403.0 > 84.0	9.287	9.297	-0.010		662464	45.6		96.4	10674	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.384	10.388	-0.004	1.000	1600202	49.9		99.7	1504	
413.0 > 169.0	10.384	10.388	-0.004	1.000	547723		2.92(0.00-0.00)	99.7	5031	
D 12 13C4 PFOA										
417.0 > 372.0	10.384	10.389	-0.005		1703672	47.4		94.9	251255	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.384	10.394	-0.010	1.000	518970	NC			76647	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.384	10.394	-0.010	1.000	518970	50.5		106		
D 16 13C4 PFOS										
503.0 > 80.0	11.341	11.350	-0.009		719110	43.4		90.7	52713	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.341	11.350	-0.009	1.000	733760	49.3		103	186	
499.0 > 99.0	11.341	11.350	-0.009	1.000	389227		1.89(0.00-0.00)	103	28728	
D 17 13C5 PFNA										
468.0 > 423.0	11.364	11.368	-0.004		1408645	45.8		91.5	34059	
18 Perfluorononanoic acid										
463.0 > 419.0	11.364	11.370	-0.006	1.000	1190255	50.5		101	86571	
D 19 13C2 PFDA										
515.0 > 470.0	12.204	12.212	-0.008		1195637	42.9		85.8	25760	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.204	12.213	-0.009	1.000	1204845	50.4		101	51185	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.752	12.759	-0.007	1.000	1731319	51.9		104	2528	
D 23 13C8 FOSA										
506.0 > 78.0	12.752	12.759	-0.007		1970796	49.0		98.0	2108	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.888	12.888	0.0	1.000	462443	NC			27420	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.888	12.888	0.0	1.000	462443	49.8		103		
D 26 13C2 PFUnA										
565.0 > 520.0	12.930	12.936	-0.006		1645691	44.3		88.6	17943	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.930	12.938	-0.008	1.000	1409118	50.3		101	15488	
D 28 13C2 PFDaA										
615.0 > 570.0	13.542	13.550	-0.008		1902376	46.1		92.2	125110	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.542	13.552	-0.010	1.000	1495316	51.5		103	1030	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.071	14.075	-0.004	1.000	1957986	55.3		111	4034	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.513	14.516	-0.003		1662577	49.1		98.2	11973	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.513	14.517	-0.004	1.000	1149682	47.5		95.0	966	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.165	15.166	-0.001		1863715	48.0		96.1	12612	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.165	15.166	-0.001	1.000	1948669	51.0		102	3527	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_008.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.492	15.496	-0.004	1.000	1973299	52.0		104	2721	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_008.d

Injection Date: 28-Feb-2016 15:59:45

Instrument ID: A6

Lims ID: Std L5

Client ID:

Operator ID: JRB

ALS Bottle#: 13

Worklist Smp#: 7

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

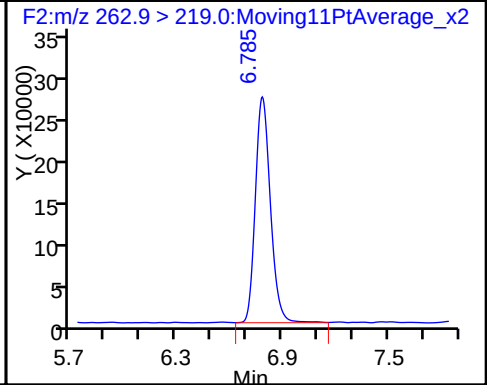
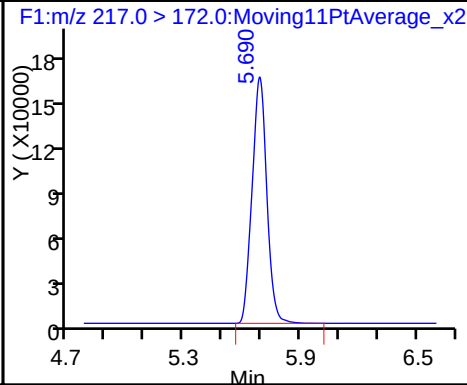
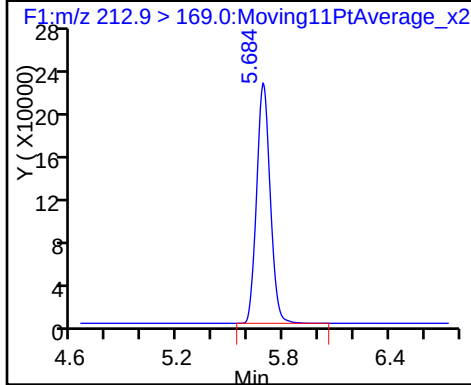
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

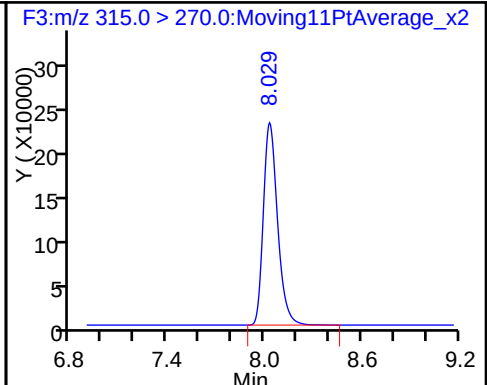
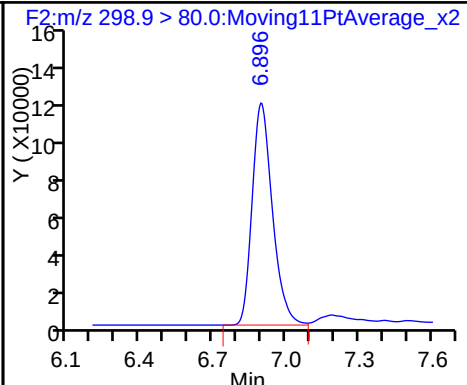
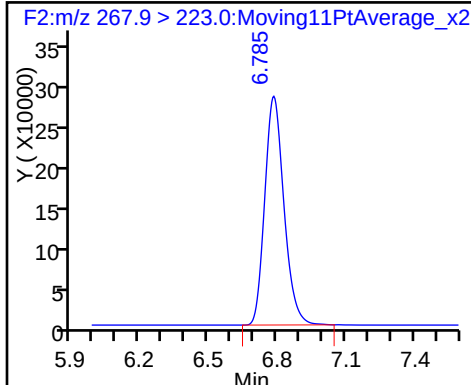
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

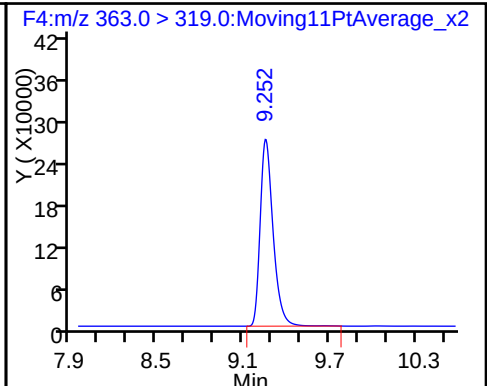
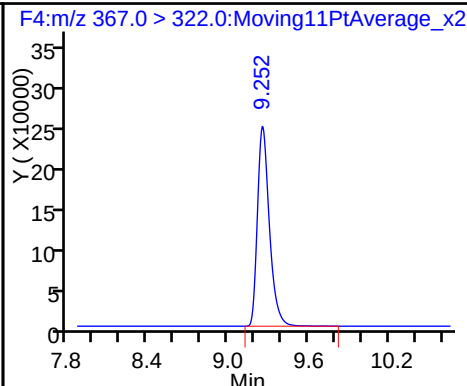
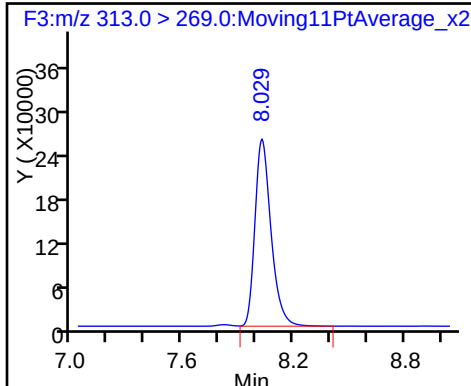
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

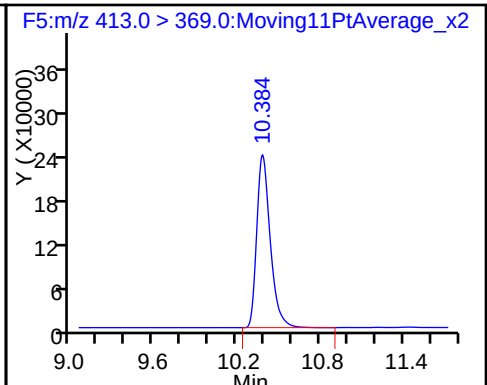
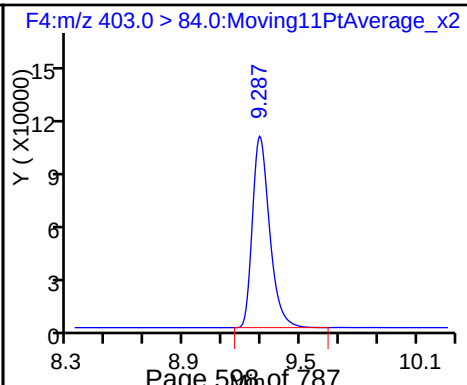
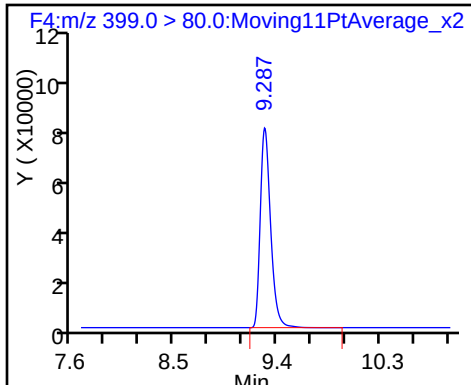
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

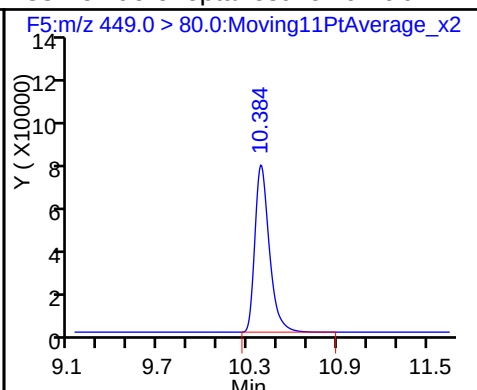
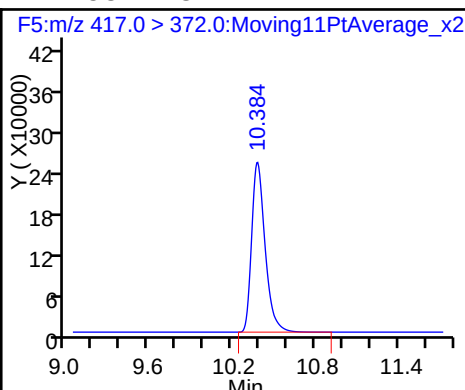
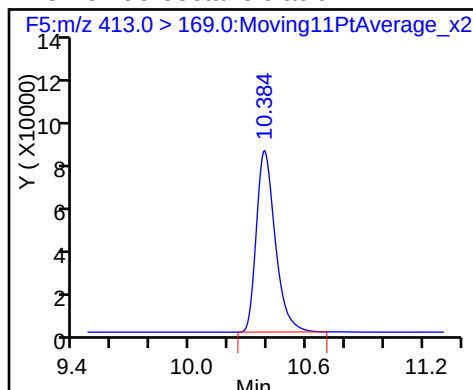
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

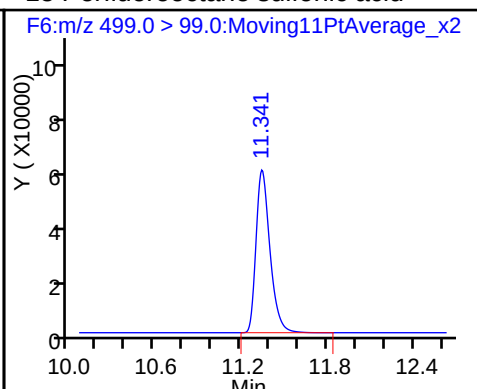
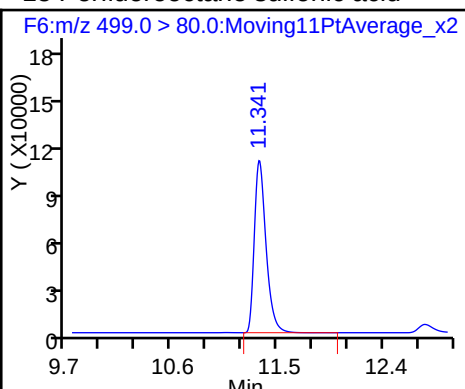
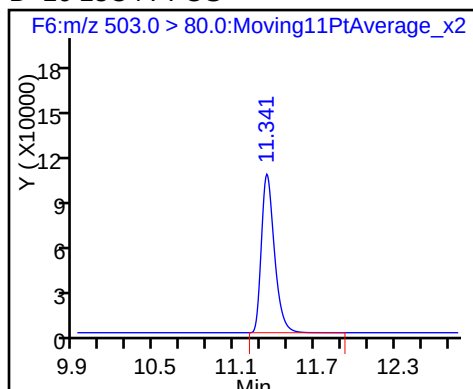
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

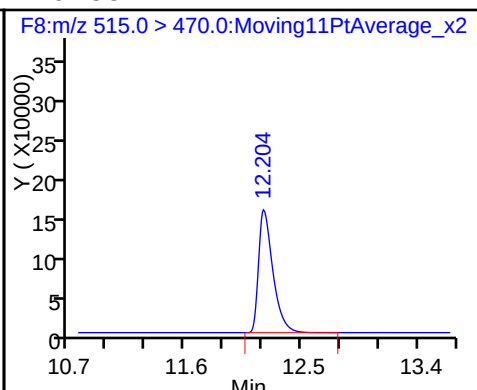
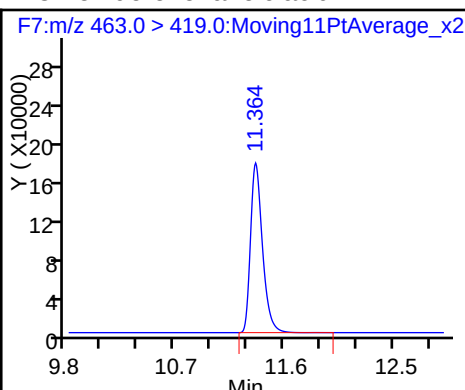
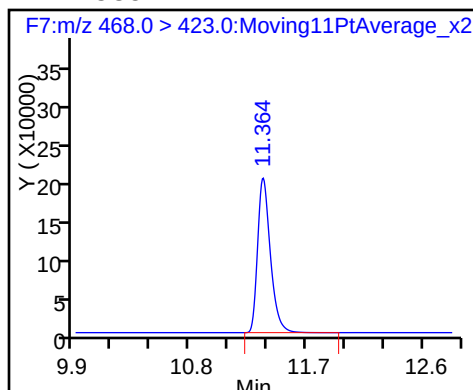
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

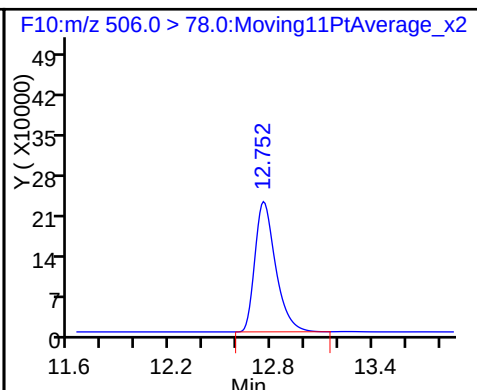
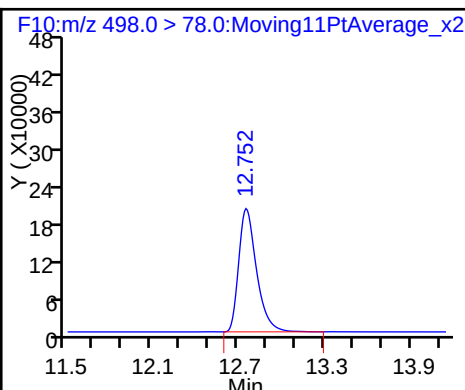
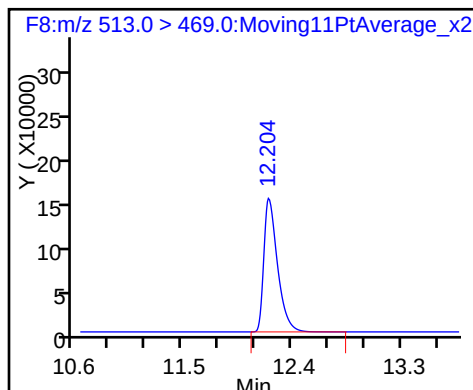
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

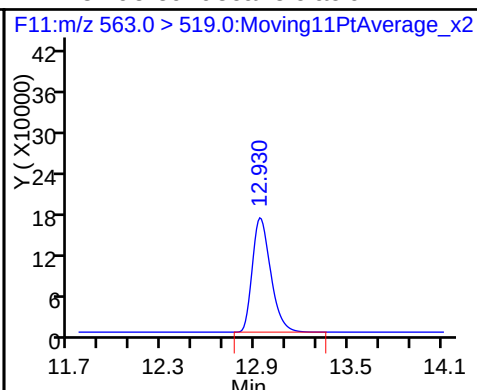
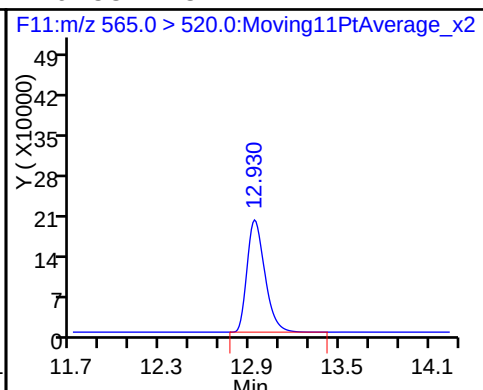
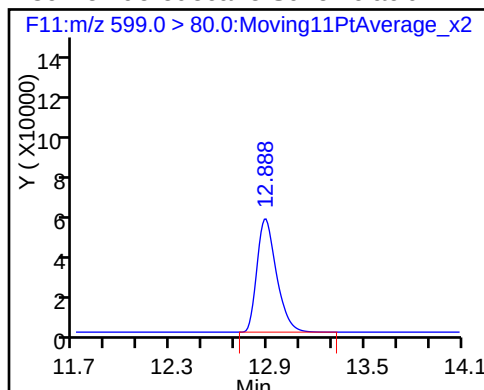
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

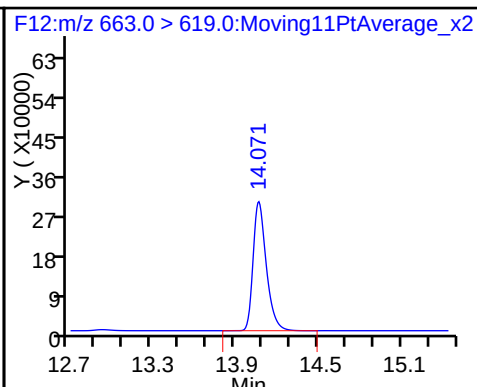
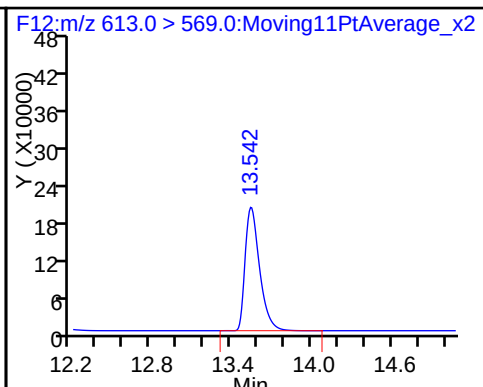
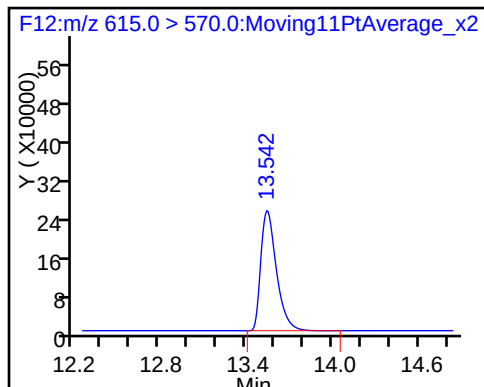
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

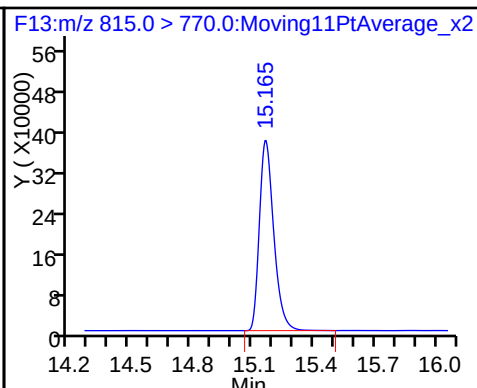
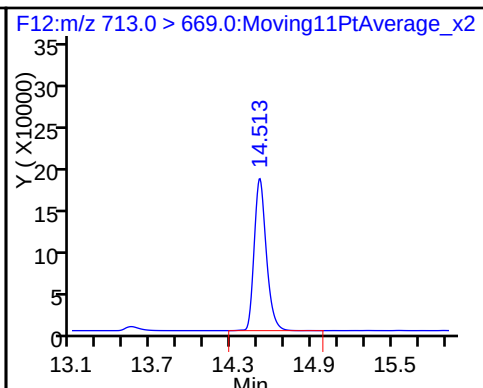
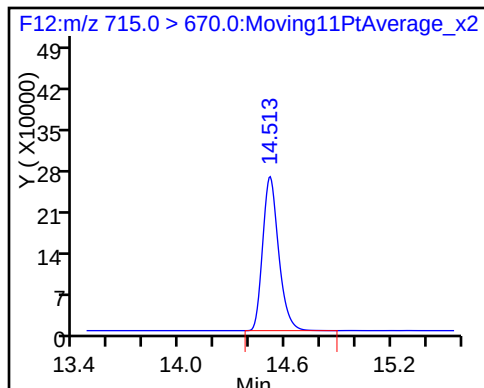
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

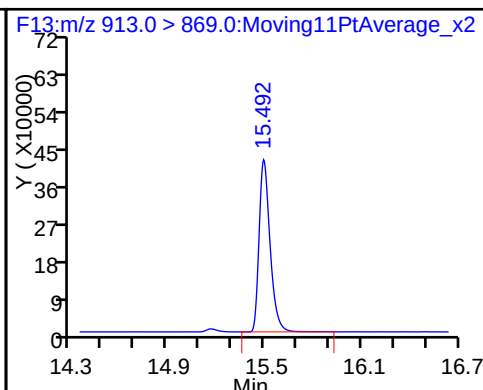
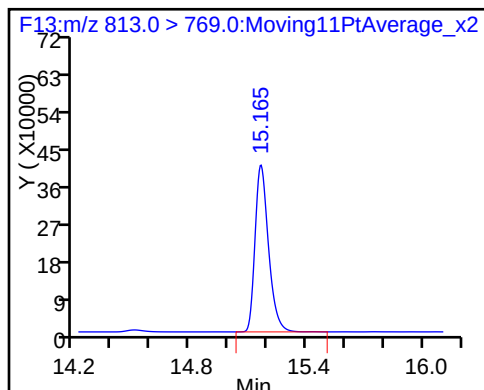
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_009.d
 Lims ID: Std L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 28-Feb-2016 16:20:59 ALS Bottle#: 14 Worklist Smp#: 8
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L6
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:17 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.687	5.691	-0.004	1.000	4684543	202.7		101	43940	
D 1 13C4 PFBA										
217.0 > 172.0	5.687	5.691	-0.004		817767	45.1		90.2	74702	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.785	6.790	-0.005	1.000	6274584	211.9		106	1216	
D 3 13C5-PFPeA										
267.9 > 223.0	6.785	6.791	-0.006		1582076	44.3		88.6	43286	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.896	6.905	-0.009	1.000	2660905	NC			252	
298.9 > 99.0	6.896	6.905	-0.009	1.000	1331936		2.00(0.00-0.00)		325	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.896	6.905	-0.009	1.000	2660905	174.0		98.4		
D 6 13C2 PFHxA										
315.0 > 270.0	8.029	8.035	-0.006		1361540	47.3		94.5	73908	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.029	8.037	-0.008	1.000	6202725	220.0		110	1023	
D 8 13C4-PFHpA										
367.0 > 322.0	9.246	9.261	-0.015		1508133	45.0		90.0	12541	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.252	9.262	-0.010	1.000	6270226	187.6		93.8	4455	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.287	9.296	-0.009	1.000	1861271	186.1		98.4		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.287	9.296	-0.009	1.000	1861271	NC			5931	
D 11 18O2 PFHxS										
403.0 > 84.0	9.287	9.297	-0.010		639112	44.0		93.0	5029	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.377	10.388	-0.011	1.000	5858438	207.5		104	11644	
413.0 > 169.0	10.377	10.388	-0.011	1.000	2146372		2.73(0.00-0.00)	104	11747	
D 12 13C4 PFOA										
417.0 > 372.0	10.377	10.389	-0.012		1498665	41.7		83.5	106952	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.384	10.394	-0.010	1.000	1903998	NC			22473	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.384	10.394	-0.010	1.000	1903998	200.6		105		
D 16 13C4 PFOS										
503.0 > 80.0	11.341	11.350	-0.009		662814	40.0		83.6	47420	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.341	11.350	-0.009	1.000	2710883	197.1		103	149	
499.0 > 99.0	11.341	11.350	-0.009	1.000	1447335		1.87(0.00-0.00)	103	4091	
D 17 13C5 PFNA										
468.0 > 423.0	11.357	11.368	-0.011		1370227	44.5		89.0	48339	
18 Perfluorononanoic acid										
463.0 > 419.0	11.357	11.370	-0.013	1.000	4553684	198.7		99.3	72841	
D 19 13C2 PFDA										
515.0 > 470.0	12.203	12.212	-0.009		1242628	44.6		89.2	78846	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.203	12.213	-0.010	1.000	4651727	186.7		93.3	25751	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.753	12.759	-0.006	1.000	7141798	201.3		101	976	
D 23 13C8 FOSA										
506.0 > 78.0	12.753	12.759	-0.006		2096682	52.1		104	1766	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.878	12.888	-0.010	1.000	1572661	NC			22959	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.878	12.888	-0.010	1.000	1572661	182.7		94.8		
D 26 13C2 PFUnA										
565.0 > 520.0	12.930	12.936	-0.006		1644138	44.3		88.6	98018	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.930	12.938	-0.008	1.000	5302451	190.2		95.1	36813	
D 28 13C2 PFDaA										
615.0 > 570.0	13.542	13.550	-0.008		1831012	44.4		88.8	79200	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.542	13.552	-0.010	1.000	5705818	204.3		102	11907	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.063	14.075	-0.012	1.000	6287027	184.5		92.2	10161	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.507	14.516	-0.009		1649127	48.7		97.4	28527	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.507	14.517	-0.010	1.000	4260180	182.8		91.4	3514	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.161	15.166	-0.005		1999742	51.5		103	16706	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.161	15.166	-0.005	1.000	7423561	210.0		105	5961	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_009.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.492	15.496	-0.004	1.000	7811741	213.9		107	6408	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L6_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_009.d

Injection Date: 28-Feb-2016 16:20:59

Instrument ID: A6

Lims ID: Std L6

Client ID:

Operator ID: JRB

ALS Bottle#: 14

Worklist Smp#: 8

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

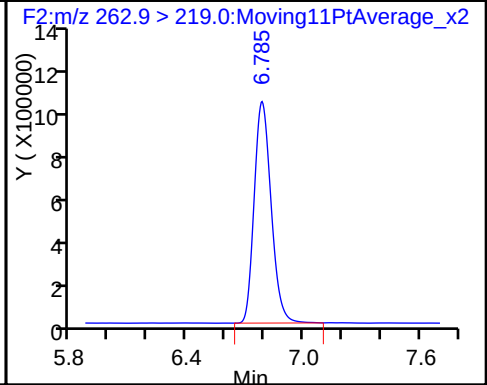
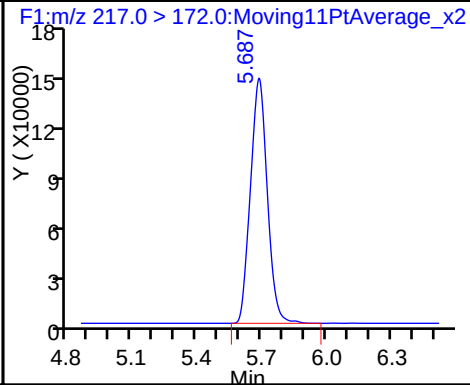
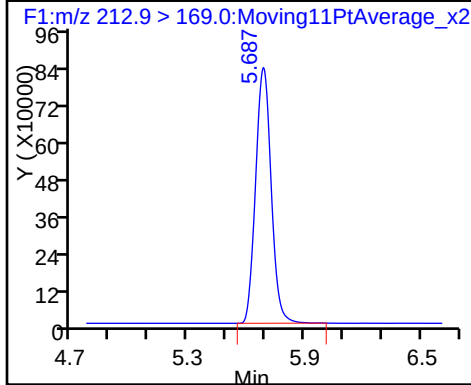
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

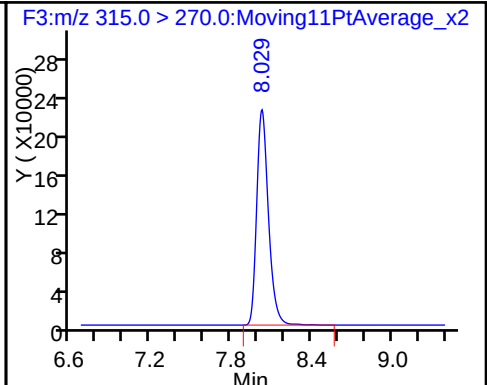
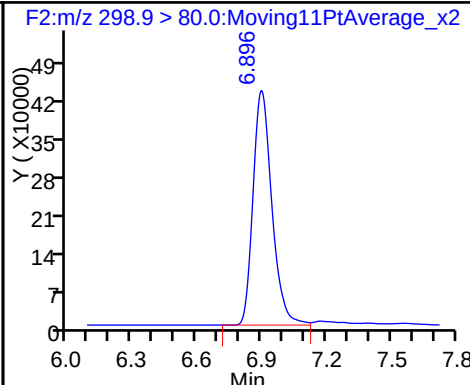
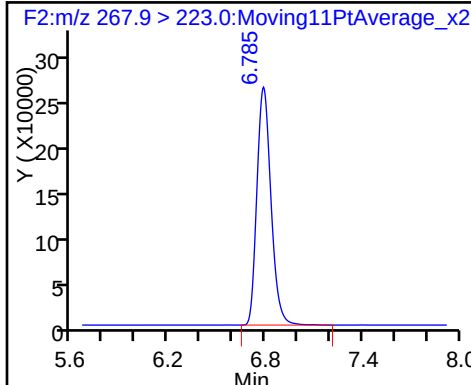
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

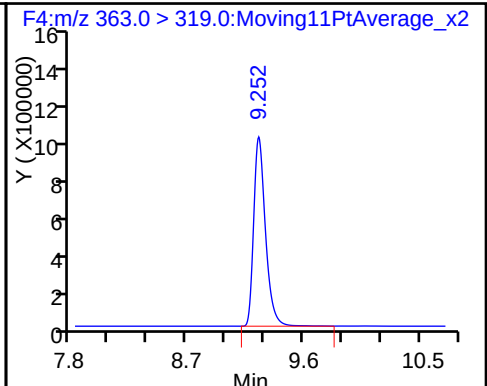
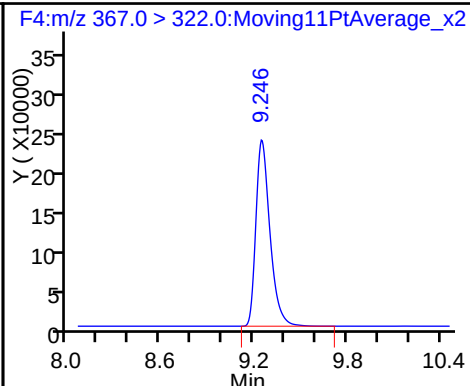
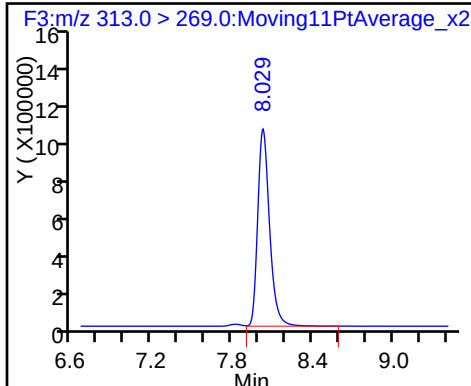
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

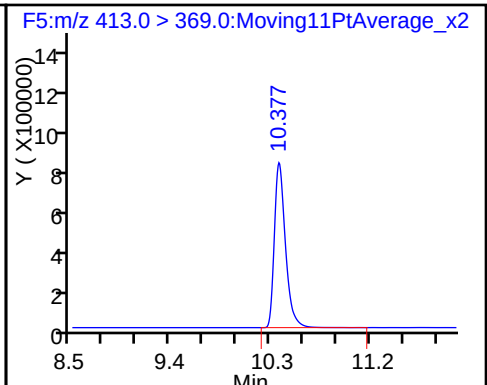
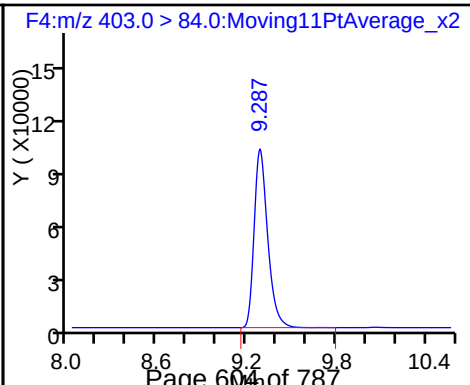
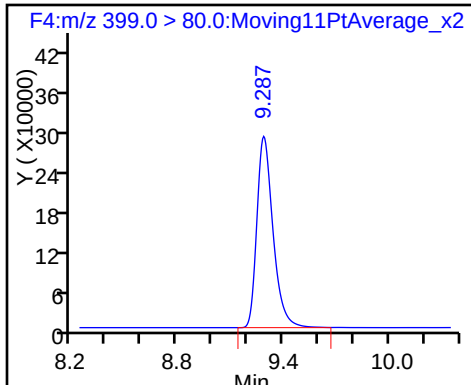
9 Perfluoroheptanoic acid



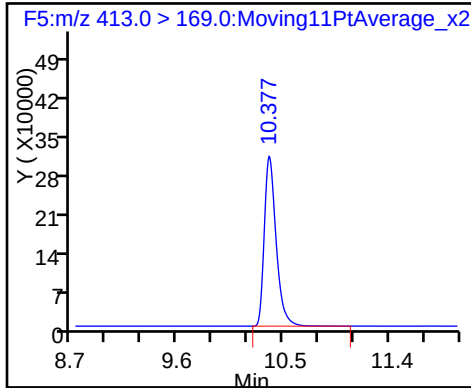
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

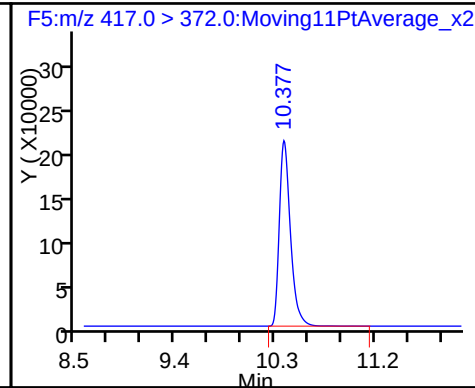
13 Perfluorooctanoic acid



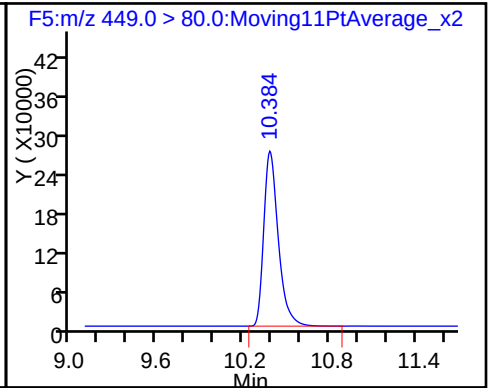
13 Perfluorooctanoic acid



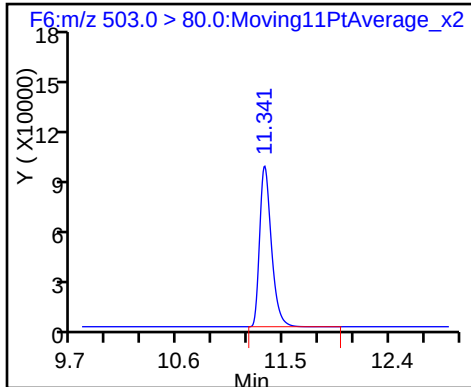
D 12 13C4 PFOA



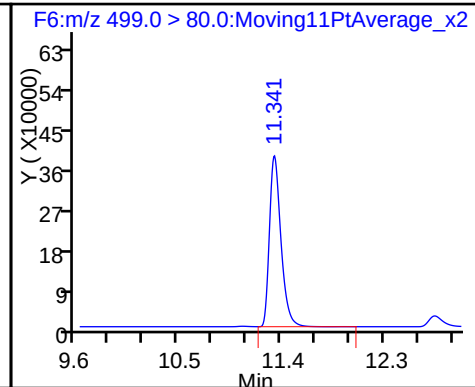
38 Perfluoroheptanesulfonic Acid



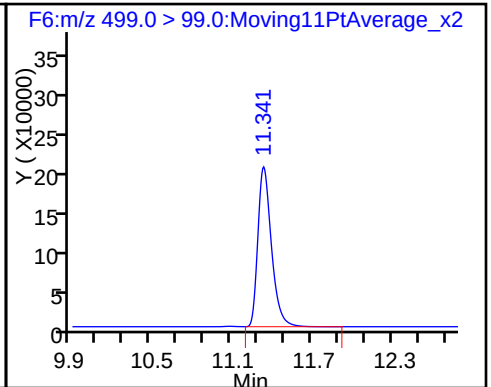
D 16 13C4 PFOS



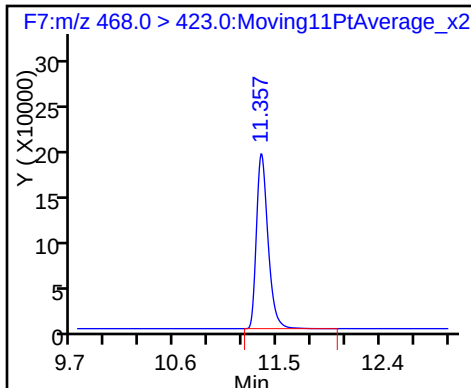
15 Perfluorooctane sulfonic acid



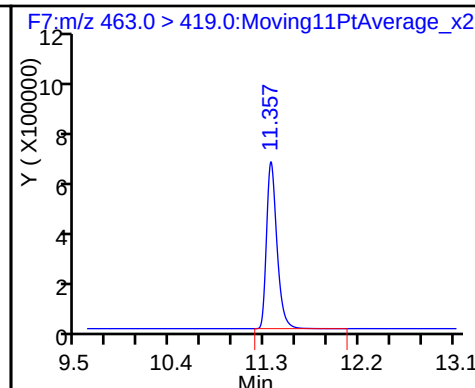
15 Perfluorooctane sulfonic acid



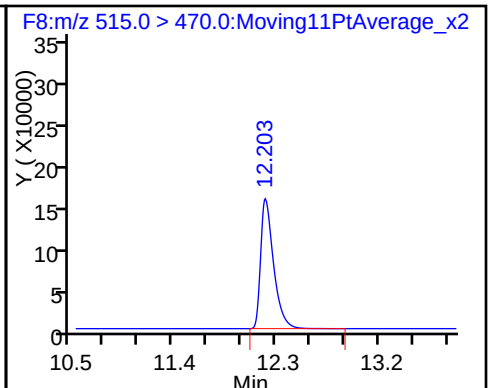
D 17 13C5 PFNA



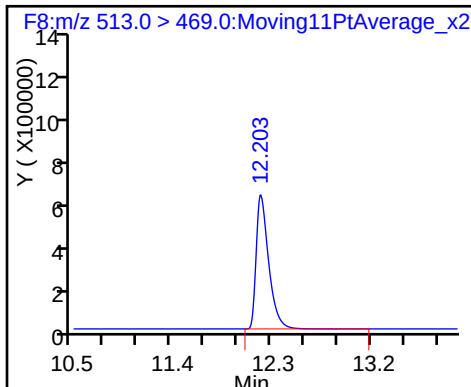
18 Perfluorononanoic acid



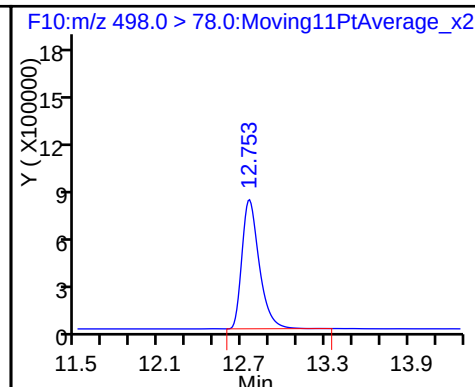
D 19 13C2 PFDA



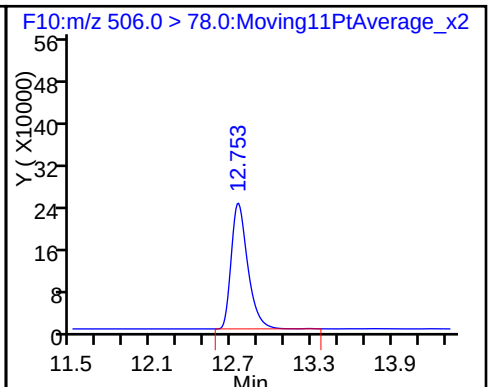
20 Perfluorodecanoic acid



24 Perfluorooctane Sulfonamide



D 23 13C8 FOSA

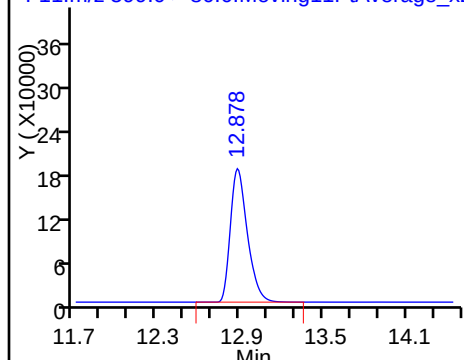


39 Perfluorodecane Sulfonic acid

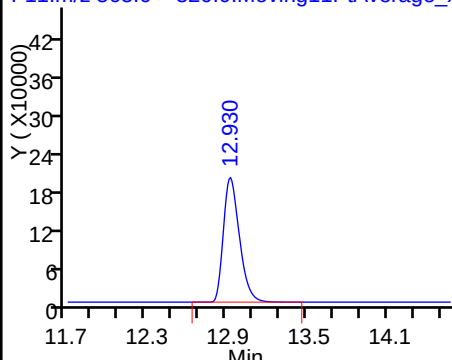
D 26 13C2 PFUnA

27 Perfluoroundecanoic acid

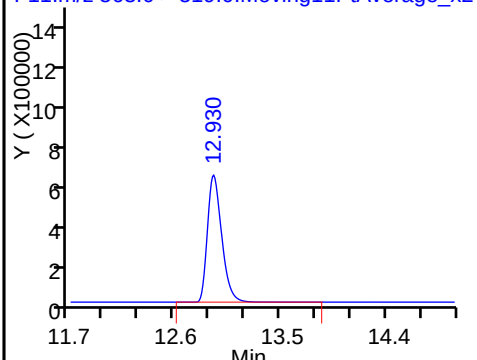
F11:m/z 599.0 > 80.0:Moving11PtAverage_x2



F11:m/z 565.0 > 520.0:Moving11PtAverage_x2



F11:m/z 563.0 > 519.0:Moving11PtAverage_x2

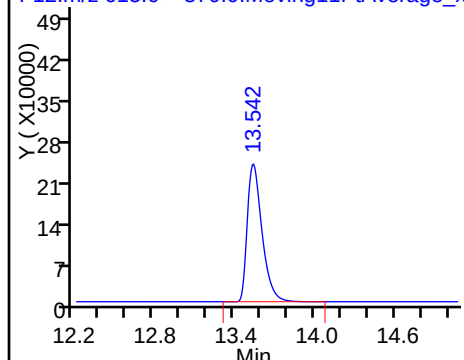


D 28 13C2 PFDaA

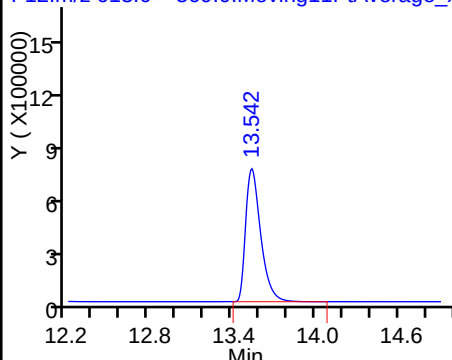
29 Perfluorododecanoic acid

30 Perfluorotridecanoic acid

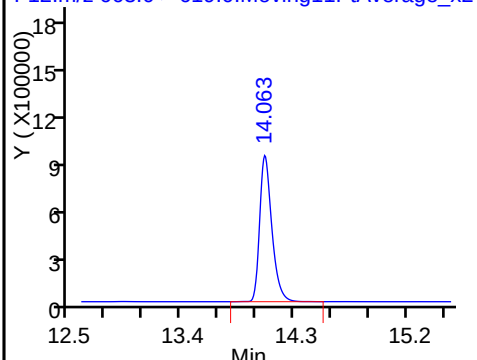
F12:m/z 615.0 > 570.0:Moving11PtAverage_x2



F12:m/z 613.0 > 569.0:Moving11PtAverage_x2



F12:m/z 663.0 > 619.0:Moving11PtAverage_x2

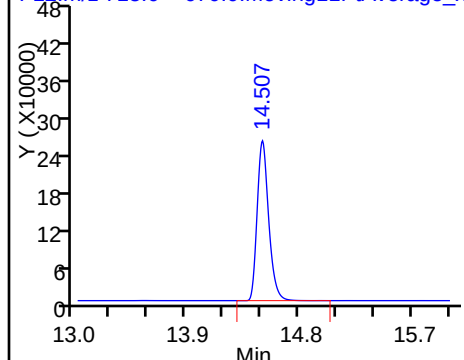


D 33 13C2-PFTeDA

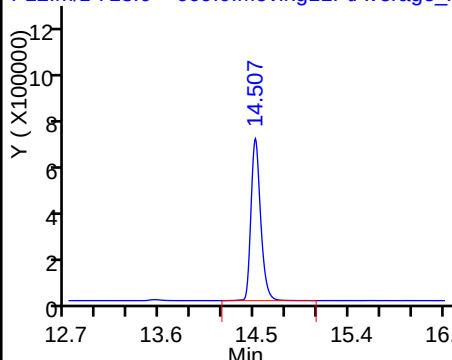
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA

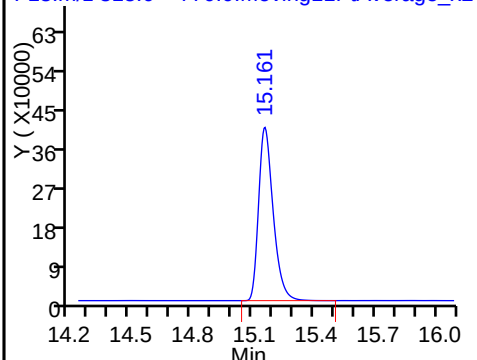
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F12:m/z 713.0 > 669.0:Moving11PtAverage_x2



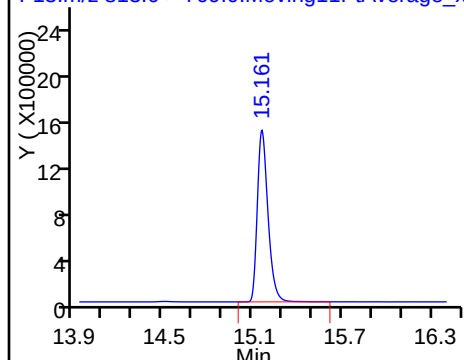
F13:m/z 815.0 > 770.0:Moving11PtAverage_x2



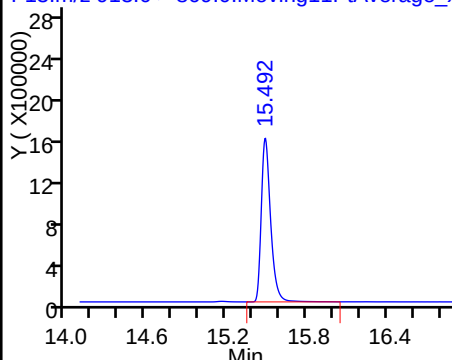
34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid

F13:m/z 813.0 > 769.0:Moving11PtAverage_x2



F13:m/z 913.0 > 869.0:Moving11PtAverage_x2



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Lims ID: Std L7
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 28-Feb-2016 16:42:13 ALS Bottle#: 15 Worklist Smp#: 9
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: STD L7
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:19 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.690	5.691	-0.001	1.000	6697412	396.6		99.1	19725	
D 1 13C4 PFBA										
217.0 > 172.0	5.687	5.691	-0.004		597055	32.9		65.9	114756	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.785	6.790	-0.005	1.000	8958733	425.4		106	1713	
D 3 13C5-PFPeA										
267.9 > 223.0	6.790	6.791	-0.001		1124840	31.5		63.0	17104	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.900	6.905	-0.005	1.000	3583829	NC			301	
298.9 > 99.0	6.900	6.905	-0.005	1.000	1870220		1.92(0.00-0.00)		782	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.900	6.905	-0.005	1.000	3583829	339.0		95.9		
D 6 13C2 PFHxA										
315.0 > 270.0	8.029	8.035	-0.006		1036911	36.0		72.0	34301	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.029	8.037	-0.008	1.000	8795496	409.7		102	1922	
D 8 13C4-PFHpA										
367.0 > 322.0	9.253	9.261	-0.008		1077078	32.2		64.3	84616	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.253	9.262	-0.009	1.000	8737306	365.8		91.4	12162	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.289	9.296	-0.007	1.000	2611327	377.9		99.9		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.289	9.296	-0.007	1.000	2611327	NC			3169	
D 11 18O2 PFHxS										
403.0 > 84.0	9.289	9.297	-0.008		441476	30.4		64.3	34055	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.378	10.388	-0.010	1.000	8571048	428.1		107	6842	
413.0 > 169.0	10.378	10.388	-0.010	1.000	2918172		2.94(0.00-0.00)	107	8927	
D 12 13C4 PFOA										
417.0 > 372.0	10.378	10.389	-0.011		1062825	29.6		59.2	37965	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.385	10.394	-0.009	1.000	2654898	NC			33903	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.385	10.394	-0.009	1.000	2654898	389.0		102		
D 16 13C4 PFOS										
503.0 > 80.0	11.343	11.350	-0.007		476334	28.7		60.1	33430	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.343	11.350	-0.007	1.000	3849195	389.2		102	147	
499.0 > 99.0	11.343	11.350	-0.007	1.000	2013349		1.91(0.00-0.00)	102	2132	
D 17 13C5 PFNA										
468.0 > 423.0	11.358	11.368	-0.010		998819	32.4		64.9	35587	
18 Perfluorononanoic acid										
463.0 > 419.0	11.358	11.370	-0.012	1.000	6443605	385.7		96.4	19536	
D 19 13C2 PFDA										
515.0 > 470.0	12.208	12.212	-0.004		840184	30.2		60.3	26046	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.208	12.213	-0.005	1.000	6553124	388.8		97.2	13542	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.757	12.759	-0.002	1.000	10378766	414.7		104	1056	
D 23 13C8 FOSA										
506.0 > 78.0	12.757	12.759	-0.002		1478994	36.8		73.5	5656	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.882	12.888	-0.006	1.000	2243489	NC			29049	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.882	12.888	-0.006	1.000	2243489	362.5		94.0		
D 26 13C2 PFUnA										
565.0 > 520.0	12.934	12.936	-0.002		1172649	31.6		63.2	10631	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.934	12.938	-0.004	1.000	7767428	391.0		97.8	14323	
D 28 13C2 PFDaA										
615.0 > 570.0	13.544	13.550	-0.006		1310921	31.8		63.6	84800	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.544	13.552	-0.008	1.000	8297159	414.9		104	11948	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.066	14.075	-0.009	1.000	8797242	360.5		90.1	9096	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.509	14.516	-0.007		1227060	36.2		72.5	27097	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.509	14.517	-0.008	1.000	6248230	374.5		93.6	4220	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.158	15.166	-0.008		1378626	35.5		71.1	10168	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.158	15.166	-0.008	1.000	10104232	401.8		100	6238	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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36 Perfluorooctadecanoic acid

913.0 > 869.0 15.489 15.496 -0.007 1.000 10069489 385.2 96.3 7136

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L7_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d

Injection Date: 28-Feb-2016 16:42:13

Instrument ID: A6

Lims ID: Std L7

Client ID:

Operator ID: JRB

ALS Bottle#: 15

Worklist Smp#: 9

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

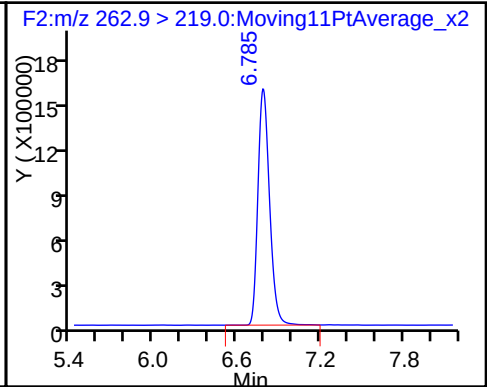
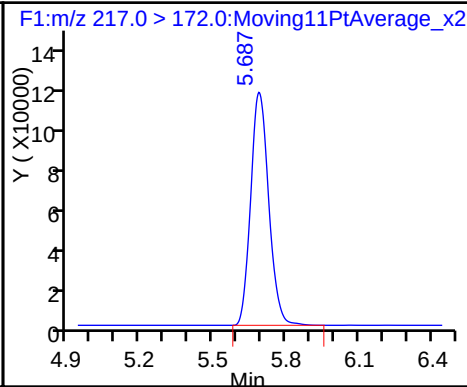
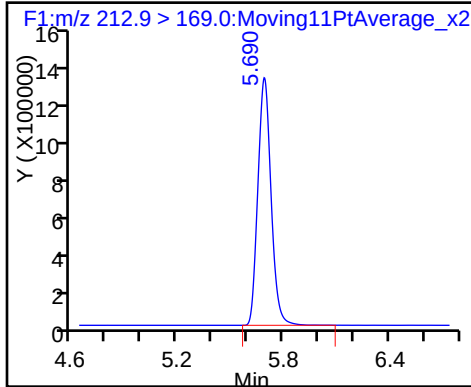
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

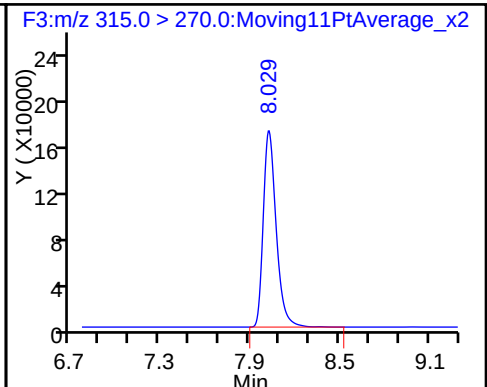
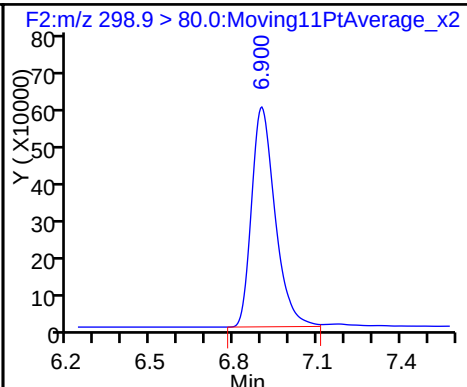
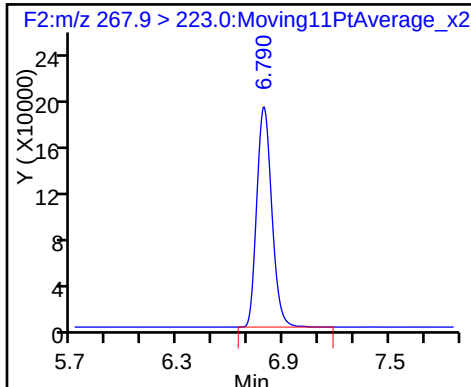
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

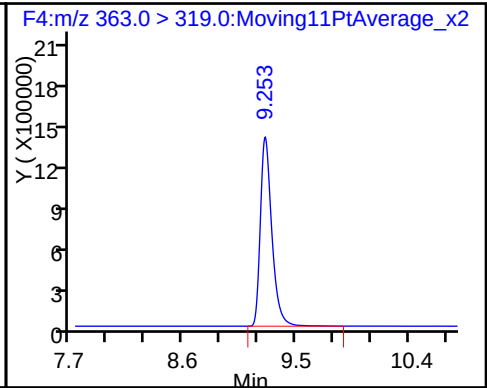
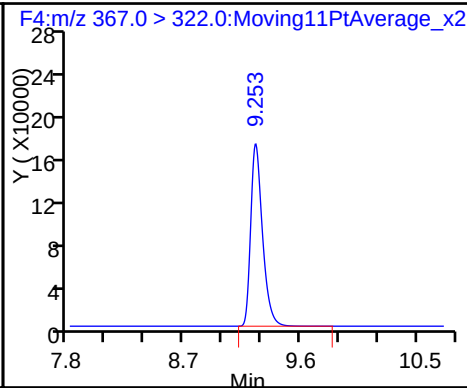
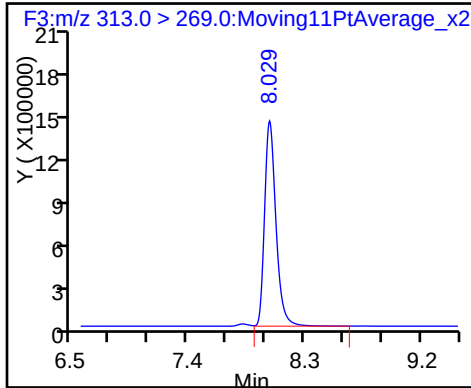
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

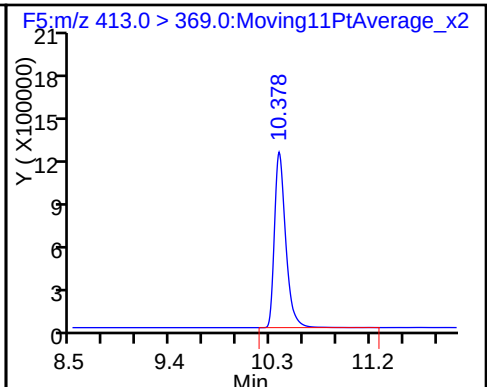
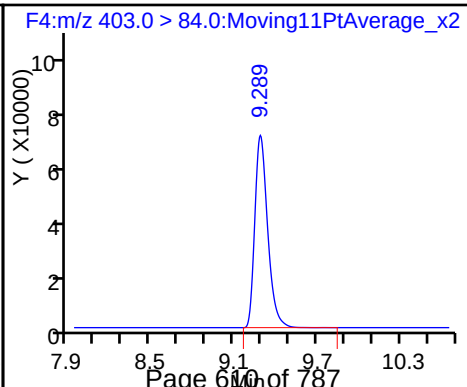
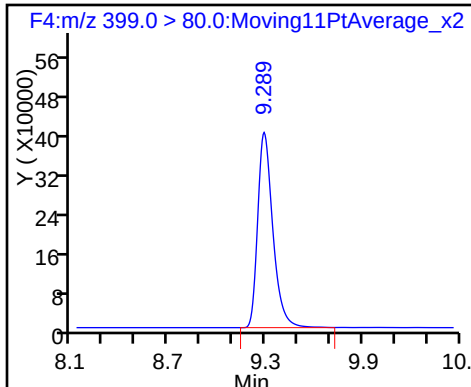
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

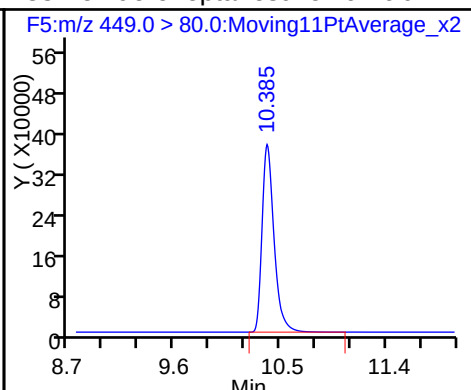
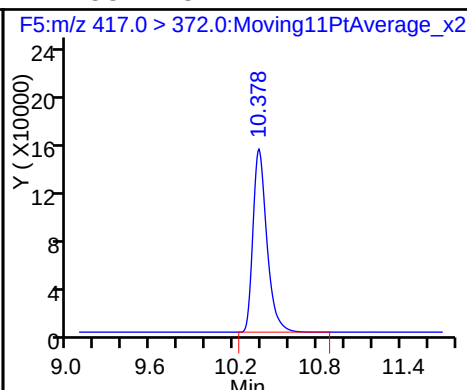
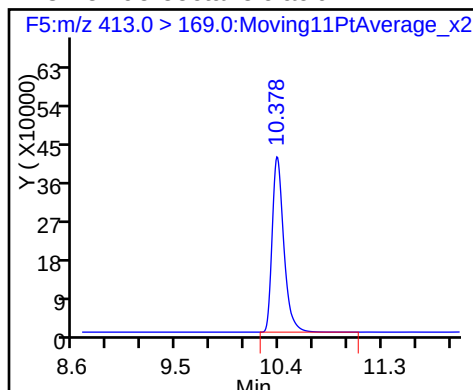
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

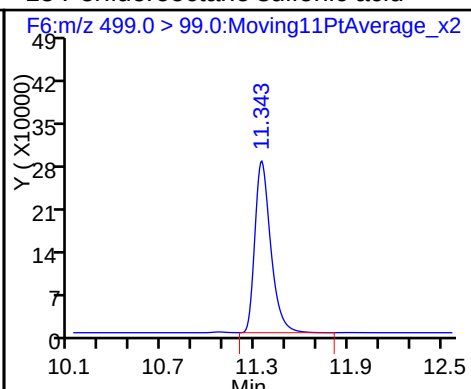
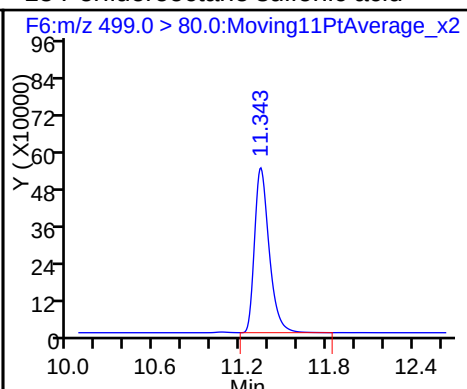
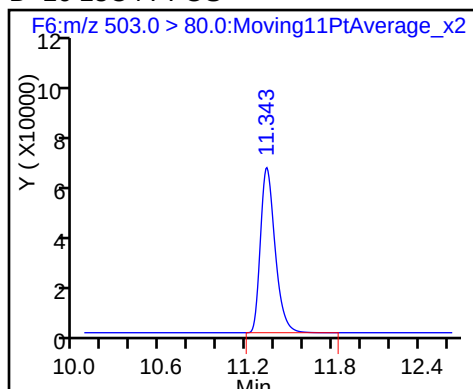
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

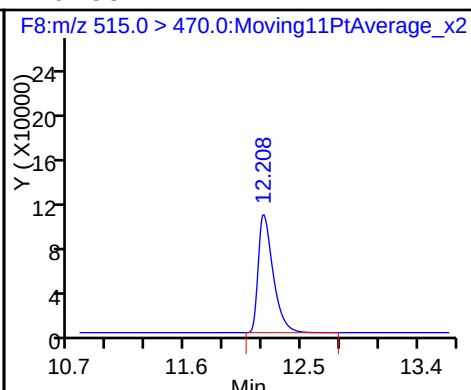
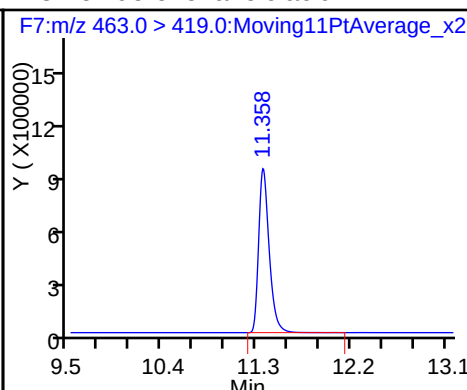
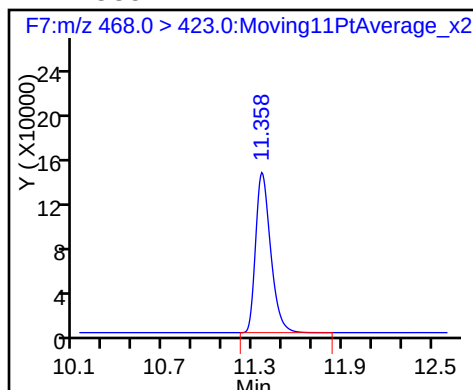
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

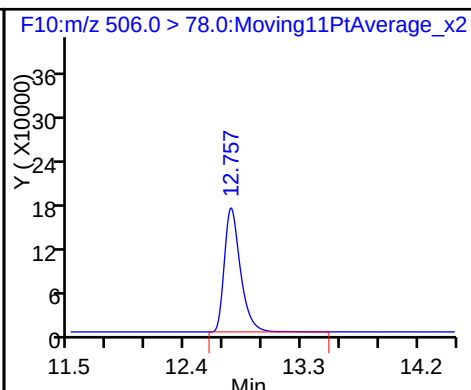
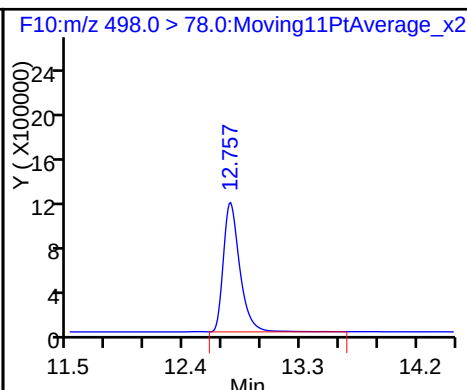
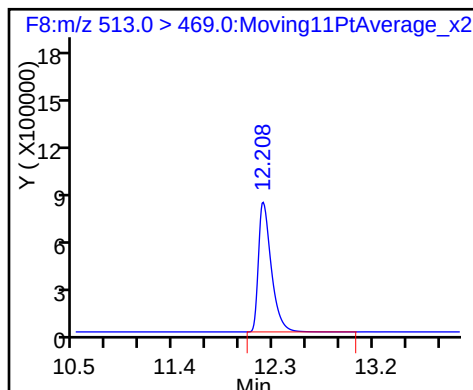
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

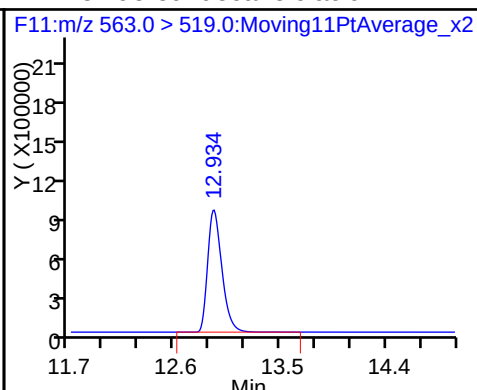
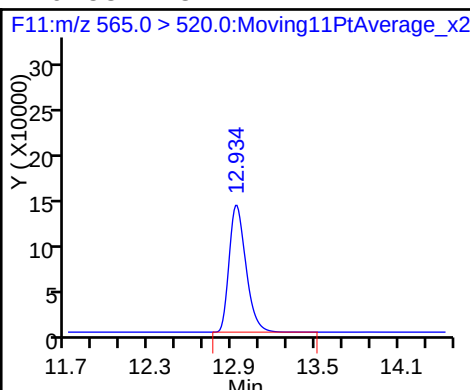
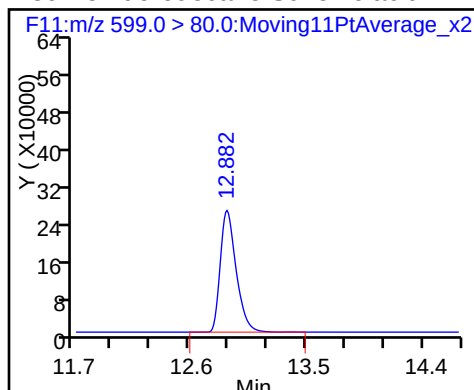
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

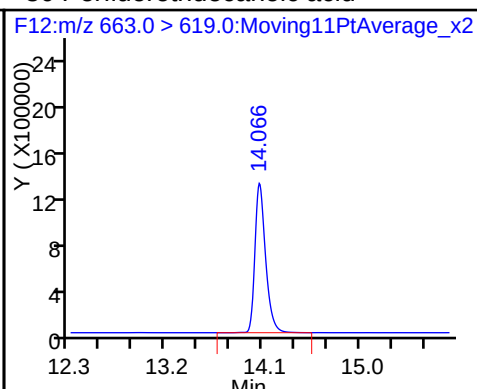
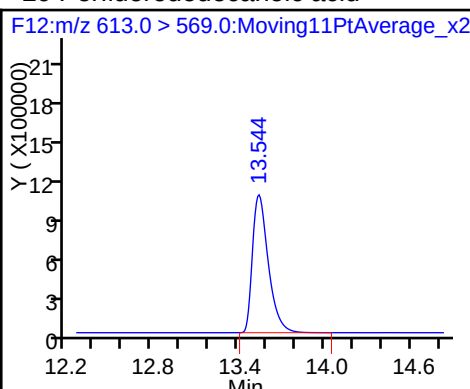
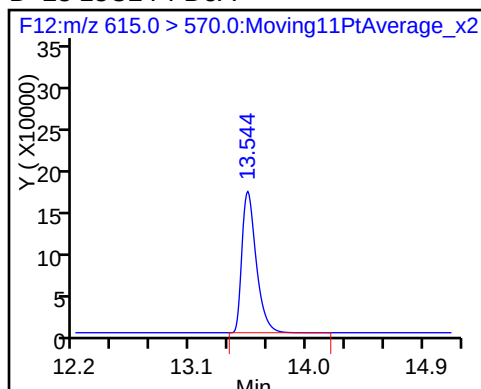
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

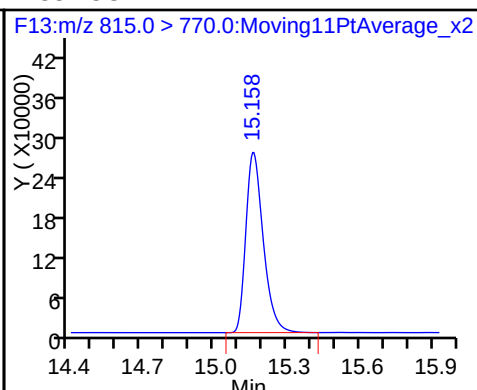
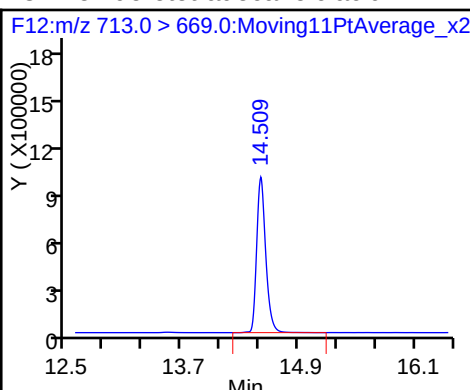
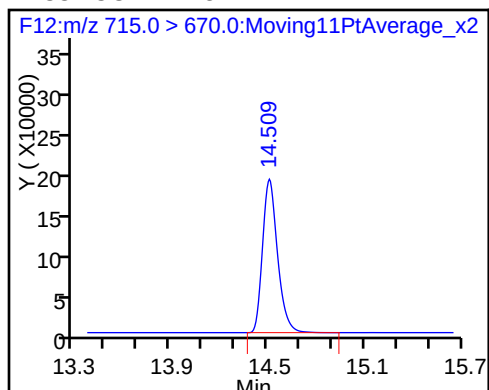
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

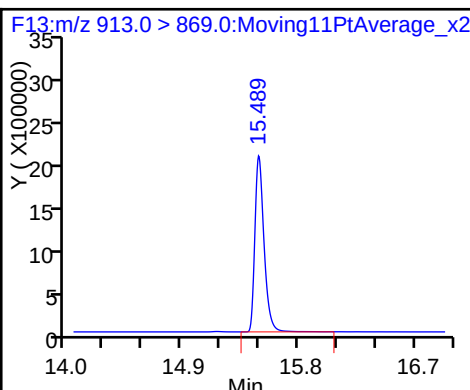
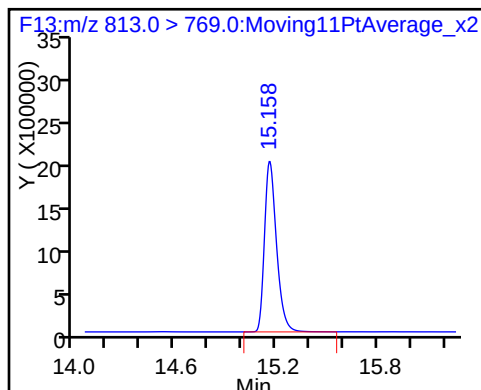
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab Sample ID: ICV 320-101820/10 Calibration Date: 02/26/2016 20:17
 Instrument ID: A4 Calib Start Date: 02/26/2016 17:27
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/26/2016 19:34
 Lab File ID: 26FEB2016A4A_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.4899	0.5519		56.3	50.0	12.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	0.5065	0.5297		52.3	50.0	4.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.5065	0.5297		52.3	50.0	4.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.4953	0.5075		51.2	50.0	2.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.5995	0.6951		51.3	44.3	15.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.4638	0.4588		49.5	50.0	-1.1	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.5882		54.8	50.0	9.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.014	1.050		48.9	47.3	3.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	2.417	2.069		40.7	47.6	-14.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.5253	0.5473		52.1	50.0	4.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	3.734	3.671		46.9	47.8	-1.7	25.0
Perfluorononanoic acid (PFNA)	L2ID		1.058		50.2	50.0	0.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.8798	0.8749		49.7	50.0	-0.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9154	0.9791		53.5	50.0	7.0	25.0
Perfluorodecane Sulfonic acid	AveID	1.587	1.562		47.5	48.3	-1.6	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.098	1.117		50.9	50.0	1.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8019	0.8729		54.4	50.0	8.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.7847	0.7421		47.3	50.0	-5.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.3730	0.3561		47.7	50.0	-4.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_014.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 26-Feb-2016 20:17:12 ALS Bottle#: 9 Worklist Smp#: 10
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub6
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:18:18 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:13:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.198	6.043	0.155	1.000	2279528	56.3			5353	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.198	6.043	0.155	1.000	2279528	52.3			5353	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.198	6.043	0.155	1.000	2279528	52.3			5353	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.198	6.043	0.155		2279528	32.5		64.9	5353	
D 1 13C4 PFBA										
216.7 > 171.5	6.198	6.043	0.155		4130305	44.8		89.7	12319	
D 3 13C5-PFPeA										
267.6 > 222.7	7.502	7.272	0.230		2687035	44.6		89.1	5981	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.502	7.275	0.227	1.000	1363584	51.2			670	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.647	7.404	0.243	1.000	1010829	NC			1426	
298.8 > 98.6	7.647	7.404	0.243	1.000	671868		1.50(0.00-0.00)		936	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.647	7.404	0.243	1.000	1010829	51.3				
7 Perfluorohexanoic acid										
312.9 > 268.7	8.870	8.604	0.266	1.000	1718894	49.5			1645	
D 6 13C2 PFHxA										
314.6 > 269.7	8.863	8.604	0.259		3746191	46.5		93.0	6006	
D 8 13C4-PFHpA										
366.6 > 321.6	10.105	9.856	0.249		3014195	44.4		88.8	4431	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.105	9.859	0.246	1.000	1773049	54.8			2124	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.139	9.892	0.247	1.000	1630372	48.9				
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.139	9.892	0.247	1.000	1630372	NC			2536	
D 11 18O2 PFHxS										
402.5 > 83.6	10.139	9.892	0.247		1554519	42.9		90.6	3837	
D 12 13C4 PFOA										
416.5 > 371.6	11.180	10.958	0.222		3390361	43.3		86.5	4780	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.190	10.958	0.232	1.000	1855656	52.1			1213	
412.8 > 168.7	11.190	10.958	0.232	1.000	711639		2.61(0.00-0.00)		1455	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.180	10.960	0.220	1.000	1595097	NC			3254	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.180	10.960	0.220	1.000	1595097	40.7				
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.075	11.874	0.201	1.000	2838213	46.9			2688	
498.3 > 98.2	12.075	11.874	0.201	1.000	1731419		1.64(0.00-0.00)		2433	
D 16 13C4 PFOS										
502.4 > 79.7	12.075	11.876	0.199		774022	47.5		99.3	1480	
D 17 13C5 PFNA										
467.5 > 422.6	12.106	11.898	0.208		3281679	50.6		101	6229	
18 Perfluorononanoic acid										
462.5 > 418.6	12.106	11.899	0.207	1.000	3471042	50.2			3082	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.882	12.693	0.189	1.000	3234126	49.7			2890	
D 19 13C2 PFDA										
514.4 > 469.5	12.869	12.693	0.176		3696513	45.8		91.5	5622	
21 PFNS (Perflouro-1-nonanesulfonate)										
548.6 > 79.6	12.831	12.831	0.0	1.000	1010175	NC			1549	
D 23 13C8 FOSA										
505.4 > 77.6	13.400	13.222	0.178		5294827	46.8		93.6	3379	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.400	13.222	0.178	1.000	5183972	53.5			3824	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.485	13.324	0.161	1.000	1220419	NC			2092	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.485	13.324	0.161	1.000	1220419	47.5				
D 26 13C2 PFUnA										
564.3 > 519.5	13.529	13.369	0.160		3470905	45.0		90.0	5042	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.529	13.372	0.157	1.000	3878037	50.9			2117	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.078	13.937	0.141	1.000	3756873	54.4			1818	
D 28 13C2 PFDaA										
614.4 > 569.4	14.078	13.939	0.139		4303774	50.5		101	3011	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.552	14.430	0.122	1.000	3193673	47.3			1695	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 PFDoS (Perflouro-1-dodecanesulfona 698.6 > 79.7	14.497	14.727	-0.230	1.000	510351	NC			1569	
32 Perfluorotetradecanoic acid 712.6 > 668.5	14.957	14.841	0.116	1.000	1532525	47.7			1171	
D 33 13C2-PFTeDA 714.5 > 669.5	14.957	14.844	0.113		3495891	50.6		101	2838	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_00014

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_014.d

Injection Date: 26-Feb-2016 20:17:12

Instrument ID: A4

Lims ID: ICV

Client ID:

Operator ID: JRB

ALS Bottle#: 9

Worklist Smp#: 10

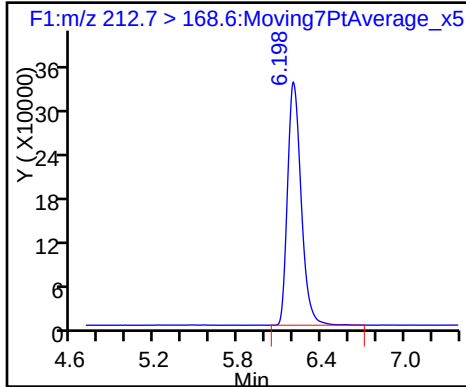
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

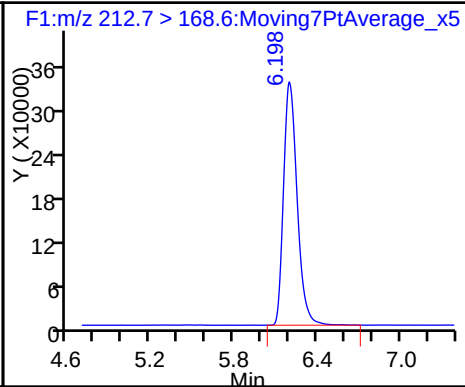
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

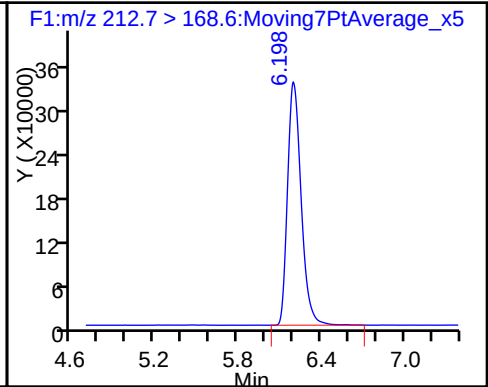
2 Perfluorobutyric acid



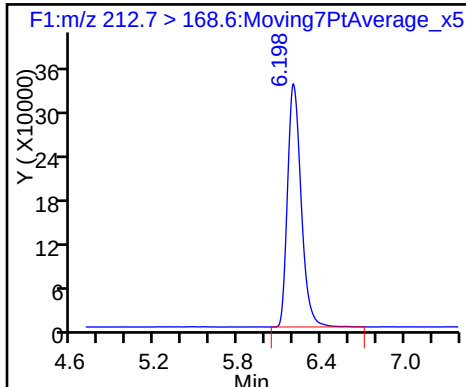
36 Perfluorooctadecanoic acid



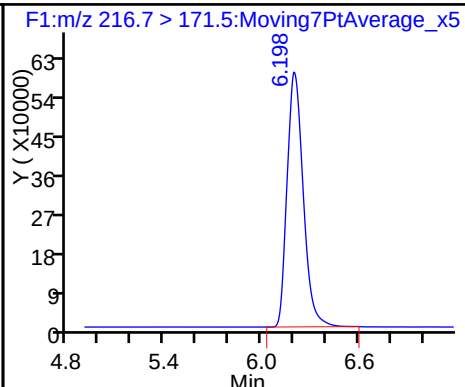
34 Perfluorohexadecanoic acid



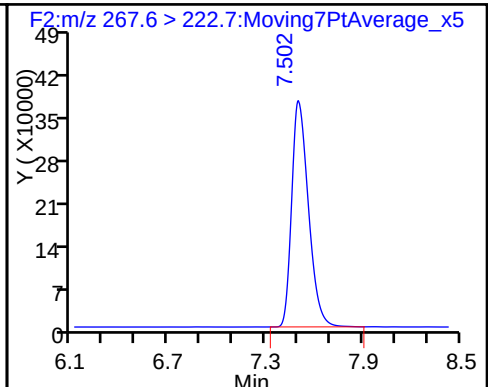
D 35 13C2-PFHxDA



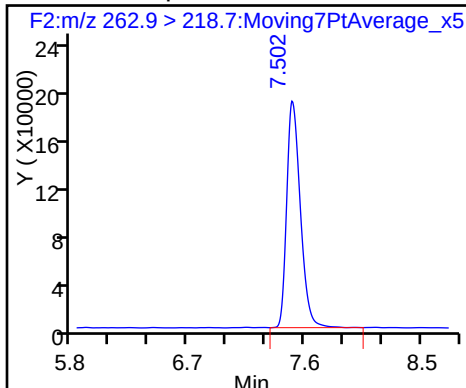
D 1 13C4 PFBA



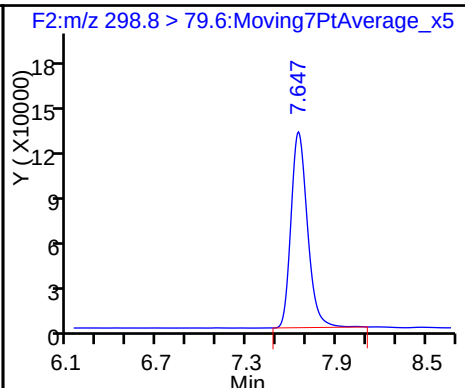
D 3 13C5-PFPeA



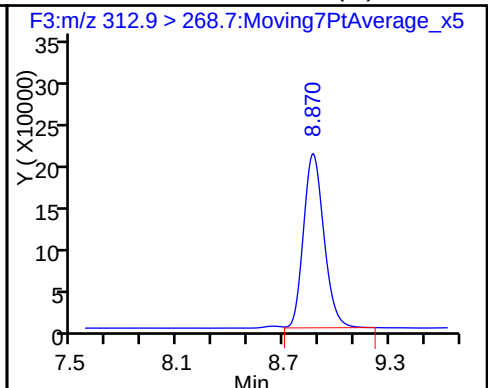
4 Perfluoropentanoic acid



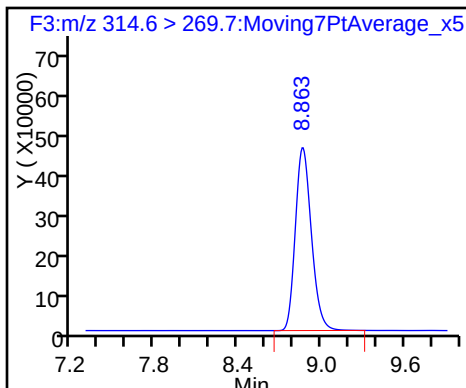
51 Perfluorobutanesulfonic acid



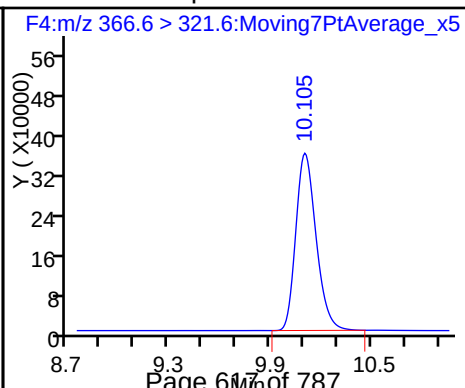
7 Perfluorohexanoic acid (M)



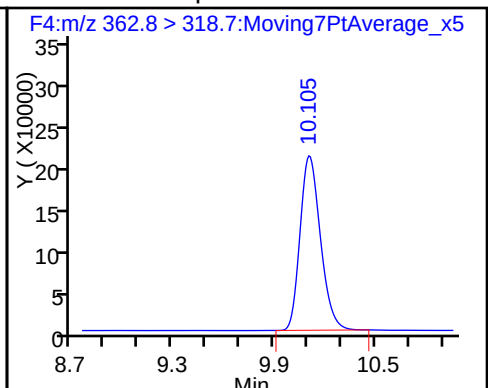
D 6 13C2 PFHxA



D 8 13C4-PFHpA



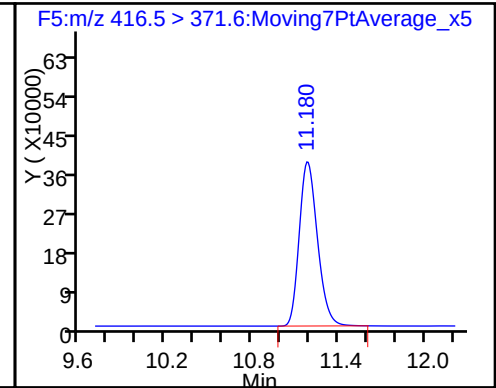
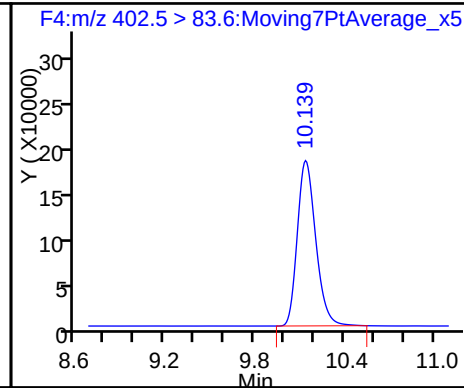
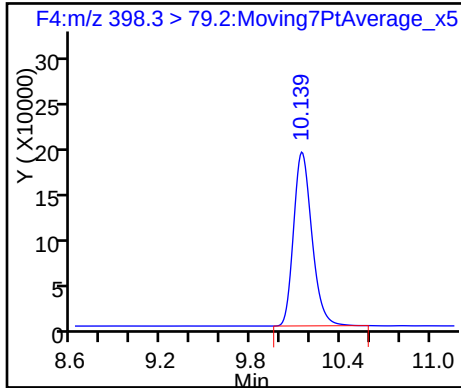
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

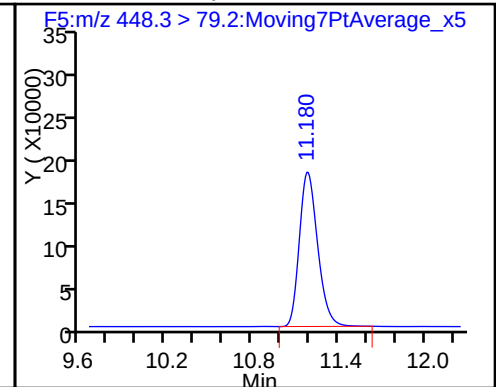
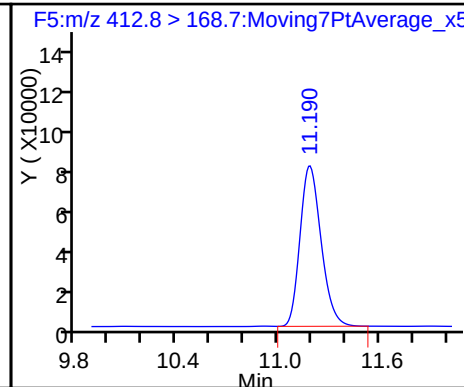
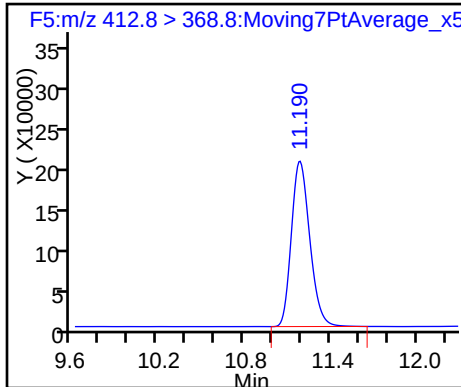
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

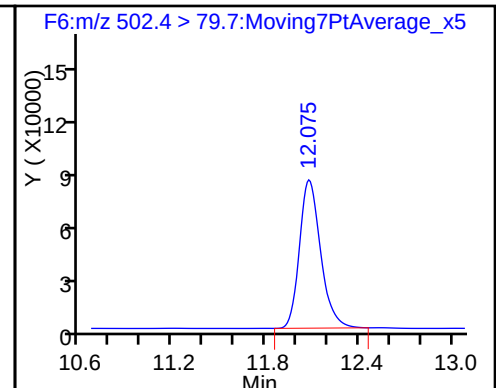
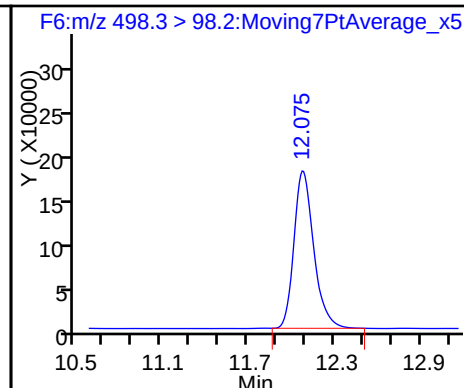
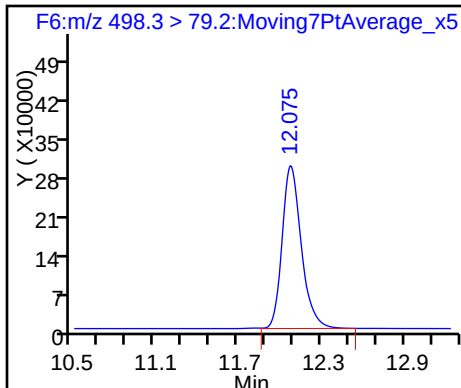
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

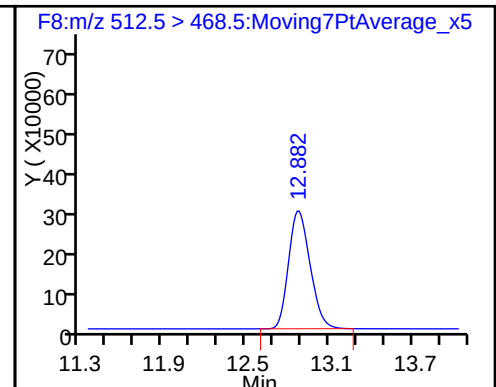
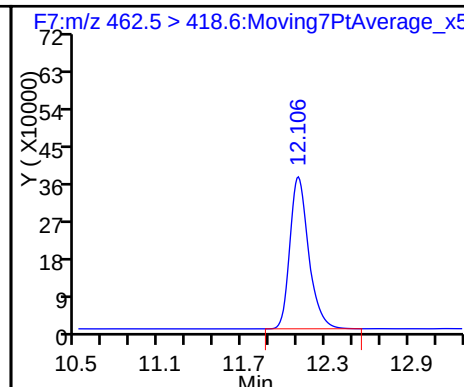
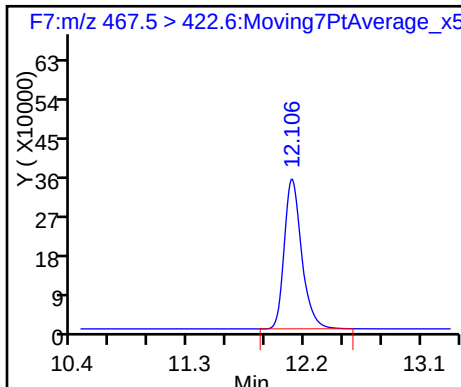
D 16 13C4 PFOS



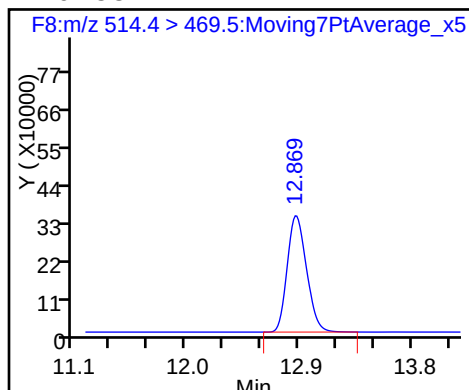
D 17 13C5 PFNA

18 Perfluorononanoic acid

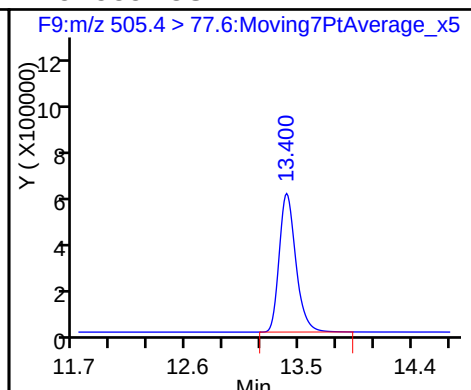
20 Perfluorodecanoic acid



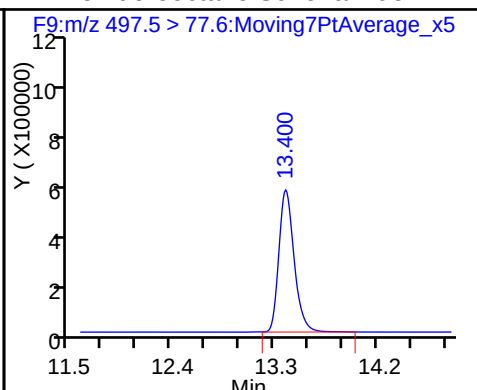
D 19 13C2 PFDA



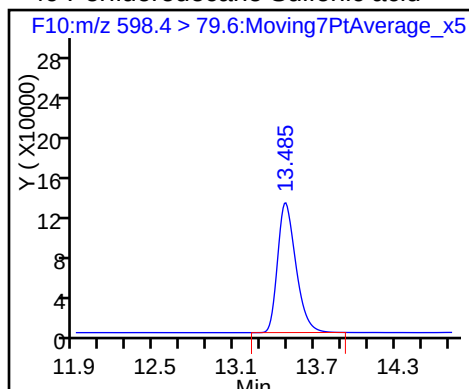
D 23 13C8 FOSA



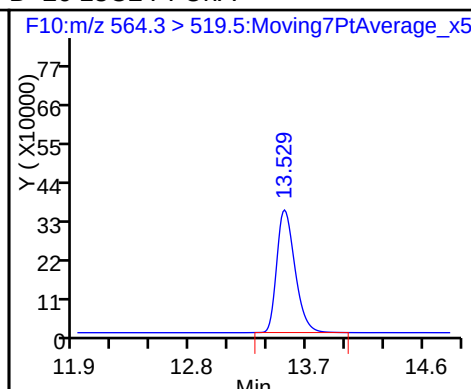
24 Perfluorooctane Sulfonamide



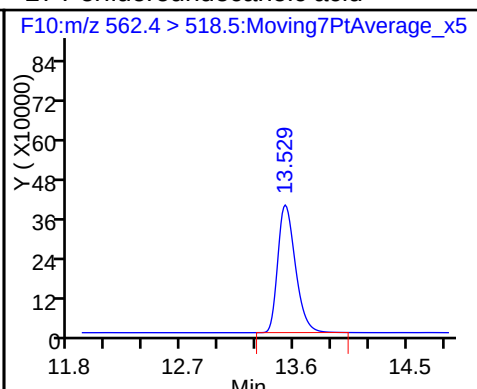
49 Perfluorodecane Sulfonic acid



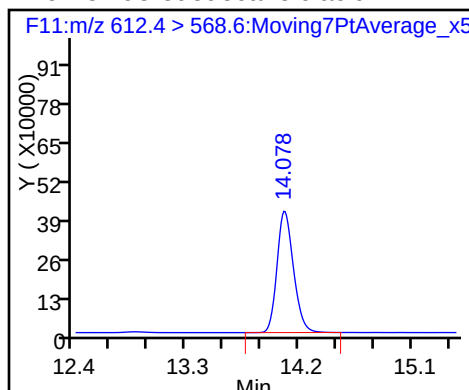
D 26 13C2 PFUnA



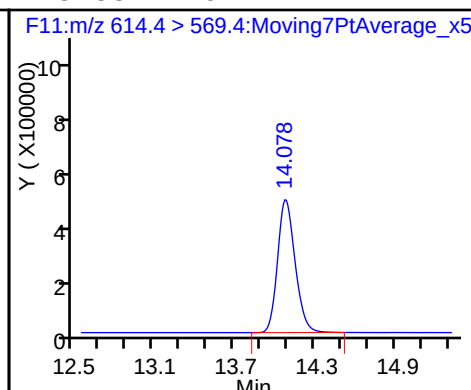
27 Perfluoroundecanoic acid



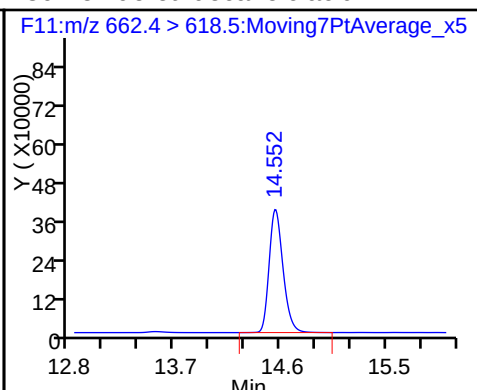
29 Perfluorododecanoic acid



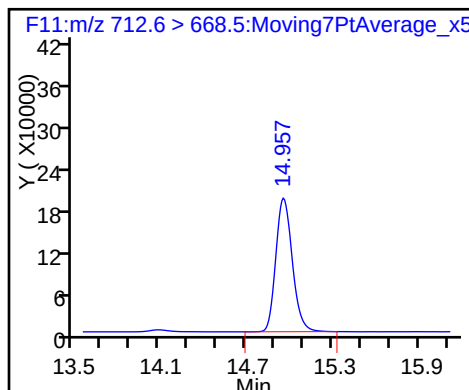
D 28 13C2 PFDoA



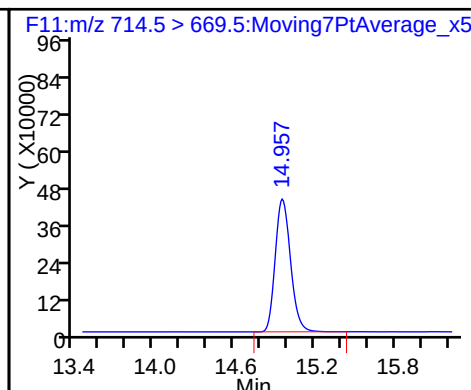
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: CCV 320-101820/21 Calibration Date: 02/27/2016 00:10

Instrument ID: A4 Calib Start Date: 02/26/2016 17:27

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/26/2016 19:34

Lab File ID: 26FEB2016A4A_025.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.4899	0.5032		51.3	50.0	2.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	0.5065	0.5009		49.4	50.0	-1.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.5065	0.5009		49.4	50.0	-1.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.4953	0.4633		46.8	50.0	-6.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.5995	0.6281		46.3	44.2	4.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.4638	0.4340		46.8	50.0	-6.4	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.4998		46.5	50.0	-6.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.014	0.9948		46.4	47.3	-1.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	2.417	2.800		55.1	47.6	15.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.5253	0.4731		45.0	50.0	-9.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	3.734	4.308		55.1	47.8	15.4	25.0
Perfluorononanoic acid (PFNA)	L2ID		1.002		47.6	50.0	-4.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.8798	0.9186		52.2	50.0	4.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9154	0.9687		52.9	50.0	5.8	25.0
Perfluorodecane Sulfonic acid	AveID	1.587	1.698		51.6	48.2	7.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.098	1.030		46.9	50.0	-6.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8019	0.7831		48.8	50.0	-2.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.7847	0.7122		45.4	50.0	-9.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.3730	0.3501		46.9	50.0	-6.1	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_025.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Feb-2016 00:10:10 ALS Bottle#: 6 Worklist Smp#: 21
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:19:39 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:24:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.415	6.043	0.372	1.000	2076624	51.3		103	5554	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.415	6.043	0.372	1.000	2076624	49.4		98.9	5554	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.415	6.043	0.372	1.000	2076624	49.4		98.9	5554	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.415	6.043	0.372		2076624	29.6		59.1	5554	
D 1 13C4 PFBA										
216.7 > 171.5	6.415	6.043	0.372		4127183	44.8		89.6	10669	
D 3 13C5-PFPeA										
267.6 > 222.7	7.778	7.272	0.506		2806814	46.5		93.1	5815	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.778	7.275	0.503	1.000	1300446	46.8		93.5	514	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.922	7.404	0.518	1.000	887539	NC			1062	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.922	7.404	0.518	1.000	887539	46.3		105		
7 Perfluorohexanoic acid										
312.9 > 268.7	9.144	8.604	0.540	1.000	1599137	46.8		93.6	1980	
D 6 13C2 PFHxA										
314.6 > 269.7	9.144	8.604	0.540		3684517	45.7		91.4	8785	
D 8 13C4-PFHpA										
366.6 > 321.6	10.378	9.856	0.522		2994042	44.1		88.2	4820	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.378	9.859	0.519	1.000	1496392	46.5		93.1	1989	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.412	9.892	0.520	1.000	1504472	46.4		98.1		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.412	9.892	0.520	1.000	1504172	NC			1970	
D 11 18O2 PFHxS										
402.5 > 83.6	10.412	9.892	0.520		1512095	41.7		88.1	3199	
D 12 13C4 PFOA										
416.5 > 371.6	11.447	10.958	0.489		3614445	46.1		92.2	7386	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.447	10.958	0.489	1.000	1709960	45.0		90.1	1294	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.447	10.960	0.487	1.000	1780978	NC			5444	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.447	10.960	0.487	1.000	1780978	55.1		116		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.334	11.874	0.460	1.000	2751655	55.1		115	2629	
D 16 13C4 PFOS										
502.4 > 79.7	12.334	11.876	0.458		638663	39.2		82.0	1217	
D 17 13C5 PFNA										
467.5 > 422.6	12.347	11.898	0.449		3034388	46.8		93.7	6231	
18 Perfluorononanoic acid										
462.5 > 418.6	12.360	11.899	0.461	1.000	3040796	47.6		95.1	3190	
20 Perfluorodecanoic acid										
512.5 > 468.5	13.120	12.693	0.427	1.000	3331888	52.2		104	4454	
D 19 13C2 PFDA										
514.4 > 469.5	13.120	12.693	0.427		3627237	44.9		89.8	5833	
21 PFNS (Perflouro-1-nonanesulfonate)										
548.6 > 79.6	13.079	12.831	0.248	1.000	1011641	NC			2526	
D 23 13C8 FOSA										
505.4 > 77.6	13.634	13.222	0.412		5014453	44.3		88.6	3116	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.634	13.222	0.412	1.000	4857567	52.9		106	2971	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.695	13.324	0.371	1.000	1093554	NC			2143	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.695	13.324	0.371	1.000	1093554	51.6		107		
D 26 13C2 PFUnA										
564.3 > 519.5	13.742	13.369	0.373		3551177	46.0		92.1	3176	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.742	13.372	0.370	1.000	3656098	46.9		93.8	2498	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.285	13.937	0.348	1.000	3246654	48.8		97.7	1425	
D 28 13C2 PFDoA										
614.4 > 569.4	14.285	13.939	0.346		4146001	48.6		97.3	2826	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.736	14.430	0.306	1.000	2952884	45.4		90.8	1411	
31 PFDoS (Perflouro-1-dodecanesulfona										
698.6 > 79.7	14.681	14.727	-0.046	1.000	406990	NC			1210	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	15.118	14.841	0.277	1.000	4451467	46.9		93.9	1071	

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_025.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 33 13C2-PFTeDA

714.5 > 669.5 15.118 14.844 0.274 3645677 52.8 106 2688

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_025.d

Injection Date: 27-Feb-2016 00:10:10

Instrument ID: A4

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 6

Worklist Smp#: 21

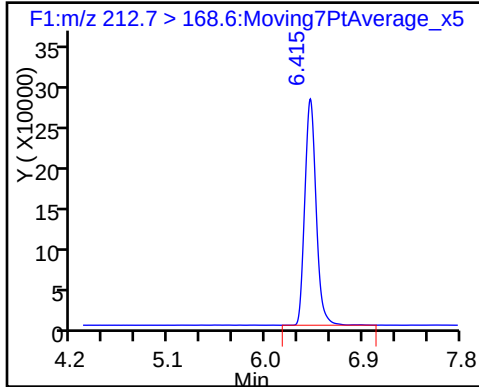
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

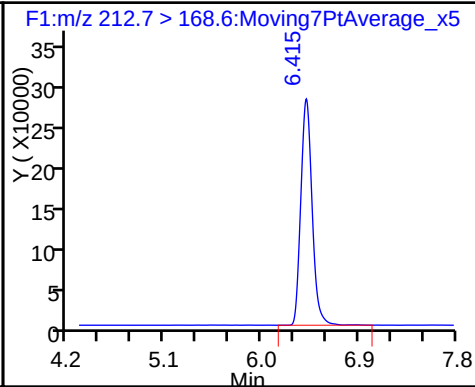
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

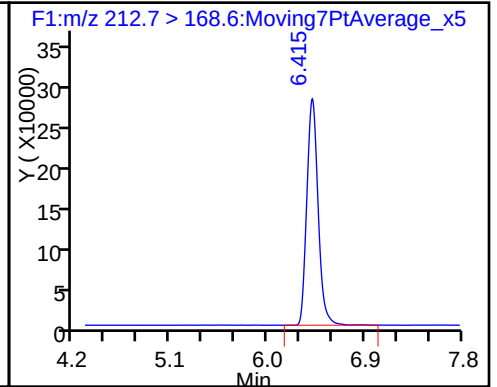
2 Perfluorobutyric acid



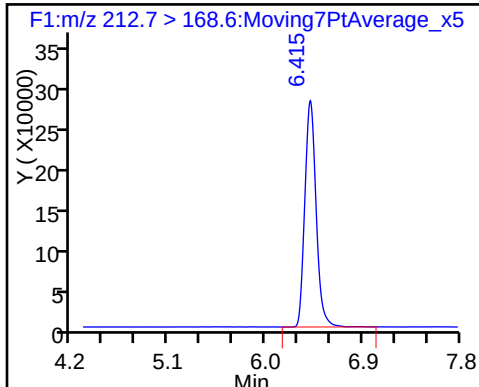
36 Perfluorooctadecanoic acid



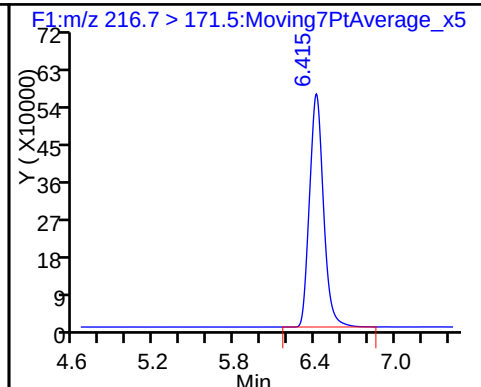
34 Perfluorohexadecanoic acid



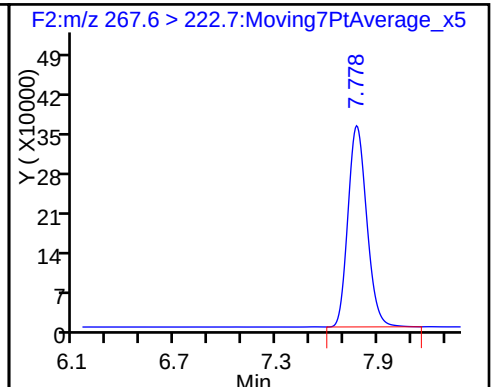
D 35 13C2-PFHxDA



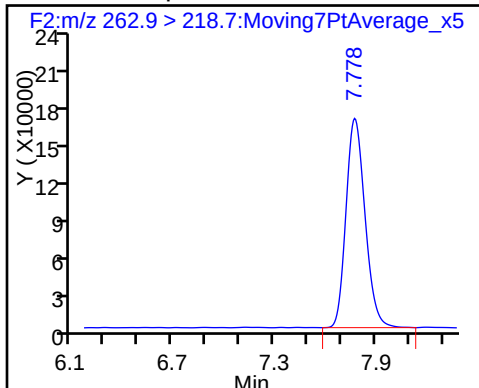
D 1 13C4 PFBA



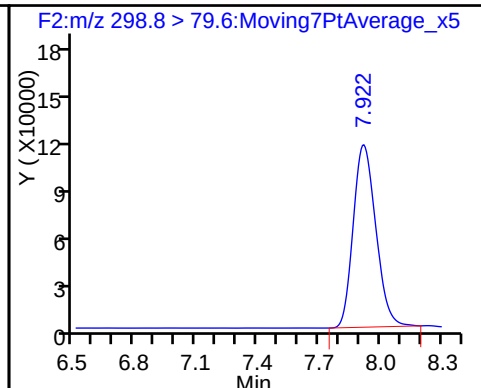
D 3 13C5-PFPeA



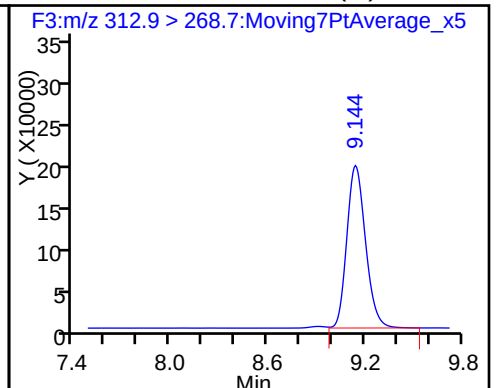
4 Perfluoropentanoic acid



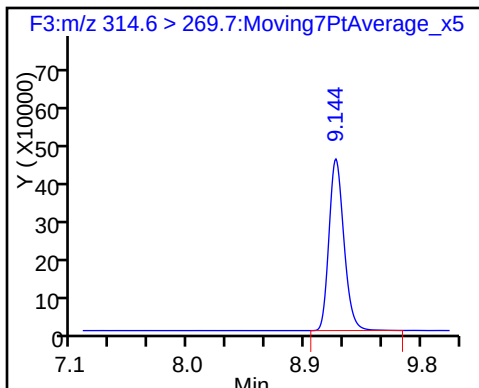
51 Perfluorobutanesulfonic acid



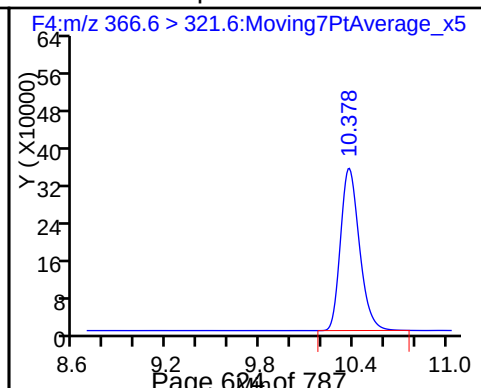
7 Perfluorohexanoic acid (M)



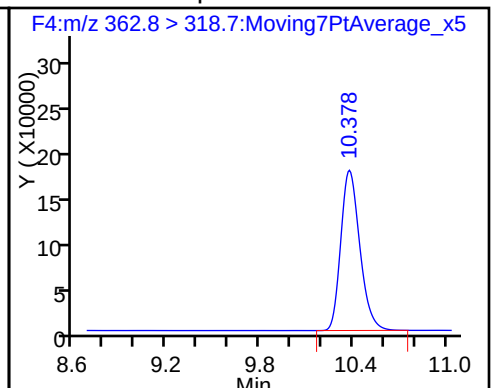
D 6 13C2 PFHxA



D 8 13C4-PFHpA



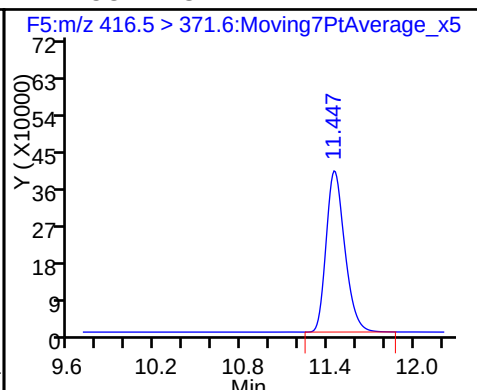
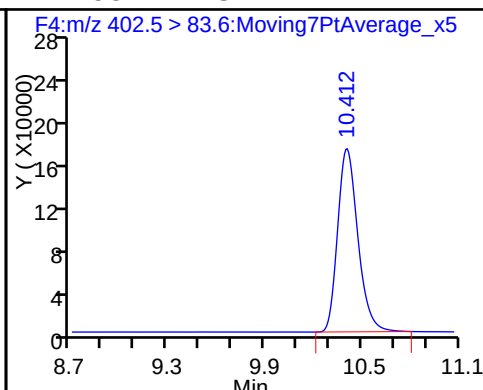
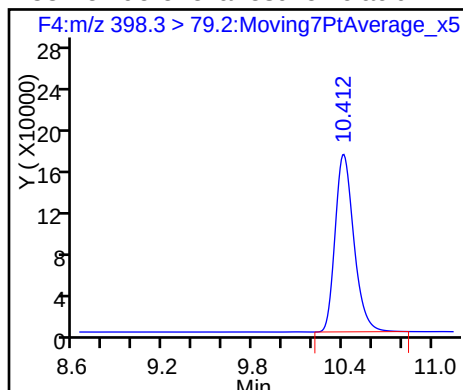
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

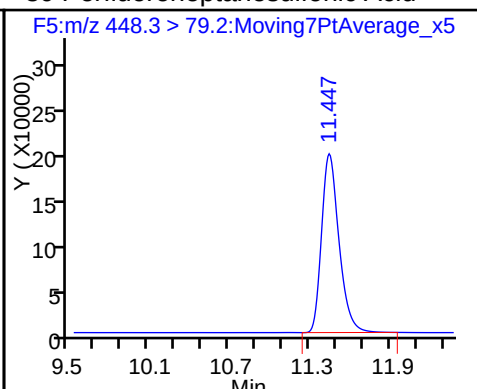
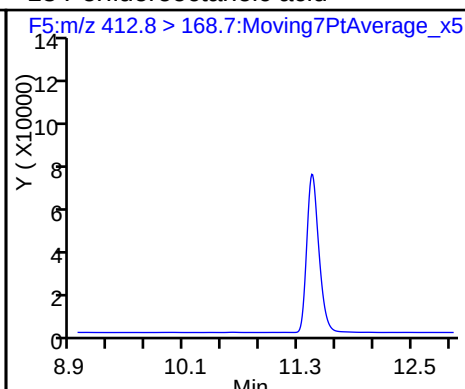
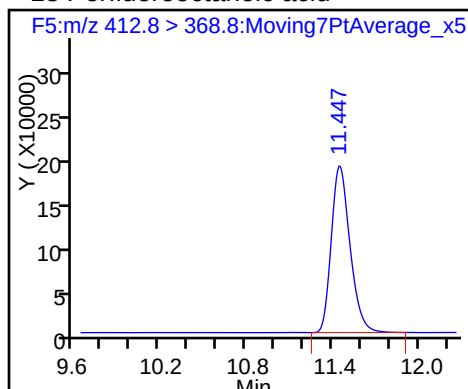
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

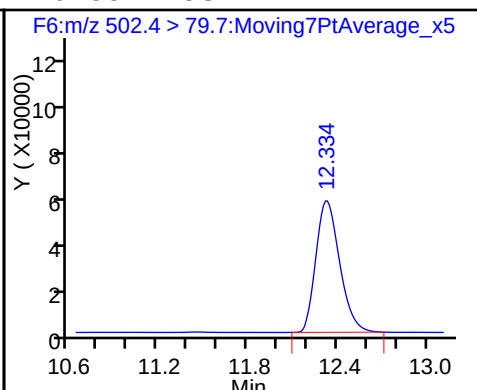
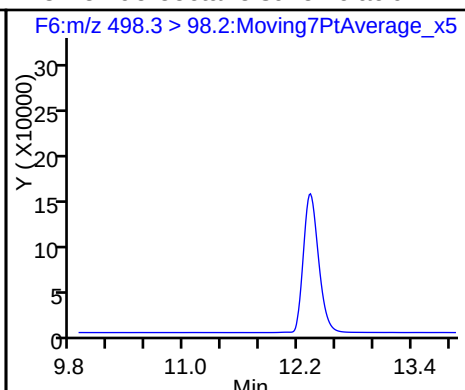
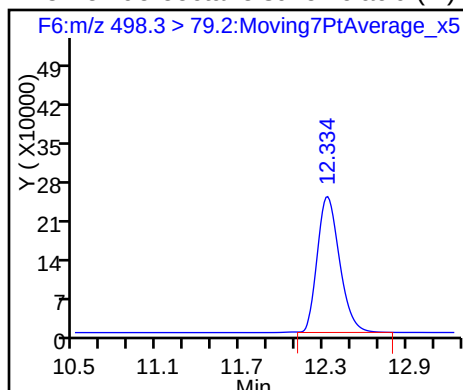
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

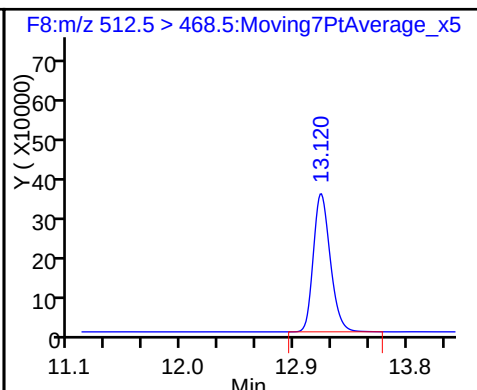
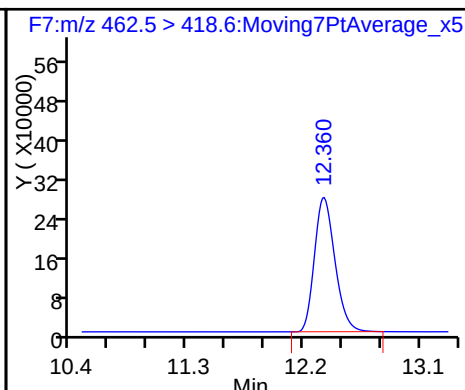
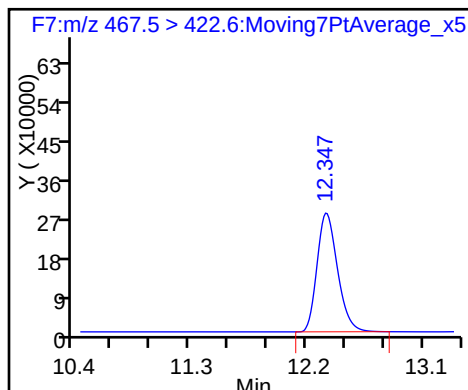
D 16 13C4 PFOS



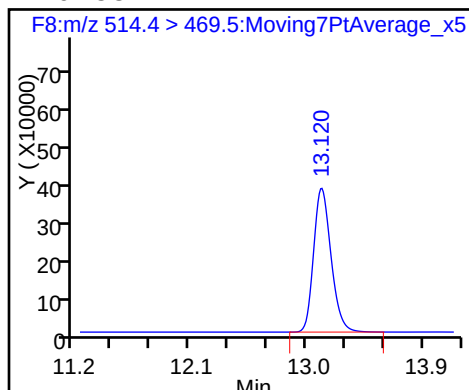
D 17 13C5 PFNA

18 Perfluorononanoic acid

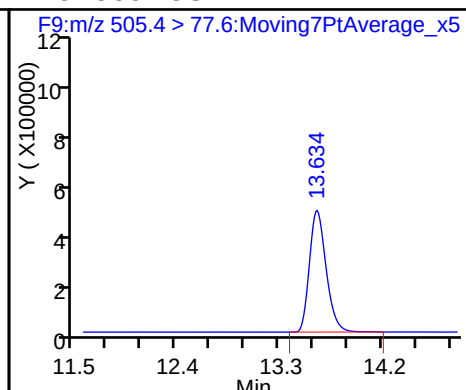
20 Perfluorodecanoic acid



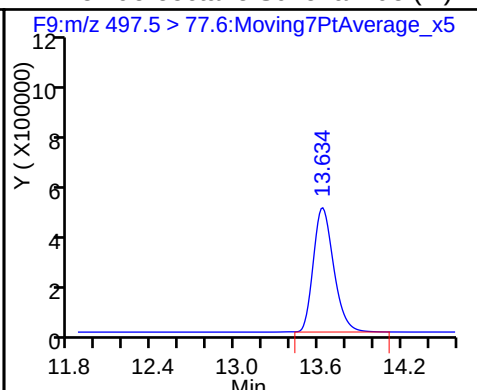
D 19 13C2 PFDA



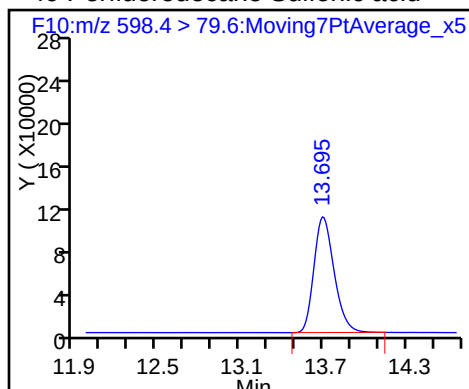
D 23 13C8 FOSA



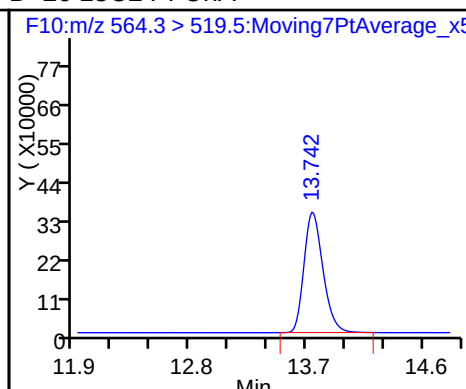
24 Perfluorooctane Sulfonamide (M)



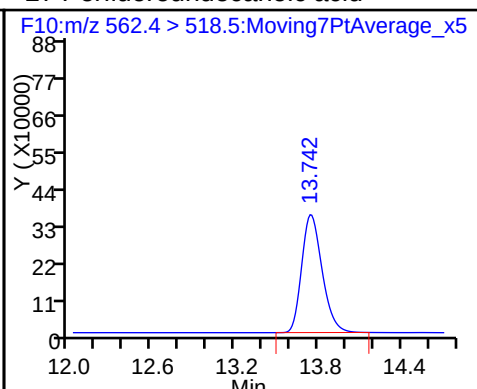
49 Perfluorodecane Sulfonic acid



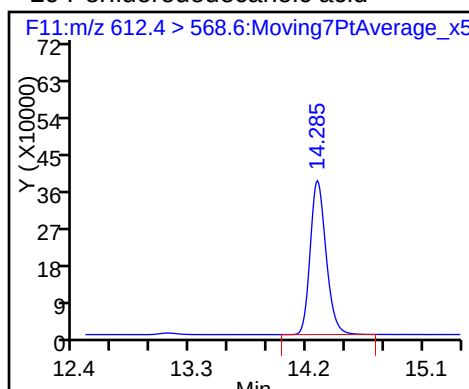
D 26 13C2 PFUnA



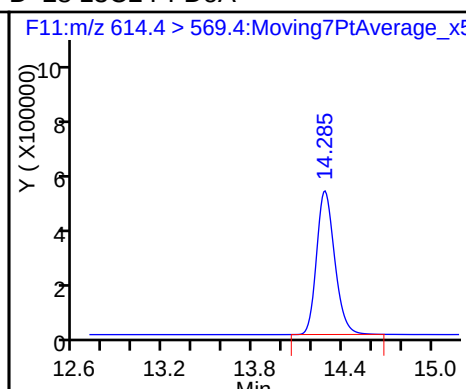
27 Perfluoroundecanoic acid



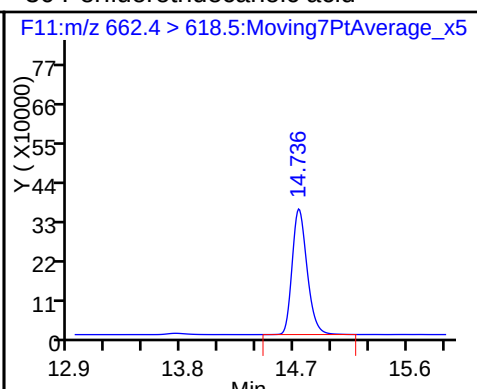
29 Perfluorododecanoic acid



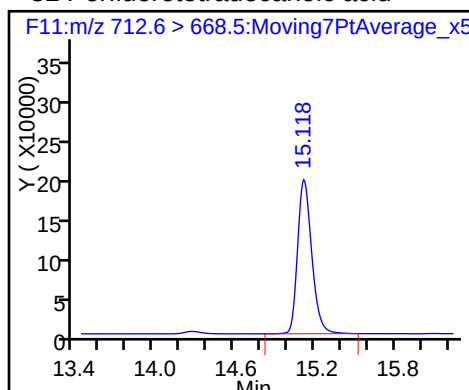
D 28 13C2 PFDoA



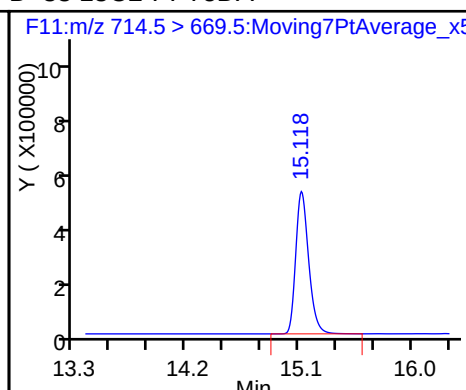
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: CCV 320-101820/32 Calibration Date: 02/27/2016 04:03

Instrument ID: A4 Calib Start Date: 02/26/2016 17:27

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/26/2016 19:34

Lab File ID: 26FEB2016A4A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.4899	0.5088		20.8	20.0	3.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	0.5065	0.4848		19.1	20.0	-4.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.5065	0.4848		19.1	20.0	-4.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.4953	0.4656		18.8	20.0	-6.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.5995	0.5773		17.0	17.7	-3.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.4638	0.4355		18.8	20.0	-6.1	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.5180		19.3	20.0	-3.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.014	1.030		19.2	18.9	1.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	2.417	3.072		24.2	19.0	27.1*	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.5253	0.4714		17.9	20.0	-10.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	3.734	4.447		22.8	19.1	19.1	25.0
Perfluorononanoic acid (PFNA)	L2ID		1.157		22.1	20.0	10.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.8798	0.9255		21.0	20.0	5.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9154	0.9434		20.6	20.0	3.1	25.0
Perfluorodecane Sulfonic acid	AveID	1.587	1.790		21.7	19.3	12.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.098	1.048		19.1	20.0	-4.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8019	0.8217		20.5	20.0	2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.7847	0.8482		21.6	20.0	8.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.3730	0.3888		20.8	20.0	4.2	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_036.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Feb-2016 04:03:09 ALS Bottle#: 5 Worklist Smp#: 32
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:20:38 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:28:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.313	6.043	0.270	1.000	888064	20.8		104	2152	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.313	6.043	0.270	1.000	888064	19.1		95.7	2152	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.313	6.043	0.270	1.000	888064	19.1		95.7	2152	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.313	6.043	0.270		888064	12.6		25.3	2152	
D 1 13C4 PFBA										
216.7 > 171.5	6.313	6.043	0.270		4363708	47.4		94.8	11501	
D 3 13C5-PFPeA										
267.6 > 222.7	7.686	7.272	0.414		2899360	48.1		96.2	6099	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.686	7.275	0.411	1.000	539924	18.8		94.0	224	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.830	7.404	0.426	1.000	343056	NC			481	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.830	7.404	0.426	1.000	343056	17.0		96.3		
7 Perfluorohexanoic acid										
312.9 > 268.7	9.073	8.604	0.469	1.000	685593	18.8		93.9	1154	
D 6 13C2 PFHxA										
314.6 > 269.7	9.073	8.604	0.469		3935514	48.8		97.7	6295	
D 8 13C4-PFHpA										
366.6 > 321.6	10.293	9.856	0.437		3356319	49.4		98.8	6280	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.293	9.859	0.434	1.000	695485	19.3		96.6	1242	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.327	9.892	0.435	1.000	654745	19.2		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.327	9.892	0.435	1.000	654745	NC			1286	
D 11 18O2 PFHxS										
402.5 > 83.6	10.327	9.892	0.435		1589768	43.8		92.7	3233	
D 12 13C4 PFOA										
416.5 > 371.6	11.319	10.958	0.361		4007572	51.1		102	5365	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.319	10.958	0.361	1.000	755656	17.9		89.7	443	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.319	10.960	0.359	1.000	835910	NC			2314	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.319	10.960	0.359	1.000	835910	24.2		127		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.174	11.874	0.300	1.000	1215170	22.8		119	2048	
D 16 13C4 PFOS										
502.4 > 79.7	12.174	11.876	0.298		683148	41.9		87.7	1608	
D 17 13C5 PFNA										
467.5 > 422.6	12.195	11.898	0.297		3458098	53.4		107	4822	
18 Perfluorononanoic acid										
462.5 > 418.6	12.195	11.899	0.296	1.000	1600329	22.1		111	2416	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.945	12.693	0.252	1.000	1551550	21.0		105	1896	
D 19 13C2 PFDA										
514.4 > 469.5	12.945	12.693	0.252		4191158	51.9		104	3868	
21 PFNS (Perflouro-1-nonanesulfonate)										
548.6 > 79.6	12.895	12.831	0.064	1.000	465601	NC			1255	
D 23 13C8 FOSA										
505.4 > 77.6	13.463	13.222	0.241		5396353	47.7		95.4	4287	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.463	13.222	0.241	1.000	2036274	20.6		103	3179	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.529	13.324	0.205	1.000	493195	NC			1339	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.529	13.324	0.205	1.000	493195	21.7		113		
D 26 13C2 PFUnA										
564.3 > 519.5	13.576	13.369	0.207		4432706	57.5		115	3558	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.576	13.372	0.204	1.000	1857670	19.1		95.4	1983	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.119	13.937	0.182	1.000	1505068	20.5		102	648	
D 28 13C2 PFDaA										
614.4 > 569.4	14.119	13.939	0.180		4579274	53.7		107	3074	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.607	14.430	0.177	1.000	1553609	21.6		108	917	
31 PFDaS (Perflouro-1-dodecanesulfona										
698.6 > 79.7	14.543	14.727	-0.184	1.000	165357	NC			843	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	15.011	14.841	0.170	1.000	712159	20.8		104	431	

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_036.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 33 13C2-PFTeDA

714.5 > 669.5 15.011 14.844 0.167 3955261 57.3 115 2947

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_036.d

Injection Date: 27-Feb-2016 04:03:09

Instrument ID: A4

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 5

Worklist Smp#: 32

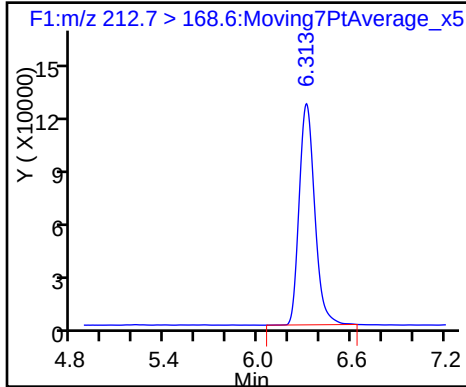
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

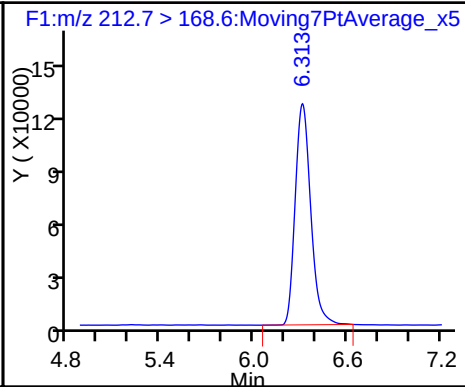
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

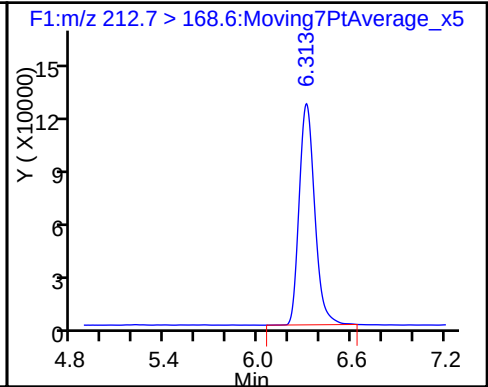
2 Perfluorobutyric acid



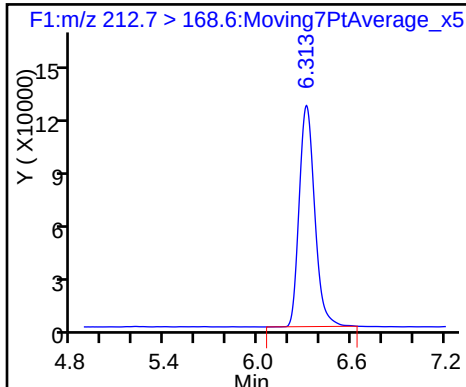
36 Perfluorooctadecanoic acid



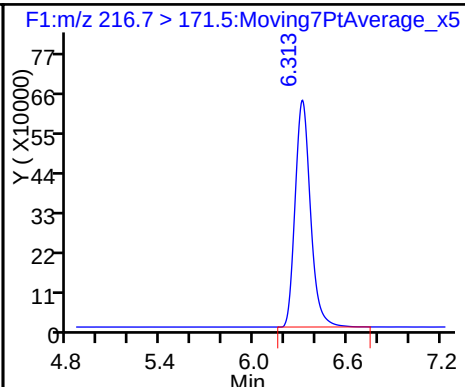
34 Perfluorohexadecanoic acid



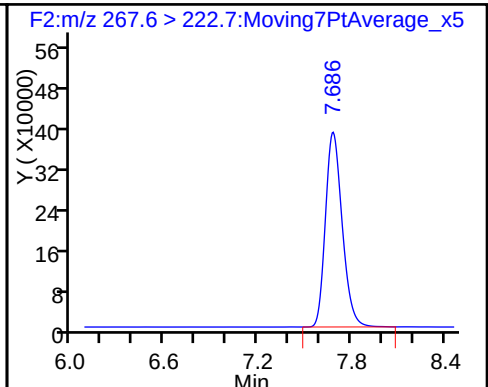
D 35 13C2-PFHxDA



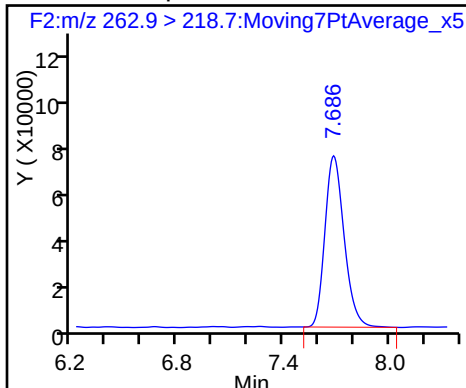
D 1 13C4 PFBA



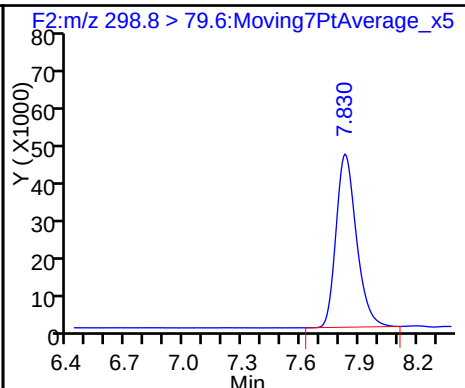
D 3 13C5-PFPeA



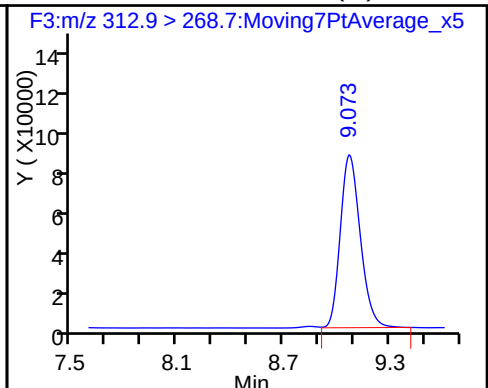
4 Perfluoropentanoic acid



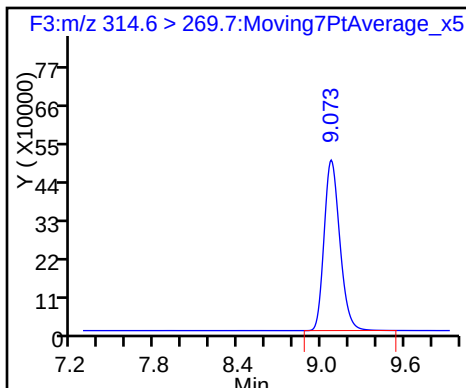
51 Perfluorobutanesulfonic acid



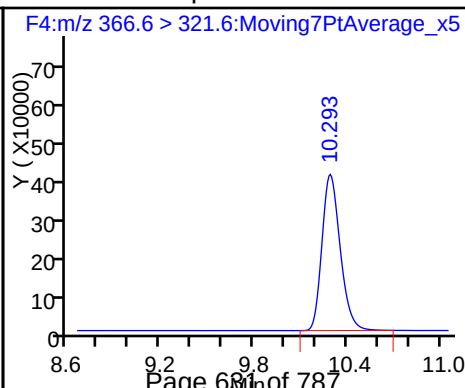
7 Perfluorohexanoic acid (M)



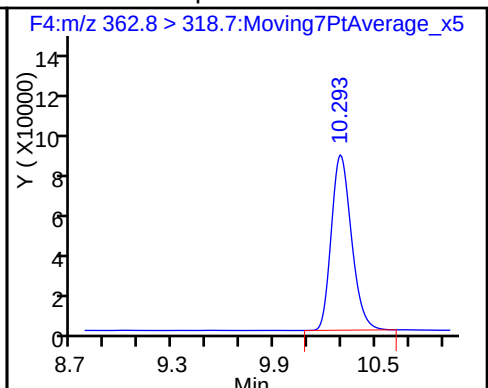
D 6 13C2 PFHxA



D 8 13C4-PFHpA



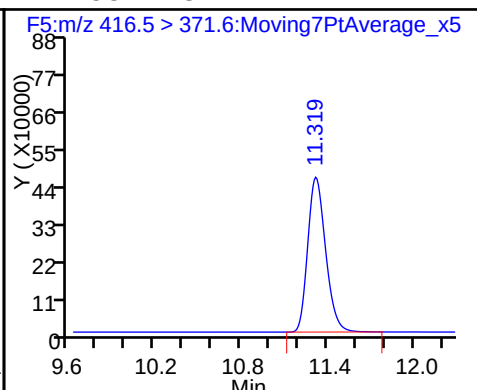
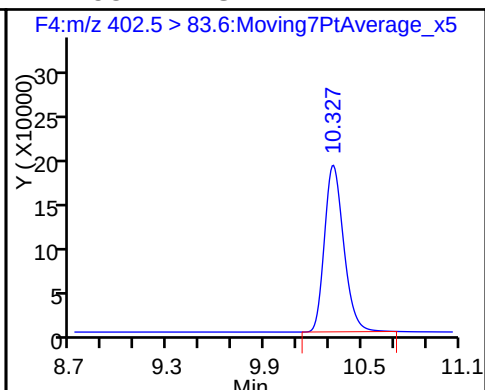
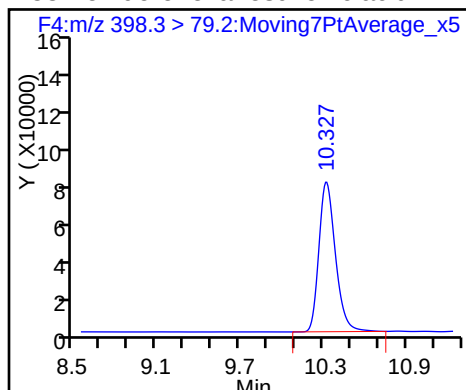
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

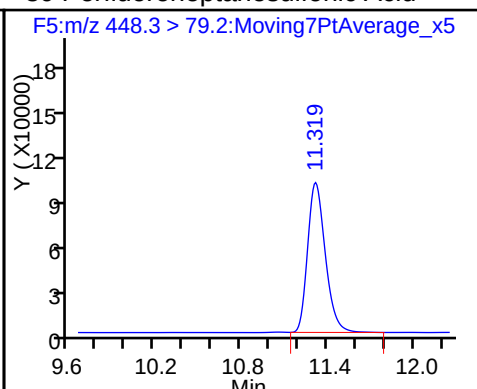
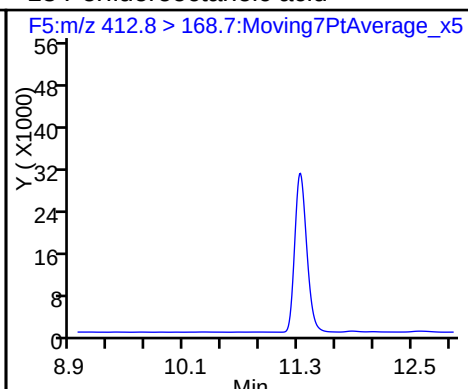
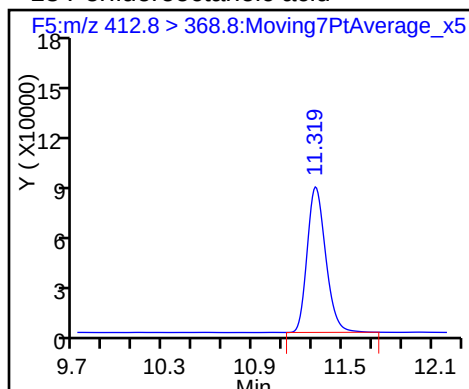
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

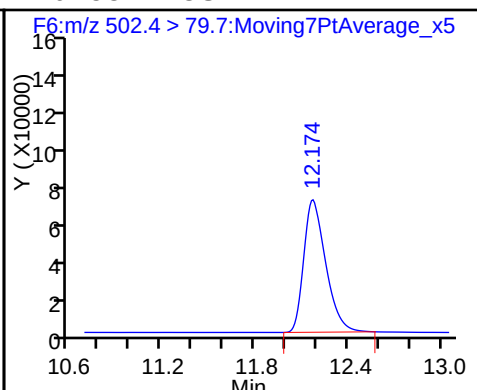
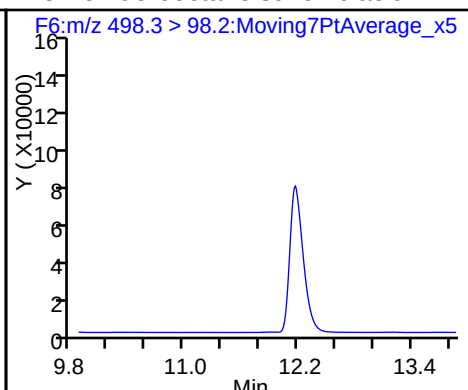
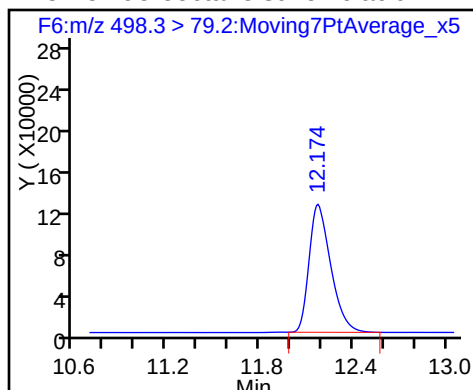
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

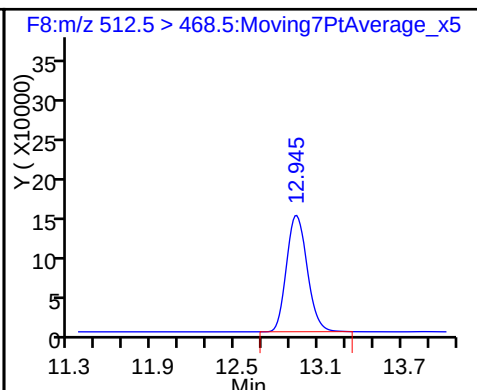
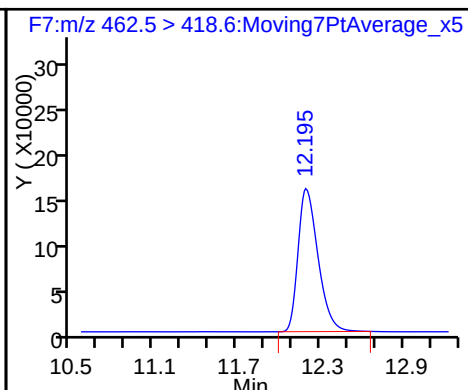
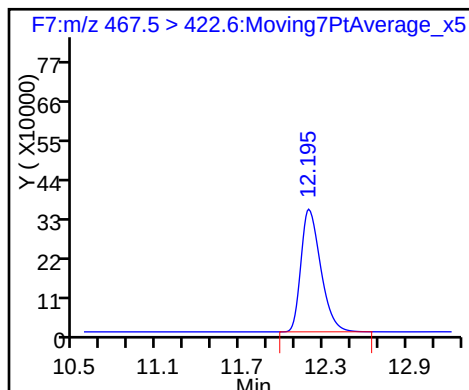
D 16 13C4 PFOS



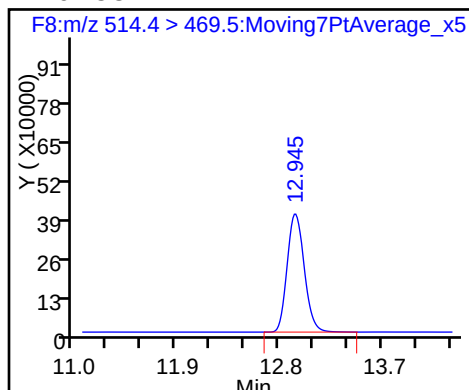
D 17 13C5 PFNA

18 Perfluorononanoic acid

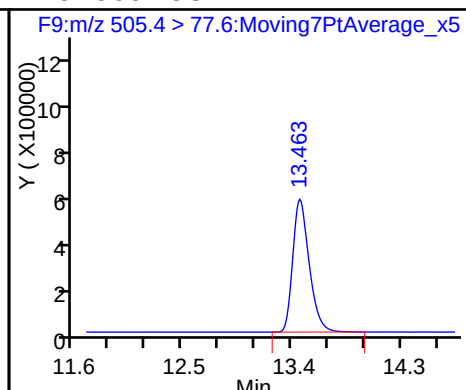
20 Perfluorodecanoic acid



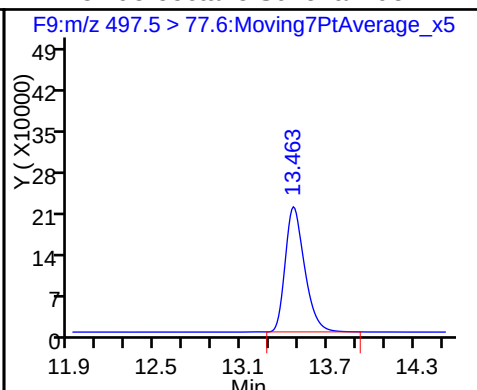
D 19 13C2 PFDA



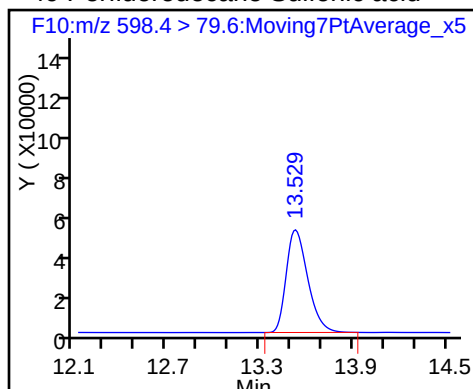
D 23 13C8 FOSA



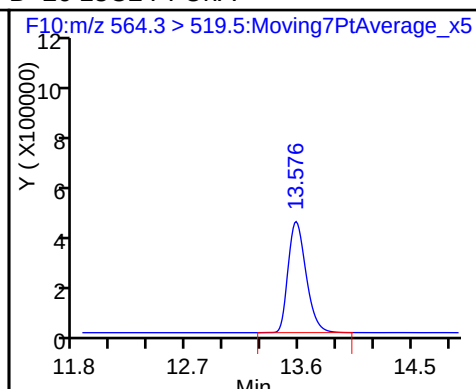
24 Perfluorooctane Sulfonamide



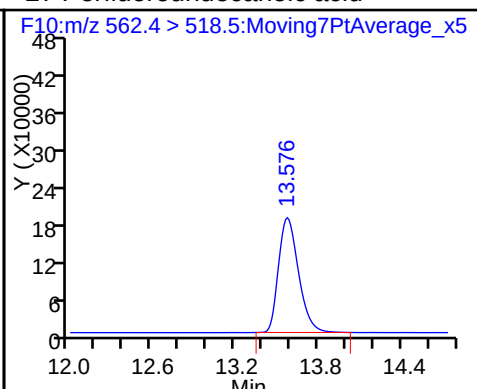
49 Perfluorodecane Sulfonic acid



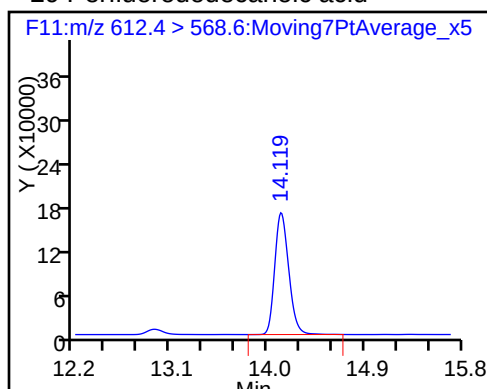
D 26 13C2 PFUnA



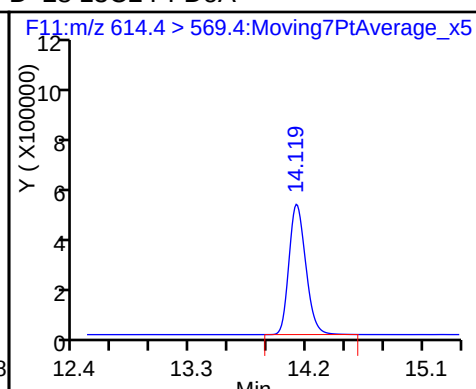
27 Perfluoroundecanoic acid



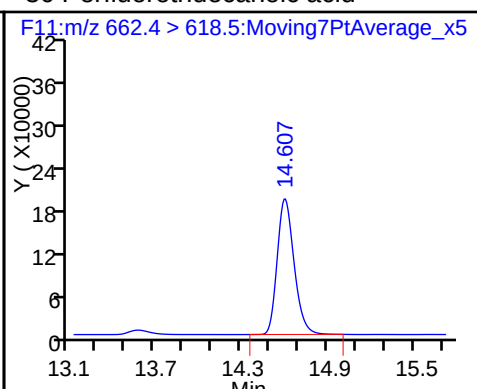
29 Perfluorododecanoic acid



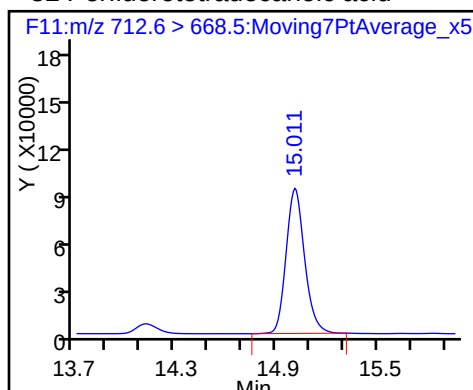
D 28 13C2 PFDoA



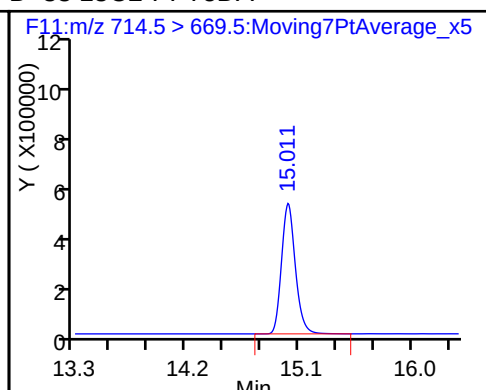
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab Sample ID: CCV 320-101820/43 Calibration Date: 02/27/2016 13:41
 Instrument ID: A4 Calib Start Date: 02/26/2016 17:27
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/26/2016 19:34
 Lab File ID: 26FEB2016A4A_047.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.4899	0.5121		52.3	50.0	4.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	0.5065	0.5020		49.6	50.0	-0.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.5065	0.5020		49.6	50.0	-0.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.4953	0.4537		45.8	50.0	-8.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.5995	0.5568		41.1	44.2	-7.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.4638	0.4324		46.6	50.0	-6.8	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.5129		47.8	50.0	-4.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.014	0.9244		43.1	47.3	-8.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	2.417	2.650		52.2	47.6	9.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.5253	0.5063		48.2	50.0	-3.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	3.734	4.749		60.8	47.8	27.2*	25.0
Perfluorononanoic acid (PFNA)	L2ID		1.009		47.9	50.0	-4.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.8798	0.8997		51.1	50.0	2.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9154	0.9447		51.6	50.0	3.2	25.0
Perfluorodecane Sulfonic acid	AveID	1.587	1.798		54.6	48.2	13.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.098	0.998		45.4	50.0	-9.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8019	0.8574		53.5	50.0	6.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.7847	0.7526		48.0	50.0	-4.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.3730	0.3262		43.7	50.0	-12.6	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_047.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Feb-2016 13:41:57 ALS Bottle#: 6 Worklist Smp#: 43
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:20 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 28-Feb-2016 13:12:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.195	6.043	0.152	1.000	1871649	52.3		105	5160	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.195	6.043	0.152	1.000	1871649	49.6		99.1	5160	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.195	6.043	0.152	1.000	1871649	49.6		99.1	5160	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.195	6.043	0.152		1871649	26.6		53.3	5160	
D 1 13C4 PFBA										
216.7 > 171.5	6.195	6.043	0.152		3654965	39.7		79.4	11211	
D 3 13C5-PFPeA										
267.6 > 222.7	7.493	7.272	0.221		2473394	41.0		82.0	5907	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.493	7.275	0.218	1.000	1122229	45.8		91.6	517	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.633	7.404	0.229	1.000	738680	41.1		92.9		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.855	8.604	0.251	1.000	1407950	46.6		93.2	1910	
D 6 13C2 PFHxA										
314.6 > 269.7	8.855	8.604	0.251		3256093	40.4		80.8	6593	
D 8 13C4-PFHpA										
366.6 > 321.6	10.097	9.856	0.241		2812146	41.4		82.8	4442	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.097	9.859	0.238	1.000	1442263	47.8		95.5	3872	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.131	9.892	0.239	1.000	1312347	43.1		91.2		
D 11 18O2 PFHxS										
402.5 > 83.6	10.131	9.892	0.239		1419638	39.1		82.7	3155	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
416.5 > 371.6	11.171	10.958	0.213		3242585	41.4		82.7	5265	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.180	10.958	0.222	1.000	1641577	48.2		96.4	1405	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.180	10.960	0.220	1.000	1510951	52.2		110		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.075	11.874	0.201	1.000	2718798	60.8		127	3667	
D 16 13C4 PFOS										
502.4 > 79.7	12.066	11.876	0.190		572547	35.1		73.5	1950	M
D 17 13C5 PFNA										
467.5 > 422.6	12.096	11.898	0.198		3092837	47.7		95.5	5727	
18 Perfluorononanoic acid										
462.5 > 418.6	12.096	11.899	0.197	1.000	3120209	47.9		95.8	3411	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.869	12.693	0.176	1.000	3198349	51.1		102	2590	
D 19 13C2 PFDA										
514.4 > 469.5	12.869	12.693	0.176		3554974	44.0		88.0	5401	
21 PFNS (Perfluoro-1-nonanesulfonate)										
548.6 > 79.6	12.831	12.831	0.0	1.000	947167	NC			2370	
D 23 13C8 FOSA										
505.4 > 77.6	13.390	13.222	0.168		4592255	40.6		81.2	5058	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.390	13.222	0.168	1.000	4338288	51.6		103	3162	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.474	13.324	0.150	1.000	1037987	NC			3659	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.474	13.324	0.150	1.000	1037987	54.6		113		
D 26 13C2 PFUnA										
564.3 > 519.5	13.517	13.369	0.148		3302446	42.8		85.6	3066	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.517	13.372	0.145	1.000	3294945	45.4		90.9	2843	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.078	13.937	0.141	1.000	3196539	53.5		107	1527	
D 28 13C2 PFDaA										
614.4 > 569.4	14.078	13.939	0.139		3728145	43.7		87.5	2714	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.552	14.430	0.122	1.000	2805824	48.0		95.9	1714	
31 PFDaS (Perfluoro-1-dodecanesulfonate)										
698.6 > 79.7	14.497	14.727	-0.230	1.000	362833	NC			1089	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.957	14.841	0.116	1.000	1216161	43.7		87.4	945	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.948	14.844	0.104		2982881	43.2		86.4	2420	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_047.d

Injection Date: 27-Feb-2016 13:41:57

Instrument ID: A4

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 6

Worklist Smp#: 43

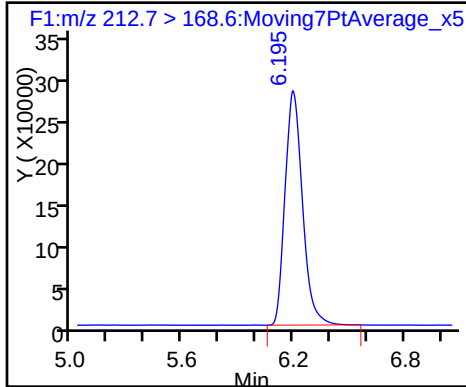
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

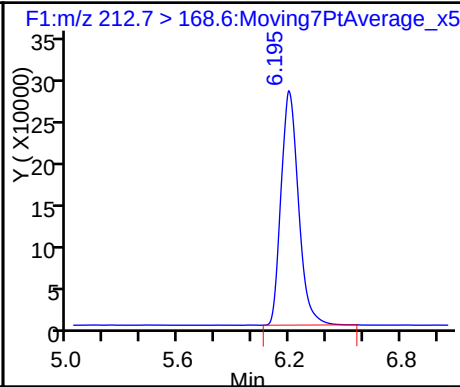
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

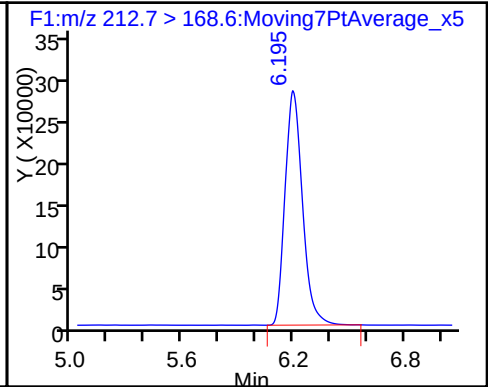
2 Perfluorobutyric acid



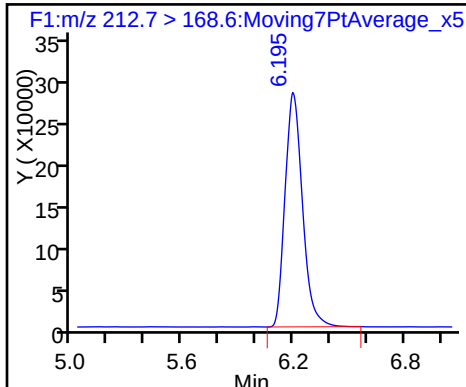
36 Perfluorooctadecanoic acid



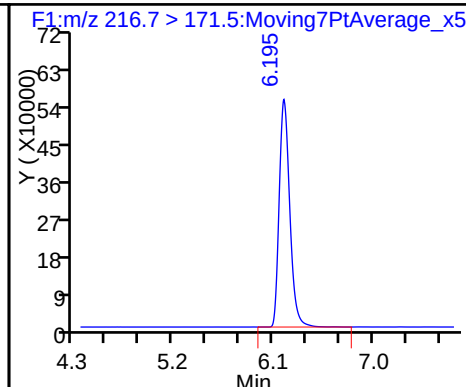
34 Perfluorohexadecanoic acid



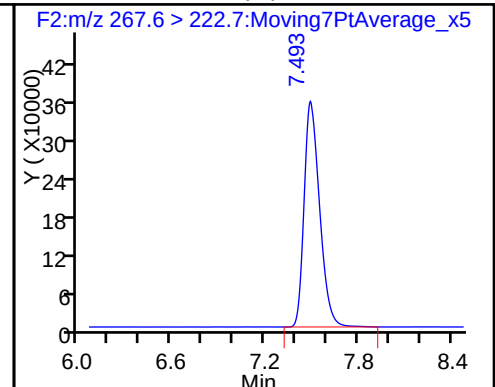
D 35 13C2-PFHxDA



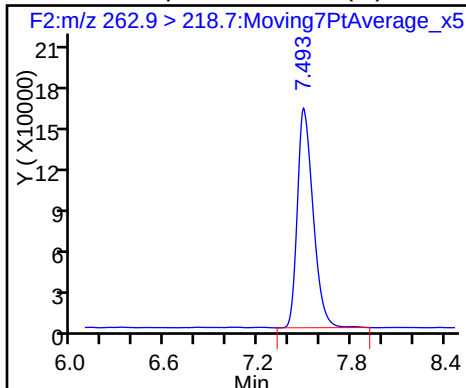
D 1 13C4 PFBA



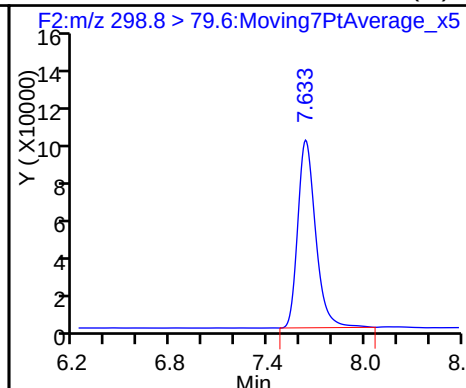
D 3 13C5-PFPeA (M)



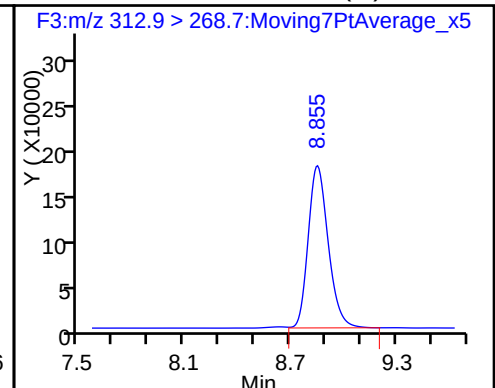
4 Perfluoropentanoic acid (M)



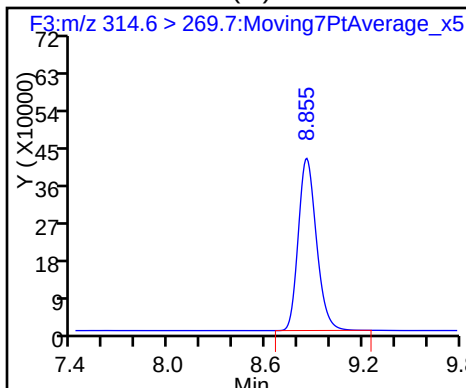
51 Perfluorobutanesulfonic acid (M)



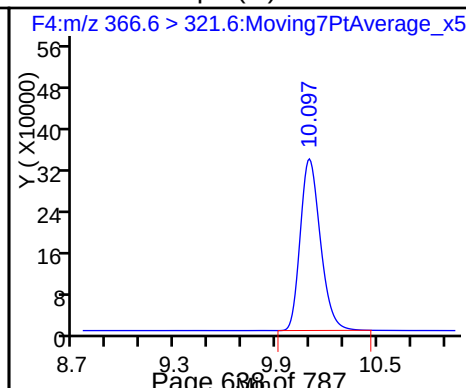
7 Perfluorohexanoic acid (M)



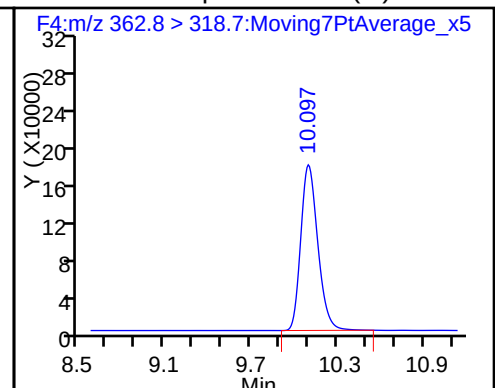
D 6 13C2 PFHxA (M)



D 8 13C4-PFHpA (M)



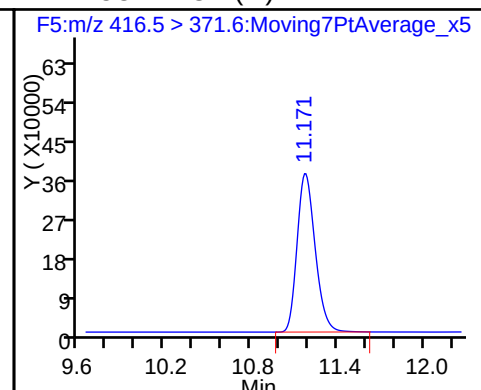
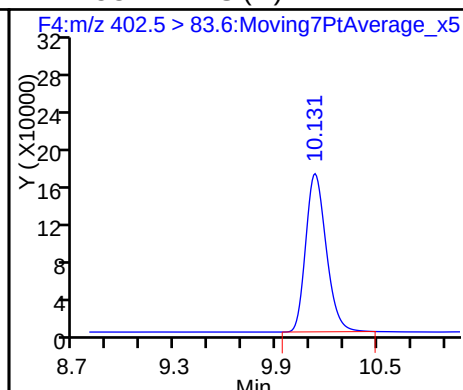
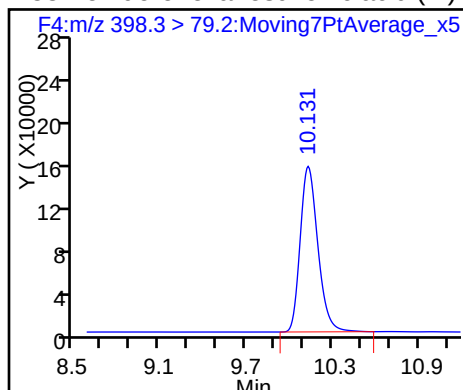
9 Perfluoroheptanoic acid (M)



58 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS (M)

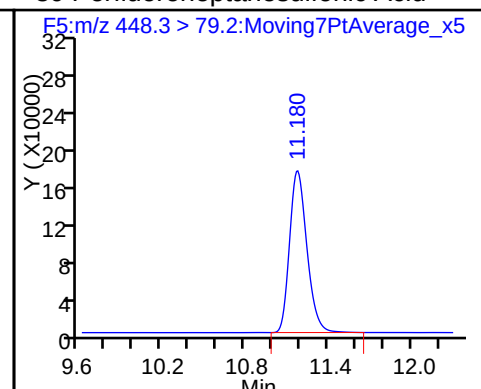
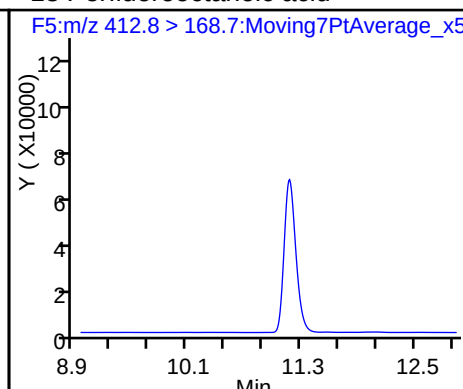
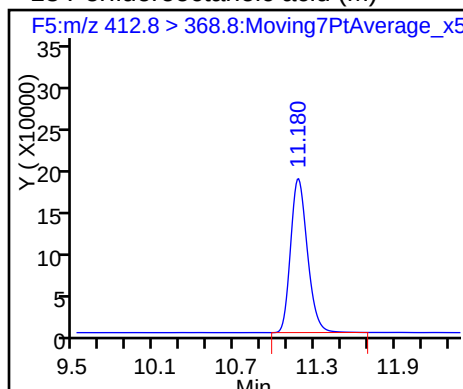
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid (M)

13 Perfluorooctanoic acid

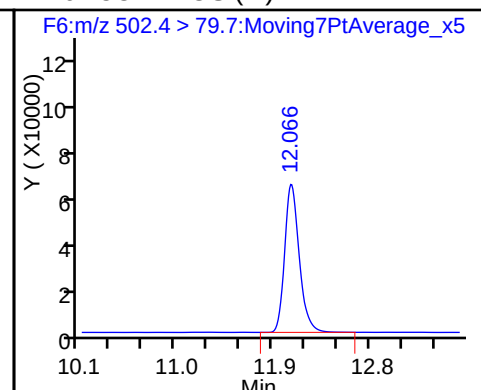
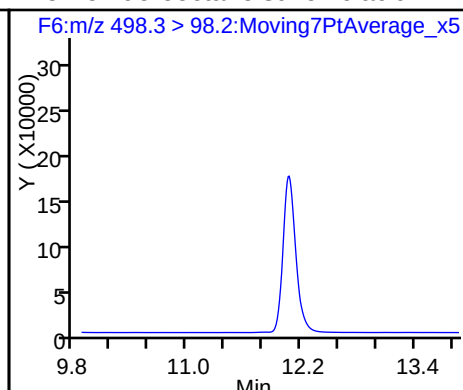
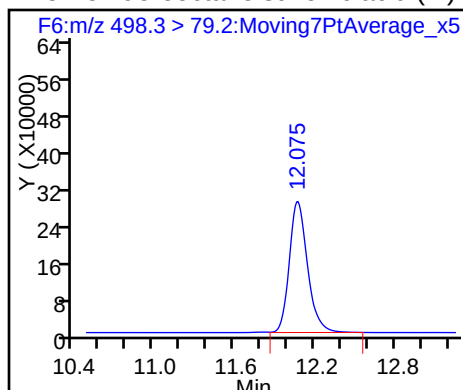
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

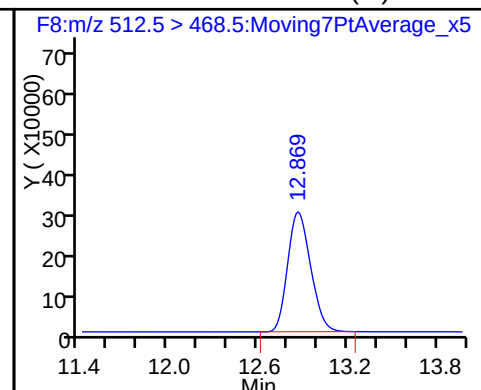
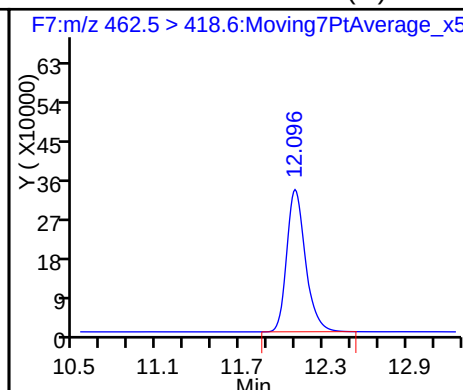
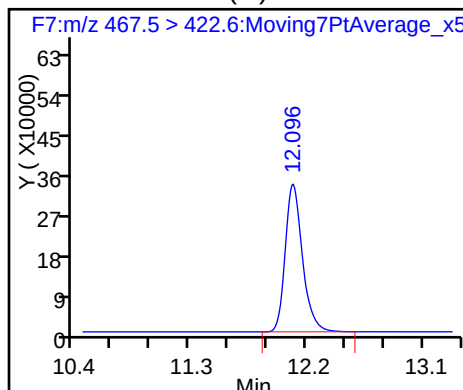
D 16 13C4 PFOS (M)



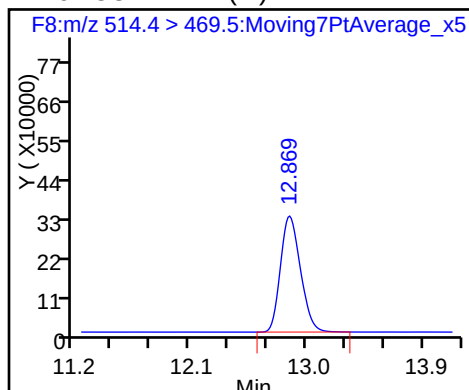
D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (M)

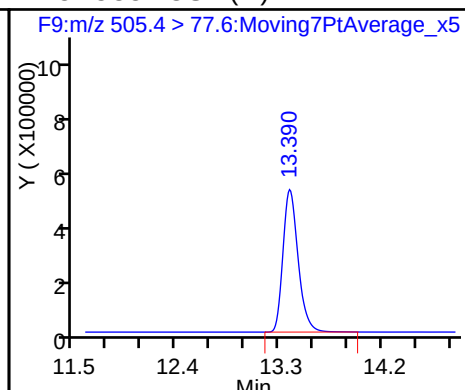
20 Perfluorodecanoic acid (M)



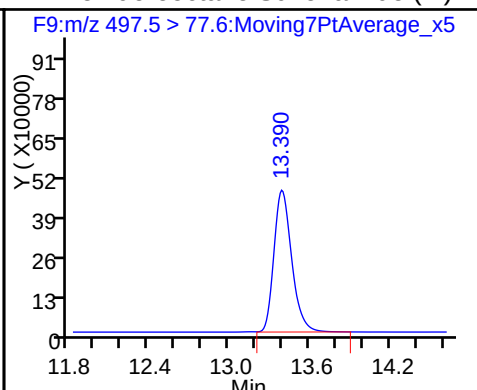
D 19 13C2 PFDA (M)



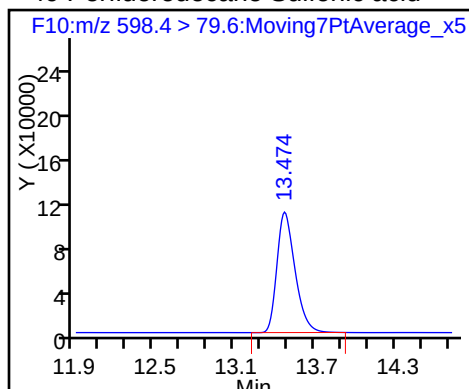
D 23 13C8 FOSA (M)



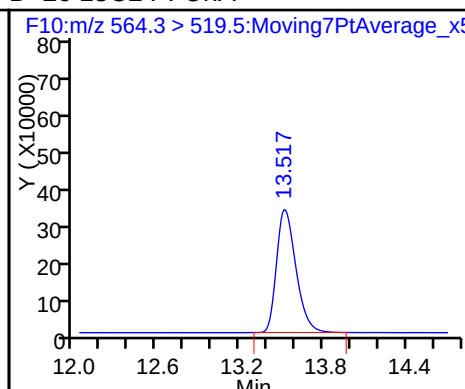
24 Perfluorooctane Sulfonamide (M)



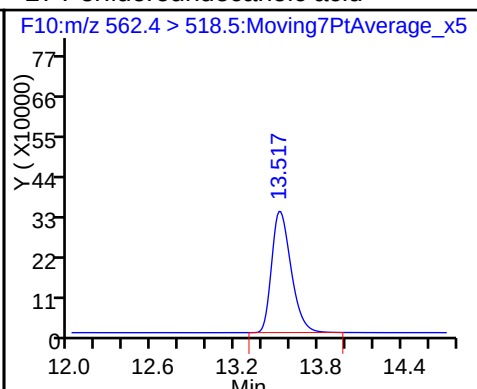
49 Perfluorodecane Sulfonic acid



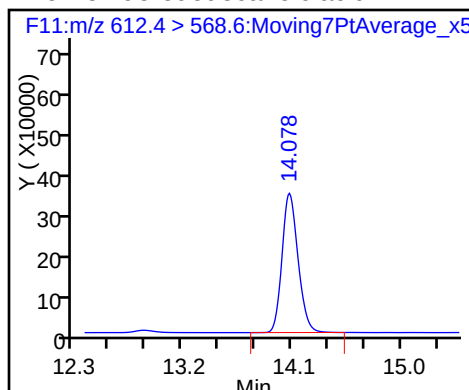
D 26 13C2 PFUnA



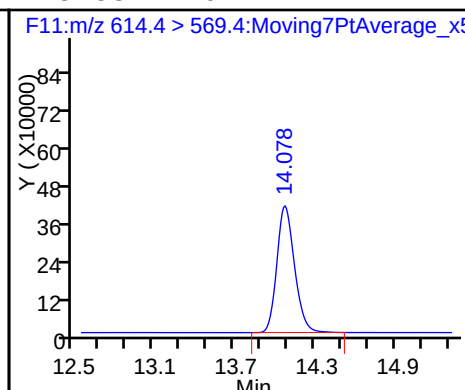
27 Perfluoroundecanoic acid



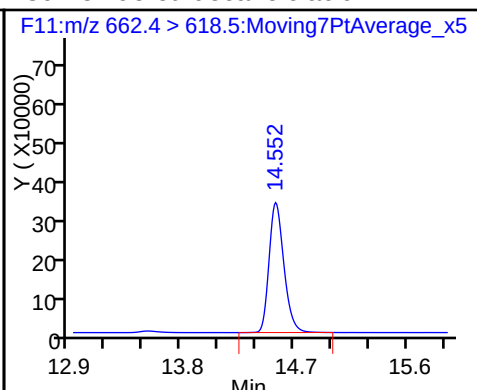
29 Perfluorododecanoic acid



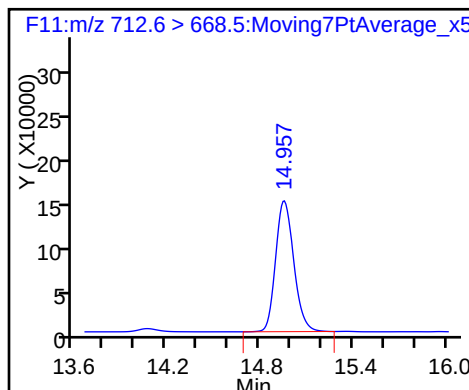
D 28 13C2 PFDaA



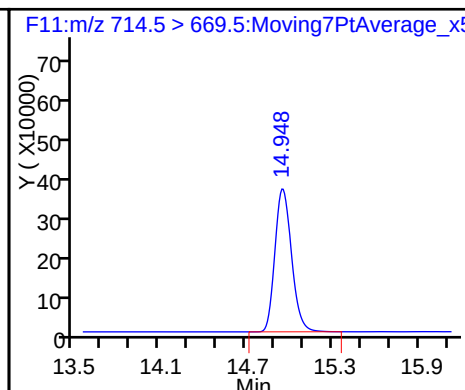
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: CCV 320-101820/54 Calibration Date: 02/27/2016 17:34

Instrument ID: A4 Calib Start Date: 02/26/2016 17:27

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/26/2016 19:34

Lab File ID: 26FEB2016A4A_058.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.4899	0.5163		21.1	20.0	5.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	0.5065	0.4991		19.7	20.0	-1.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.5065	0.4991		19.7	20.0	-1.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.4953	0.5012		20.2	20.0	1.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.5995	0.5501		16.2	17.7	-8.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.4638	0.4464		19.2	20.0	-3.8	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.5571		20.8	20.0	3.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.014	0.9732		18.2	18.9	-4.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	2.417	2.422		19.1	19.0	0.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.5253	0.4663		17.8	20.0	-11.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	3.734	3.850		19.7	19.1	3.1	25.0
Perfluorononanoic acid (PFNA)	L2ID		1.160		22.2	20.0	10.8	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.8798	0.9447		21.5	20.0	7.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9154	0.9510		20.8	20.0	3.9	25.0
Perfluorodecane Sulfonic acid	AveID	1.587	1.614		19.6	19.3	1.7	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.098	1.039		18.9	20.0	-5.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8019	0.8279		20.6	20.0	3.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.7847	0.7510		19.1	20.0	-4.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.3730	0.3290		17.6	20.0	-11.8	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_058.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Feb-2016 17:34:56 ALS Bottle#: 5 Worklist Smp#: 54
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:45 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 28-Feb-2016 13:16:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.415	6.043	0.372	1.000	837400	21.1		105	1948	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.415	6.043	0.372	1.000	837400	19.7		98.5	1948	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.415	6.043	0.372	1.000	837400	19.7		98.5	1948	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.415	6.043	0.372		837400	11.9		23.8	1948	
D 1 13C4 PFBA										
216.7 > 171.5	6.415	6.043	0.372		4054929	44.0		88.1	10937	
D 3 13C5-PFPeA										
267.6 > 222.7	7.837	7.272	0.565		2527867	41.9		83.8	6120	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.843	7.275	0.568	1.000	506763	20.2		101	254	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.994	7.404	0.590	1.000	326849	NC			724	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.994	7.404	0.590	1.000	326849	16.2		91.8		
7 Perfluorohexanoic acid										
312.9 > 268.7	9.269	8.604	0.665	1.000	630364	19.2		96.2	1241	
D 6 13C2 PFHxA										
314.6 > 269.7	9.269	8.604	0.665		3530392	43.8		87.6	5174	
D 8 13C4-PFHpA										
366.6 > 321.6	10.506	9.856	0.650		3104204	45.7		91.4	4072	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.506	9.859	0.647	1.000	691741	20.8		104	1813	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.543	9.892	0.651	1.000	618799	18.2		96.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
402.5 > 83.6	10.543	9.892	0.651		1589563	43.8		92.6	2597	
D 12 13C4 PFOA										
416.5 > 371.6	11.554	10.958	0.596		3726741	47.5		95.1	7557	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.554	10.958	0.596	1.000	695130	17.8		88.8	412	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.554	10.960	0.594	1.000	708170	19.1		100		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.410	11.874	0.536	1.000	1130370	19.7		103	1982	
D 16 13C4 PFOS										
502.4 > 79.7	12.410	11.876	0.534		733966	45.0		94.2	1497	
D 17 13C5 PFNA										
467.5 > 422.6	12.436	11.898	0.538		3062440	47.3		94.5	4584	
18 Perfluorononanoic acid										
462.5 > 418.6	12.436	11.899	0.537	1.000	1420971	22.2		111	1458	
20 Perfluorodecanoic acid										
512.5 > 468.5	13.182	12.693	0.489	1.000	1433213	21.5		107	1987	
D 19 13C2 PFDA										
514.4 > 469.5	13.182	12.693	0.489		3792855	47.0		93.9	5775	
D 23 13C8 FOSA										
505.4 > 77.6	13.693	13.222	0.471		4976757	44.0		88.0	3165	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.693	13.222	0.471	1.000	1893071	20.8		104	2209	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.754	13.324	0.430	1.000	477825	19.6		102		
D 26 13C2 PFUnA										
564.3 > 519.5	13.801	13.369	0.432		3692148	47.9		95.8	3913	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.801	13.372	0.429	1.000	1534995	18.9		94.7	1744	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.331	13.937	0.394	1.000	1388995	20.6		103	740	
D 28 13C2 PFDaA										
614.4 > 569.4	14.331	13.939	0.392		4194314	49.2		98.4	3389	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.782	14.430	0.352	1.000	1259965	19.1		95.7	824	
31 PFDaS (Perfluoro-1-dodecanesulfona										
698.6 > 79.7	14.727	14.727	0.0	1.000	182279	NC			588	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	15.156	14.841	0.315	1.000	552027	17.6		88.2	522	
D 33 13C2-PFTeDA										
714.5 > 669.5	15.156	14.844	0.312		3419347	49.5		99.0	2419	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_058.d

Injection Date: 27-Feb-2016 17:34:56

Instrument ID: A4

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 5

Worklist Smp#: 54

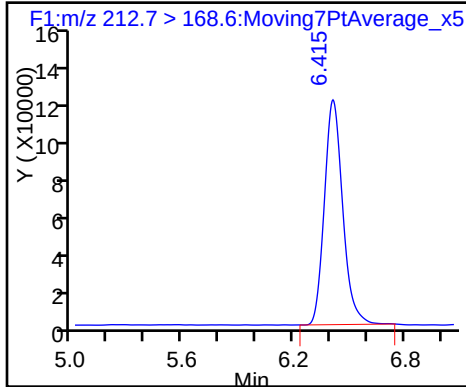
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

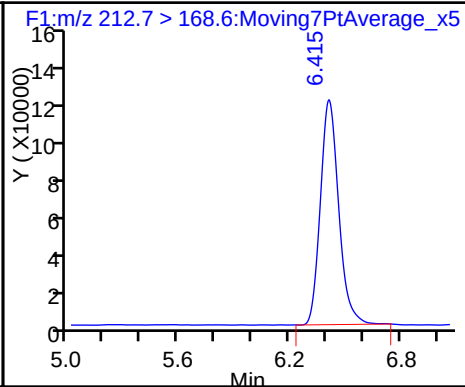
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

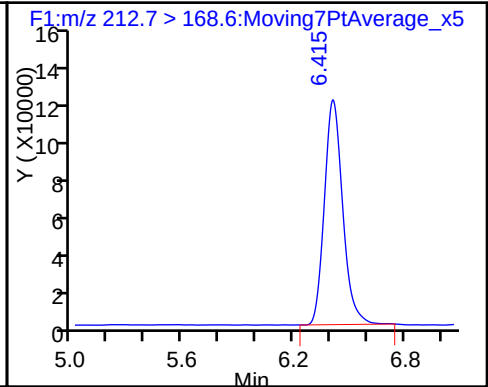
2 Perfluorobutyric acid



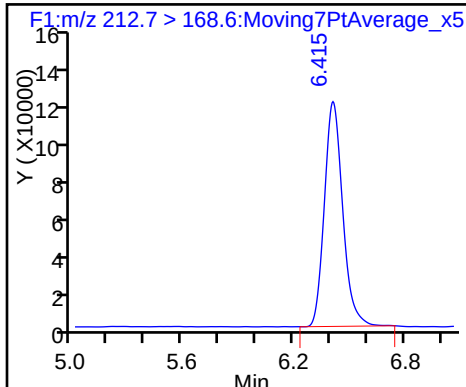
36 Perfluorooctadecanoic acid



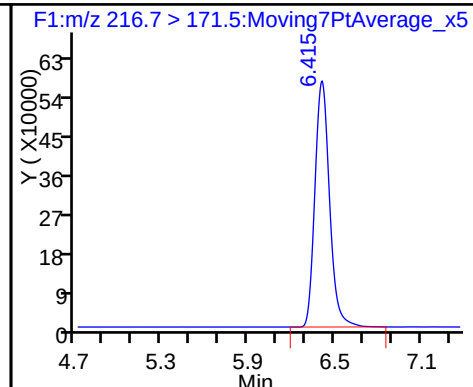
34 Perfluorohexadecanoic acid



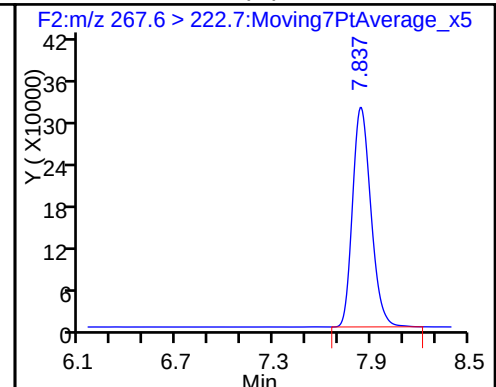
D 35 13C2-PFHxDA



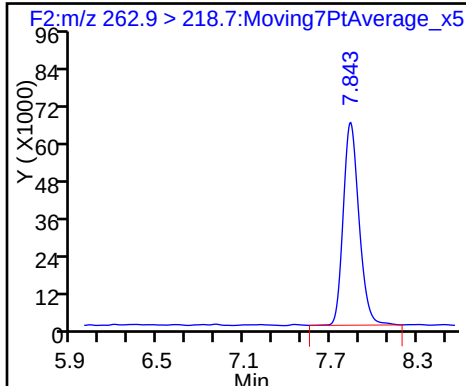
D 1 13C4 PFBA



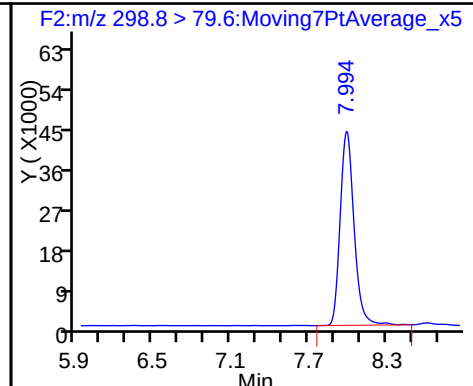
D 3 13C5-PFPeA (M)



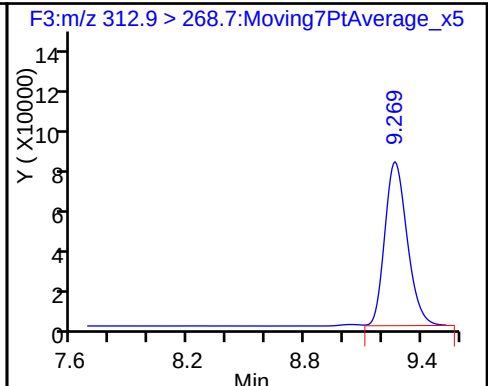
4 Perfluoropentanoic acid (M)



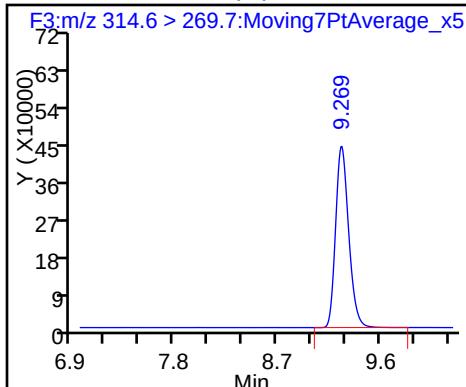
51 Perfluorobutanesulfonic acid (M)



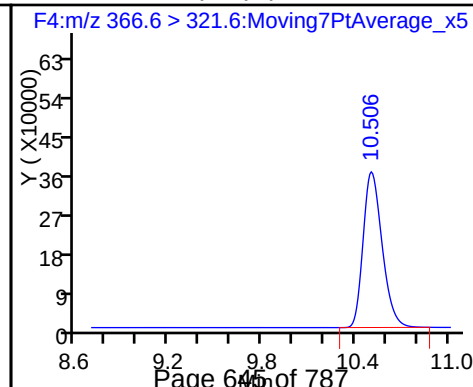
7 Perfluorohexanoic acid (M)



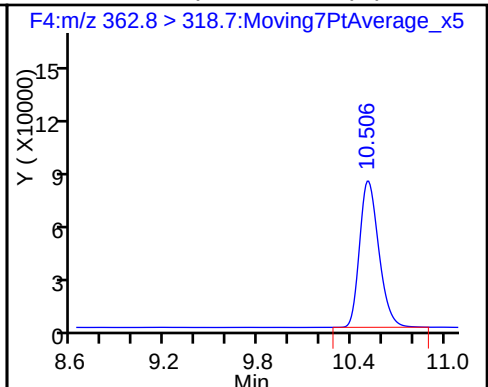
D 6 13C2 PFHxA (M)



D 8 13C4-PFHpA (M)



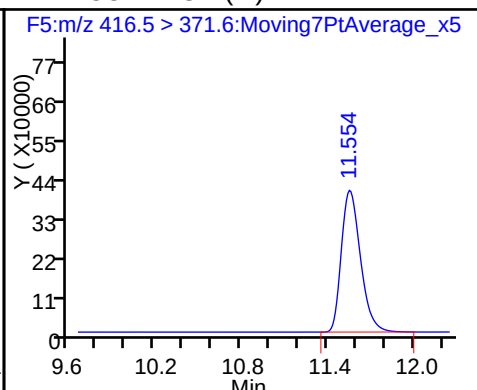
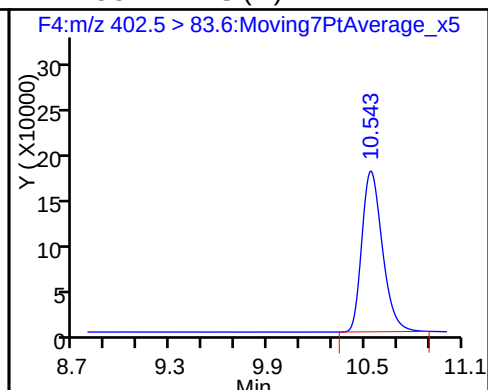
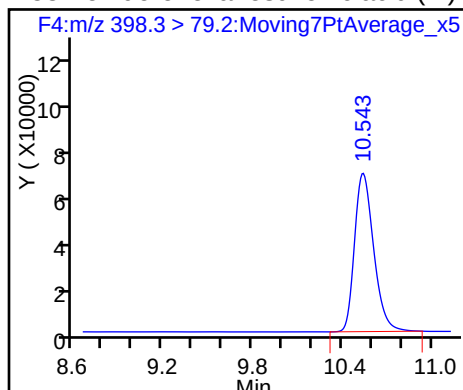
9 Perfluoroheptanoic acid (M)



58 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS (M)

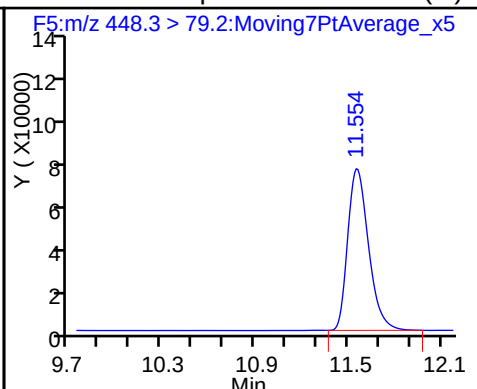
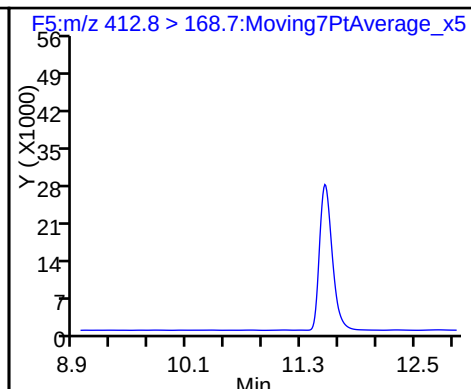
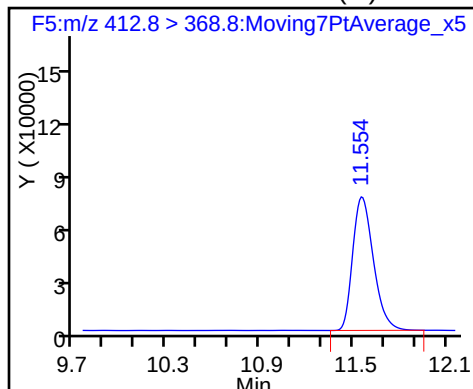
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid (M)

13 Perfluorooctanoic acid

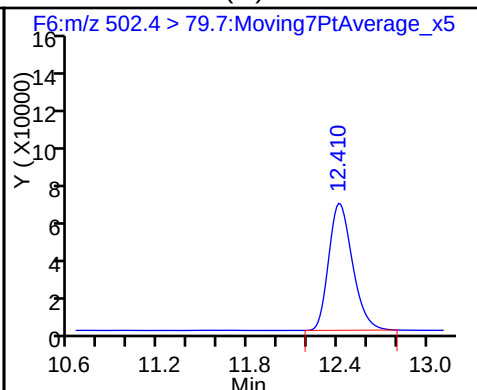
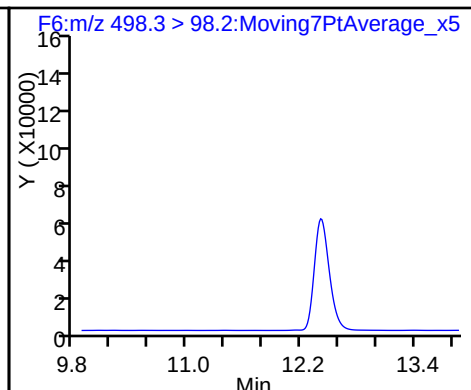
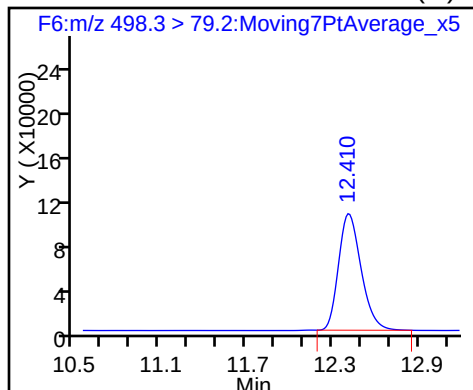
39 Perfluoroheptanesulfonic Acid (M)



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

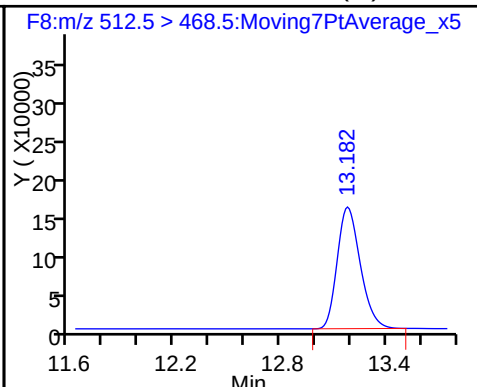
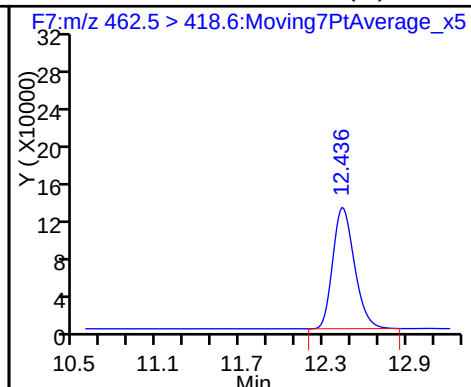
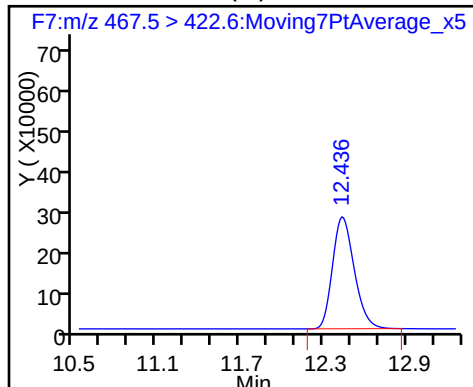
D 16 13C4 PFOS (M)



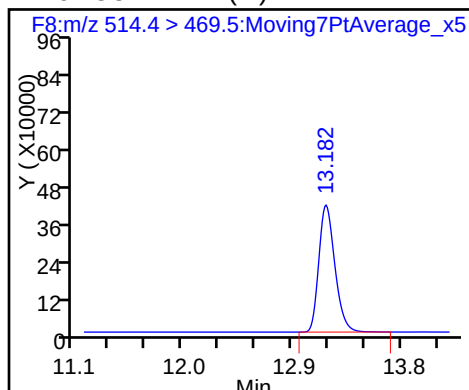
D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (M)

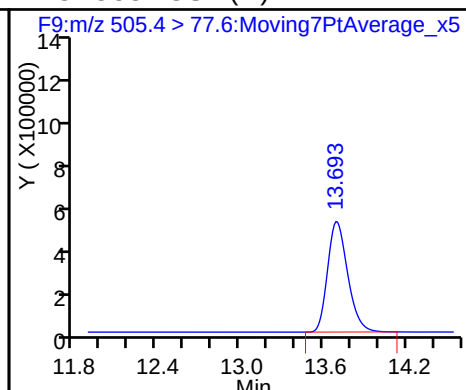
20 Perfluorodecanoic acid (M)



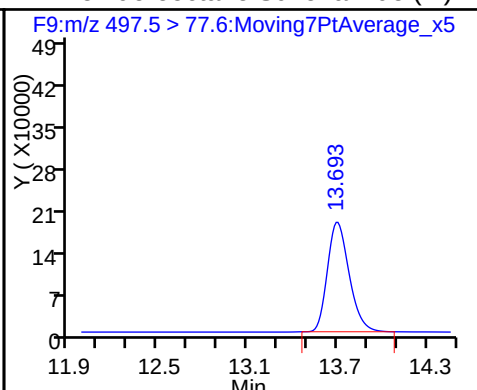
D 19 13C2 PFDA (M)



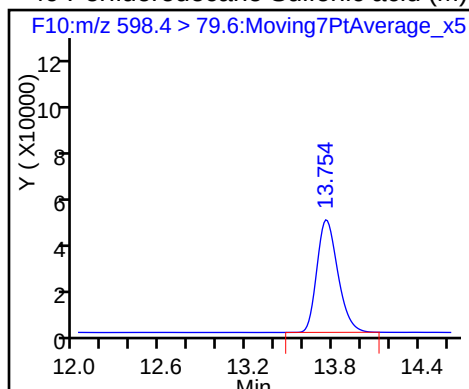
D 23 13C8 FOSA (M)



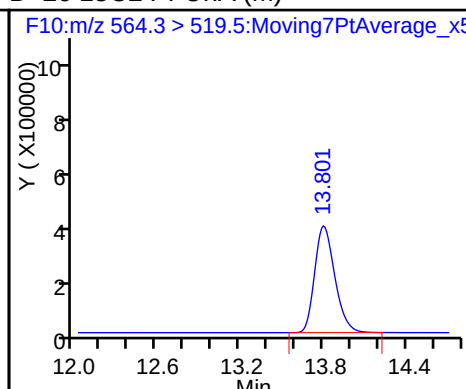
24 Perfluorooctane Sulfonamide (M)



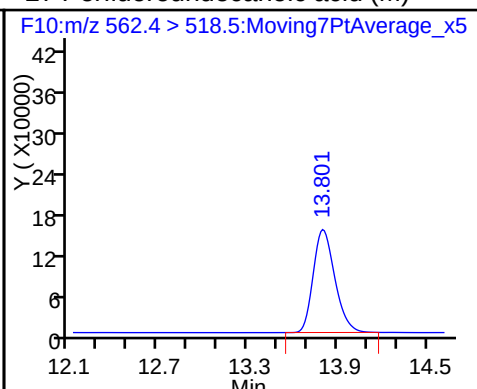
49 Perfluorodecane Sulfonic acid (M)



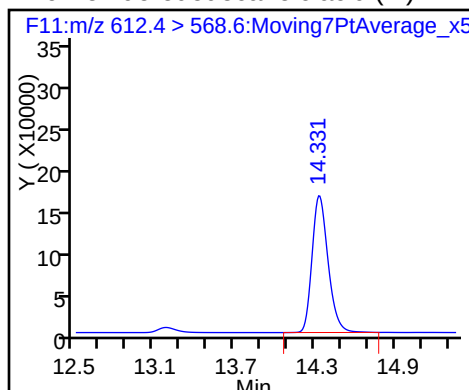
D 26 13C2 PFUnA (M)



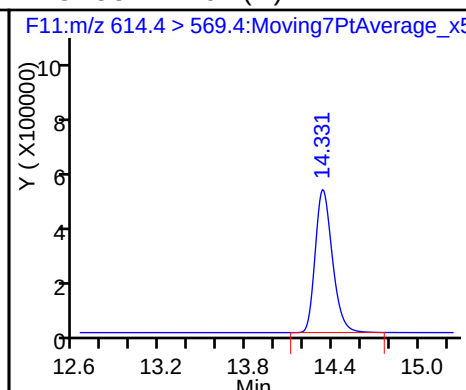
27 Perfluoroundecanoic acid (M)



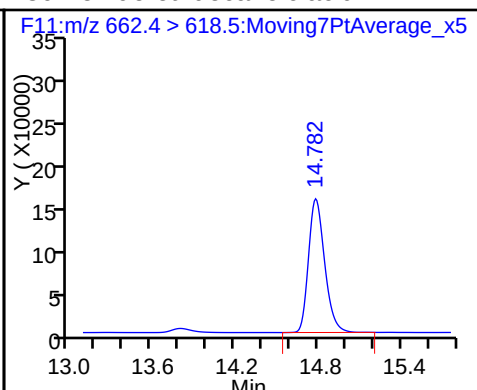
29 Perfluorododecanoic acid (M)



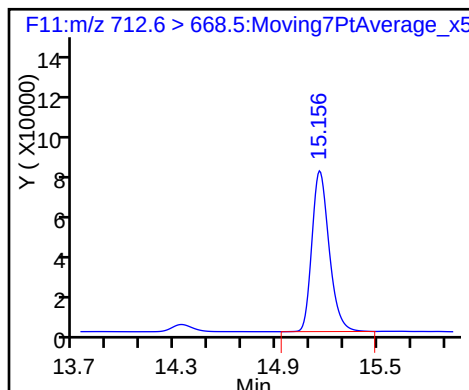
D 28 13C2 PFDoA (M)



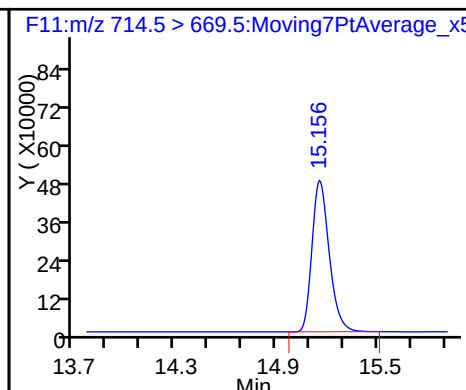
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: CCV 320-101820/59 Calibration Date: 02/27/2016 19:20

Instrument ID: A4 Calib Start Date: 02/26/2016 17:27

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/26/2016 19:34

Lab File ID: 26FEB2016A4A_063.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.4899	0.5274		53.8	50.0	7.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	0.5065	0.5528		54.6	50.0	9.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.5065	0.5528		54.6	50.0	9.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.4953	0.4747		47.9	50.0	-4.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	0.5995	0.5914		43.6	44.2	-1.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.4638	0.4412		47.6	50.0	-4.9	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.4916		45.8	50.0	-8.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.014	0.9530		44.4	47.3	-6.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	2.417	2.452		48.3	47.6	1.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.5253	0.5098		48.5	50.0	-3.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	3.734	4.109		52.6	47.8	10.0	25.0
Perfluorononanoic acid (PFNA)	L2ID		1.060		50.3	50.0	0.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.8798	0.9201		52.3	50.0	4.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9154	0.9722		53.1	50.0	6.2	25.0
Perfluorodecane Sulfonic acid	AveID	1.587	1.688		51.3	48.2	6.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.098	1.091		49.7	50.0	-0.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.8019	0.8732		54.4	50.0	8.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.7847	0.7343		46.8	50.0	-6.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.3730	0.3375		45.2	50.0	-9.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_063.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 27-Feb-2016 19:20:48 ALS Bottle#: 6 Worklist Smp#: 59
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Sublist: chrom-PFAC_A4*sub12
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 14:13:56 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d

Column 1 : Det: F1:MRM

Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 28-Feb-2016 13:18:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.180	6.043	0.137	1.000	2002236	53.8		108	5438	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.180	6.043	0.137	1.000	2002236	54.6		109	5438	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.180	6.043	0.137	1.000	2002236	54.6		109	5438	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.180	6.043	0.137		2002236	28.5		57.0	5438	
D 1 13C4 PFBA										
216.7 > 171.5	6.180	6.043	0.137		3796287	41.2		82.4	12093	
D 3 13C5-PFPeA										
267.6 > 222.7	7.488	7.272	0.216		2452025	40.7		81.3	6255	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.488	7.275	0.213	1.000	1163878	47.9		95.8	552	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.633	7.404	0.229	1.000	800392	43.6		98.7		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.878	8.604	0.274	1.000	1478362	47.6		95.1	2058	
D 6 13C2 PFHxA										
314.6 > 269.7	8.878	8.604	0.274		3350737	41.6		83.2	5444	
D 8 13C4-PFHpA										
366.6 > 321.6	10.131	9.856	0.275		2833317	41.7		83.4	4817	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.131	9.859	0.272	1.000	1392767	45.8		91.5	2211	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.165	9.892	0.273	1.000	1380297	44.4		94.0		
D 11 18O2 PFHxS										
402.5 > 83.6	10.165	9.892	0.273		1448351	39.9		84.4	3169	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
416.5 > 371.6	11.208	10.958	0.250		3027557	38.6		77.2	4197	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.208	10.958	0.250	1.000	1543417	48.5		97.0	1094	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.208	10.960	0.248	1.000	1518753	48.3		101		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.095	11.874	0.221	1.000	2555904	52.6		110	2917	
D 16 13C4 PFOS										
502.4 > 79.7	12.095	11.876	0.219		622067	38.2		79.8	1743	
D 17 13C5 PFNA										
467.5 > 422.6	12.126	11.898	0.228		2810154	43.4		86.7	7755	
18 Perfluorononanoic acid										
462.5 > 418.6	12.126	11.899	0.227	1.000	2979627	50.3		101	3333	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.892	12.693	0.199	1.000	3019614	52.3		105	3724	
D 19 13C2 PFDA										
514.4 > 469.5	12.892	12.693	0.199		3281719	40.6		81.3	3614	
21 PFNS (Perfluoro-1-nonanesulfonate)										
548.6 > 79.6	12.854	12.831	0.023	1.000	942573	NC			2936	
D 23 13C8 FOSA										
505.4 > 77.6	13.417	13.222	0.195		4585432	40.5		81.0	3550	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.417	13.222	0.195	1.000	4457938	53.1		106	3100	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.491	13.324	0.167	1.000	1059056	NC			2253	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.491	13.324	0.167	1.000	1059056	51.3		106		
D 26 13C2 PFUnA										
564.3 > 519.5	13.537	13.369	0.168		3027386	39.3		78.5	3342	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.537	13.372	0.165	1.000	3302981	49.7		99.4	2993	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.085	13.937	0.148	1.000	3162905	54.4		109	1529	
D 28 13C2 PFDaA										
614.4 > 569.4	14.085	13.939	0.146		3622265	42.5		85.0	2891	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.556	14.430	0.126	1.000	2659711	46.8		93.6	1625	
31 PFDaS (Perfluoro-1-dodecanesulfonate)										
698.6 > 79.7	14.501	14.727	-0.226	1.000	361891	NC			798	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.952	14.841	0.111	1.000	1222564	45.2		90.5	1056	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.952	14.844	0.108		2962192	42.9		85.8	2401	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_063.d

Injection Date: 27-Feb-2016 19:20:48

Instrument ID: A4

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 6

Worklist Smp#: 59

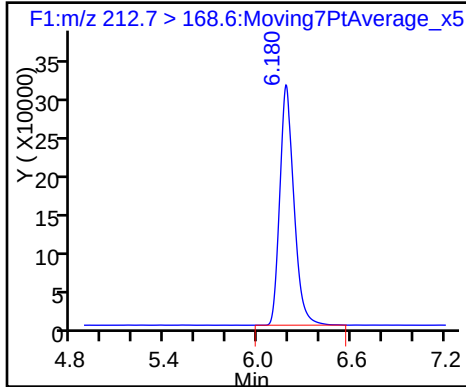
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

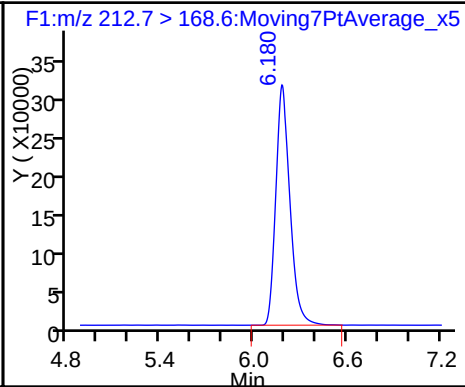
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

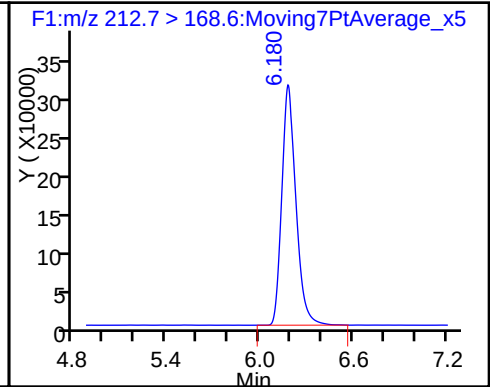
2 Perfluorobutyric acid



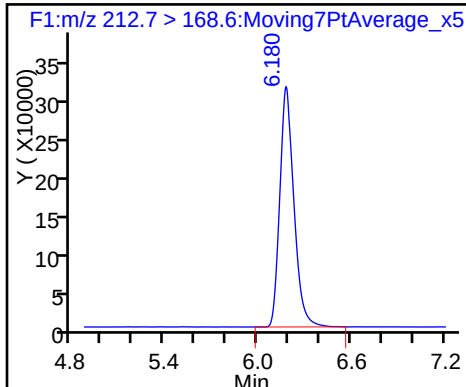
36 Perfluorooctadecanoic acid



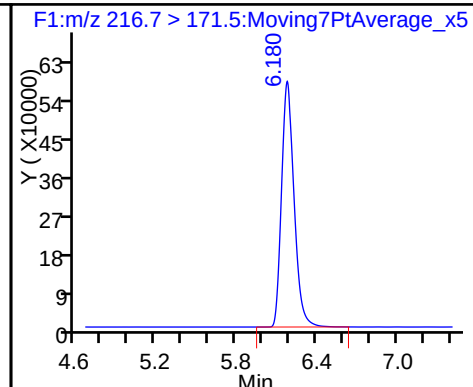
34 Perfluorohexadecanoic acid



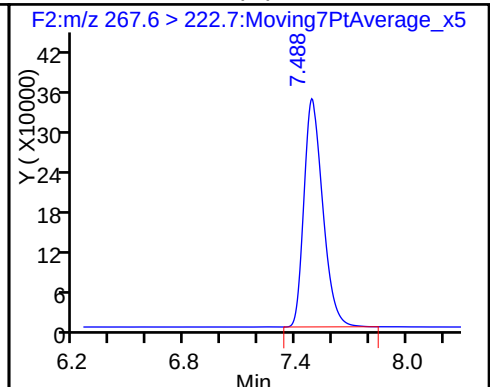
D 35 13C2-PFHxDA



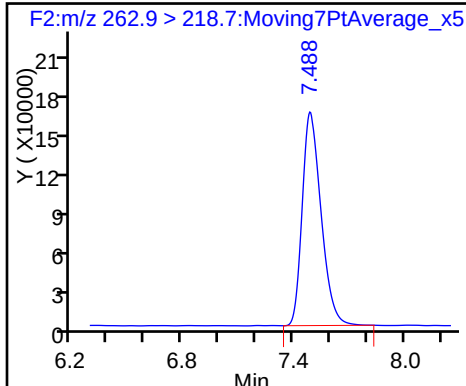
D 1 13C4 PFBA



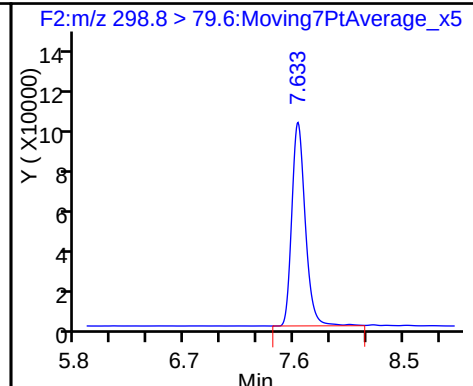
D 3 13C5-PFPeA (M)



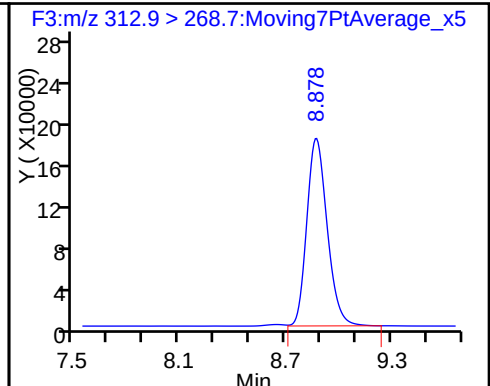
4 Perfluoropentanoic acid (M)



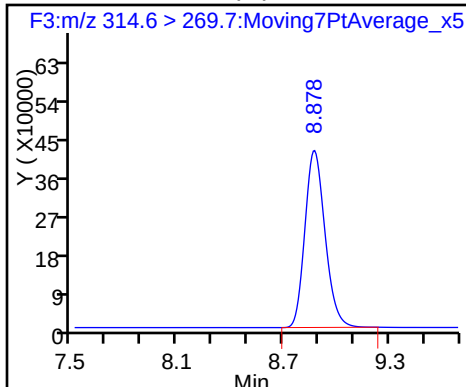
51 Perfluorobutanesulfonic acid (M)



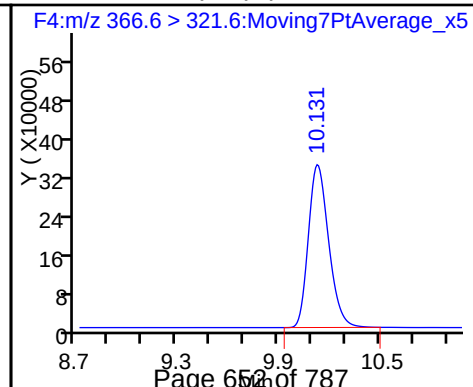
7 Perfluorohexanoic acid (M)



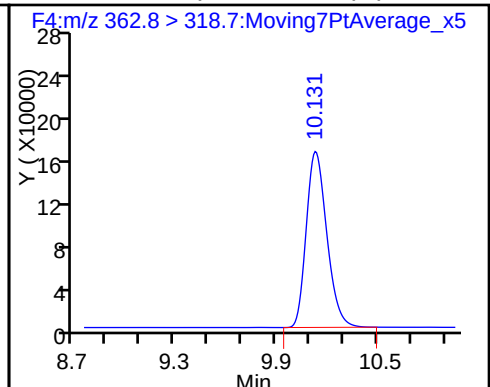
D 6 13C2 PFHxA (M)



D 8 13C4-PFHpA (M)



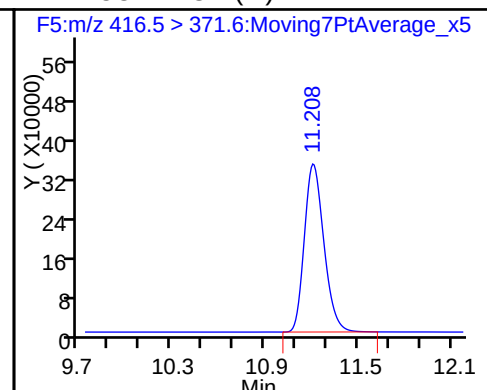
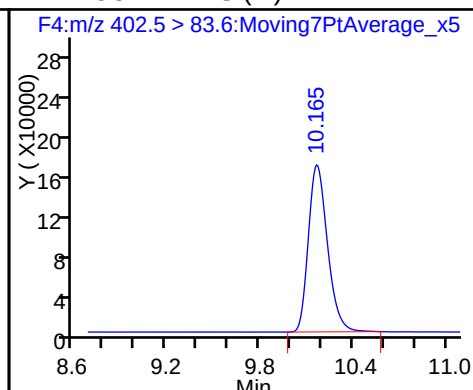
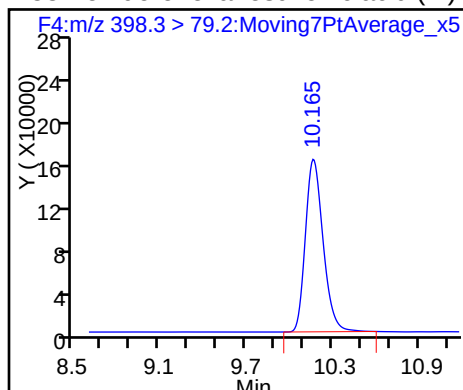
9 Perfluoroheptanoic acid (M)



58 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS (M)

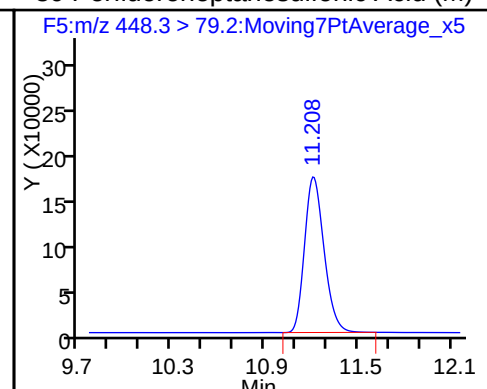
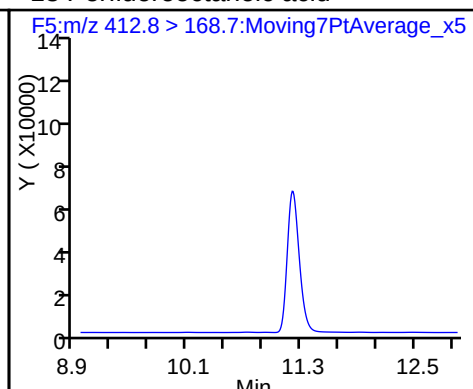
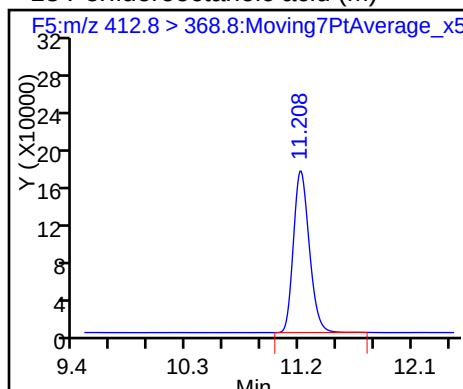
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid (M)

13 Perfluorooctanoic acid

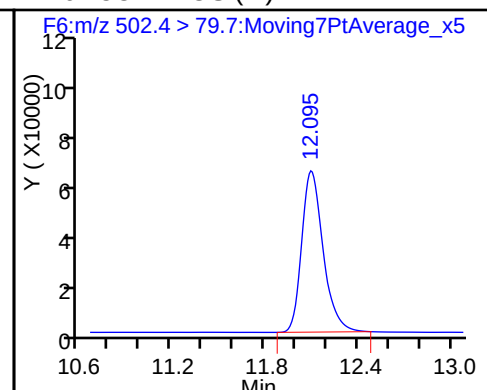
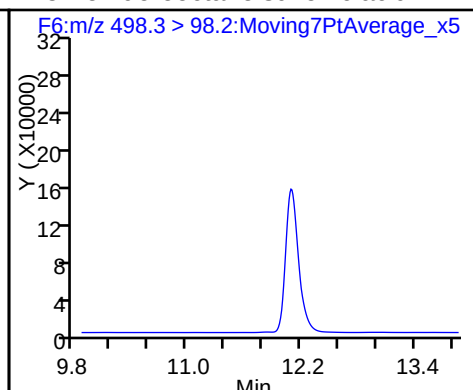
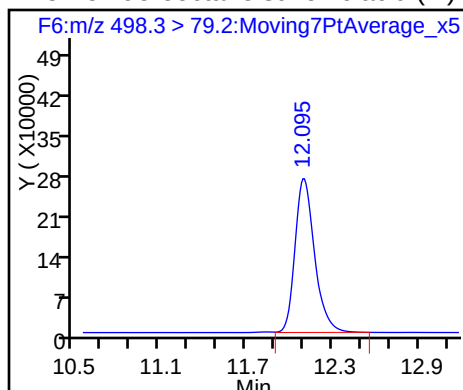
39 Perfluoroheptanesulfonic Acid (M)



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

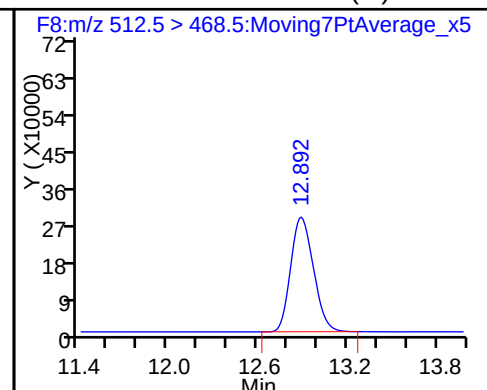
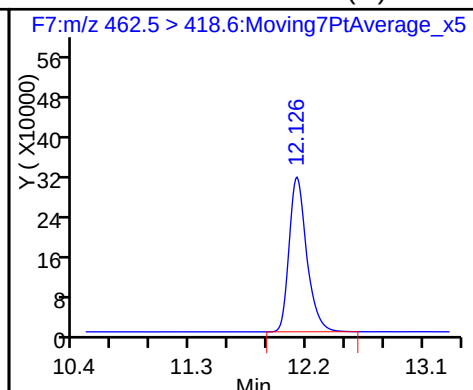
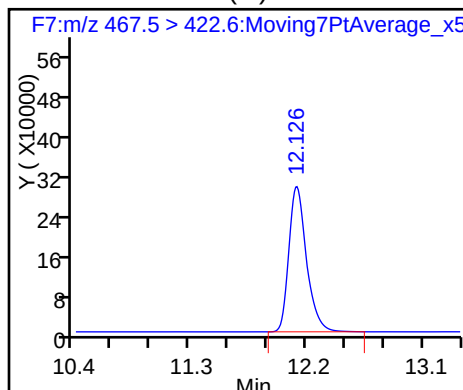
D 16 13C4 PFOS (M)



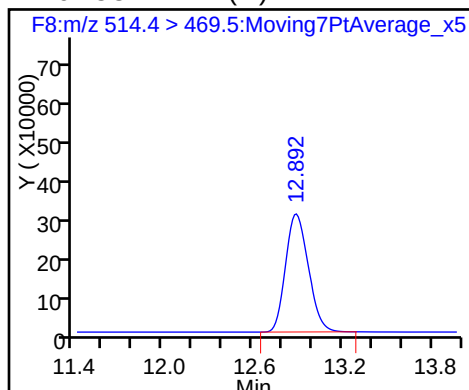
D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (M)

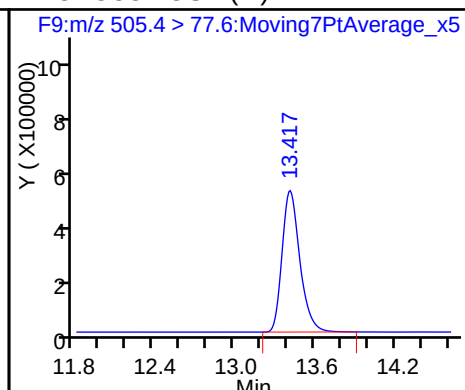
20 Perfluorodecanoic acid (M)



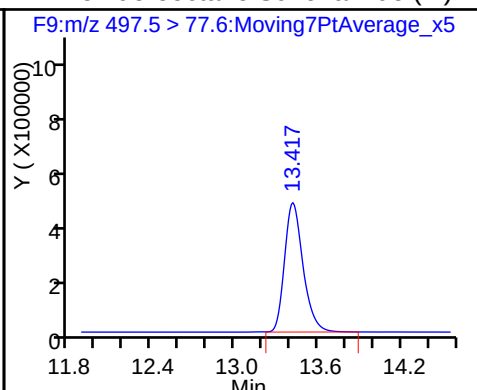
D 19 13C2 PFDA (M)



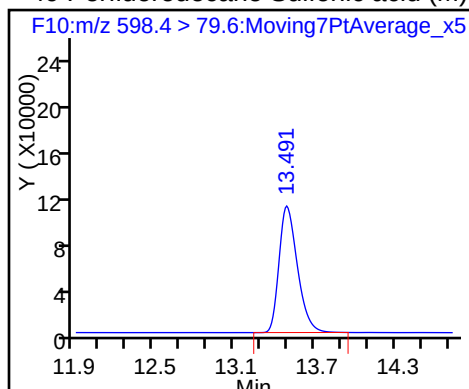
D 23 13C8 FOSA (M)



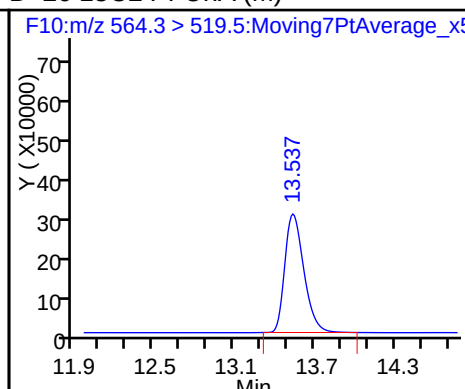
24 Perfluorooctane Sulfonamide (M)



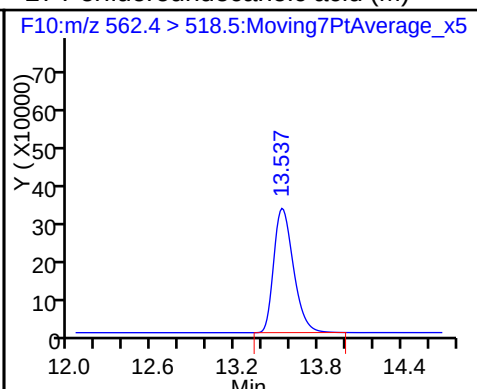
49 Perfluorodecane Sulfonic acid (M)



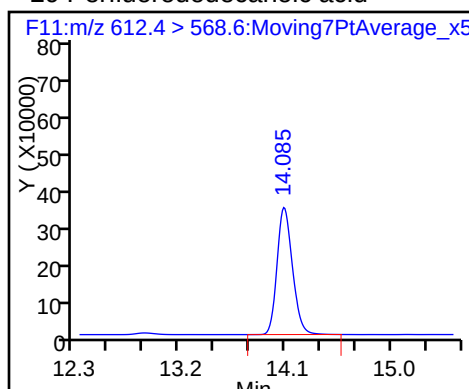
D 26 13C2 PFUnA (M)



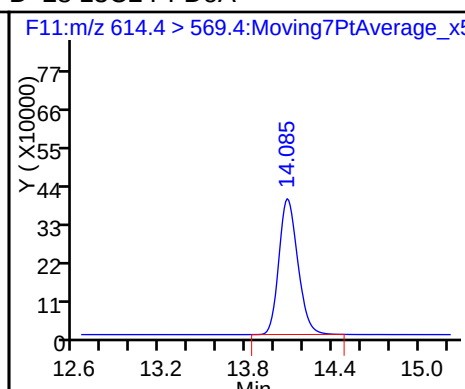
27 Perfluoroundecanoic acid (M)



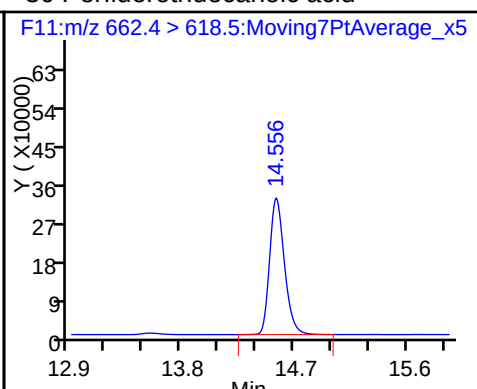
29 Perfluorododecanoic acid



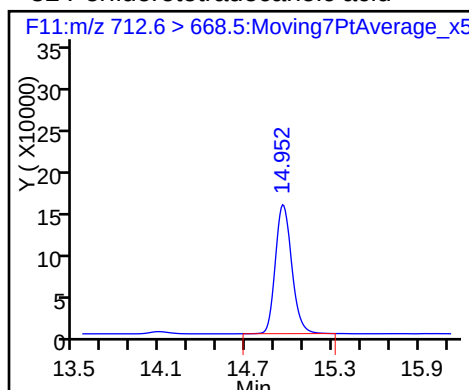
D 28 13C2 PFDaA



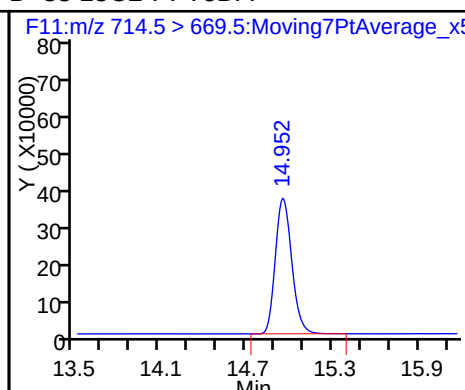
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: ICV 320-101853/11 Calibration Date: 02/28/2016 17:24

Instrument ID: A6 Calib Start Date: 02/28/2016 14:34

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/28/2016 16:42

Lab File ID: 28FEB2016A6A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.495		53.1	50.0	6.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9360	1.100		58.8	50.0	17.5	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.228		48.2	44.3	8.8	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.035	1.165		56.3	50.0	12.5	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.150		52.1	50.0	4.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.8772		56.1	47.3	18.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9419	1.023		54.3	50.0	8.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.7836		54.6	47.6	14.8	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		1.157		55.9	47.8	17.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8363	0.9489		56.7	50.0	13.5	25.0
Perfluorodecanoic acid (PFDA)	L2ID		1.022		51.1	50.0	2.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8460	0.8842		52.3	50.0	4.5	25.0
Perfluorodecane Sulfonic acid	L2ID		0.7091		55.3	48.3	14.7	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8829		51.8	50.0	3.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7628	0.8057		52.8	50.0	5.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9307	0.9452		50.8	50.0	1.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6364	0.6190		48.6	50.0	-2.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.095		54.8	50.0	9.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.997	1.141		57.2	50.0	14.4	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_012.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 28-Feb-2016 17:24:39 ALS Bottle#: 16 Worklist Smp#: 11
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A4*sub6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 16:44:24 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: westendorfc

Date: 29-Feb-2016 08:26:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.681	5.691	-0.010	1.000	1272190	53.1			46171	
D 1 13C4 PFBA										
217.0 > 172.0	5.678	5.691	-0.013		850737	46.9		93.8	52905	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.776	6.790	-0.014	1.000	1877519	58.8			369	
D 3 13C5-PFPeA										
267.9 > 223.0	6.776	6.791	-0.015		1706693	47.8		95.6	23678	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.891	6.905	-0.014	1.000	747938	NC			178	
298.9 > 99.0	6.891	6.905	-0.014	1.000	379951		1.97(0.00-0.00)		99.5	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.891	6.905	-0.014	1.000	747938	48.2				
D 6 13C2 PFHxA										
315.0 > 270.0	8.018	8.035	-0.017		1499907	52.1		104	40362	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.024	8.037	-0.013	1.000	1747571	56.3			7063	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.100	8.158	-0.058	0.872	578331	NC			11883	
D 8 13C4-PFHpA										
367.0 > 322.0	9.252	9.261	-0.009		1628309	48.6		97.2	84874	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.252	9.262	-0.010	1.000	1872079	52.1			4948	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.287	9.296	-0.009	1.000	570680	56.1				
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.287	9.296	-0.009	1.000	570680	NC			7584	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.0 > 84.0	9.287	9.297	-0.010		651292	44.8		94.8	52110	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.377	10.388	-0.011	1.000	1776357	54.3			1654	
413.0 > 169.0	10.377	10.388	-0.011	1.000	609623		2.91(0.00-0.00)		8011	
D 12 13C4 PFOA										
417.0 > 372.0	10.377	10.389	-0.012		1736662	48.4		96.7	63603	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.384	10.394	-0.010	1.000	539925	NC			40340	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.384	10.394	-0.010	1.000	539925	54.6				
D 16 13C4 PFOS										
503.0 > 80.0	11.341	11.350	-0.009		691908	41.7		87.3	33093	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.341	11.350	-0.009	1.000	800016	55.9			251	
499.0 > 99.0	11.341	11.350	-0.009	1.000	431763		1.85(0.00-0.00)		31530	
D 17 13C5 PFNA										
468.0 > 423.0	11.364	11.368	-0.004		1430176	46.5		92.9	104413	
18 Perfluorononanoic acid										
463.0 > 419.0	11.364	11.370	-0.006	1.000	1357077	56.7			97654	
D 19 13C2 PFDA										
515.0 > 470.0	12.204	12.212	-0.008		1312853	47.1		94.3	55403	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.204	12.213	-0.009	1.000	1341608	51.1			33953	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.174	12.249	-0.075	1.000	495631	NC			68724	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.753	12.759	-0.006	1.000	1863495	52.3			2494	
D 23 13C8 FOSA										
506.0 > 78.0	12.753	12.759	-0.006		2107497	52.4		105	6363	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.879	12.888	-0.009	1.000	495228	NC			29695	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.879	12.888	-0.009	1.000	495228	55.3				
D 26 13C2 PFUnA										
565.0 > 520.0	12.930	12.936	-0.006		1698970	45.8		91.5	67466	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.930	12.938	-0.008	1.000	1500069	51.8			5012	
D 28 13C2 PFDaA										
615.0 > 570.0	13.543	13.550	-0.007		1962567	47.6		95.2	7402	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.543	13.552	-0.009	1.000	1581163	52.8			1378	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.064	14.075	-0.011	1.000	1854978	50.8			3621	
31 PFDoS (Perfluoro-1-dodecanesulfonate)										
699.0 > 80.0	14.010	14.083	-0.073	1.000	496897	NC			35280	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.508	14.516	-0.008		1696436	50.1		100	12102	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_012.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
32 Perfluorotetradecanoic acid	713.0 > 669.0	14.508	14.517	-0.009	1.000	1214728	48.6		1395	
D 35 13C2-PFHxDA	815.0 > 770.0	15.156	15.166	-0.010		2214103	57.1	114	18182	
34 Perfluorohexadecanoic acid	813.0 > 769.0	15.156	15.166	-0.010	1.000	2149867	54.8		2320	
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.488	15.496	-0.008	1.000	2238386	57.2		2794	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_012.d

Injection Date: 28-Feb-2016 17:24:39

Instrument ID: A6

Lims ID: ICV

Client ID:

Operator ID: JRB

ALS Bottle#: 16

Worklist Smp#: 11

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

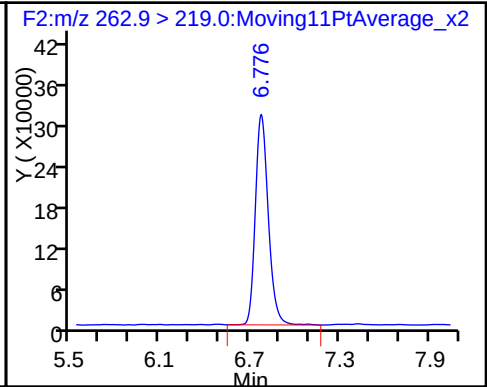
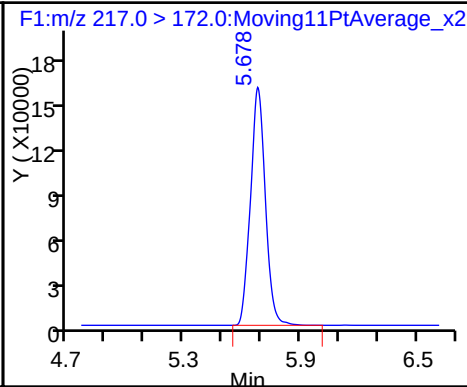
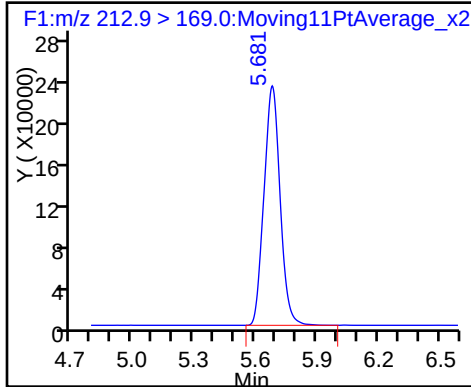
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

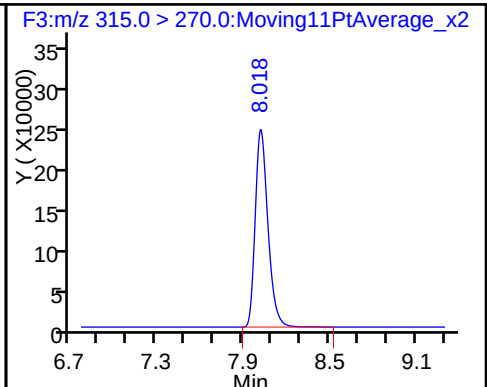
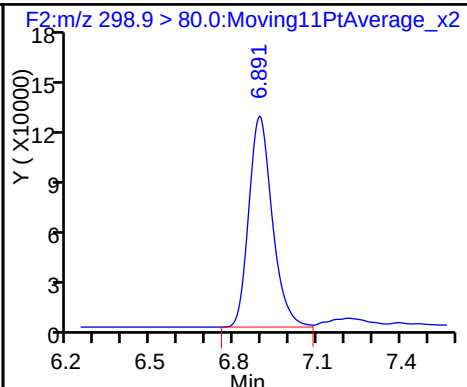
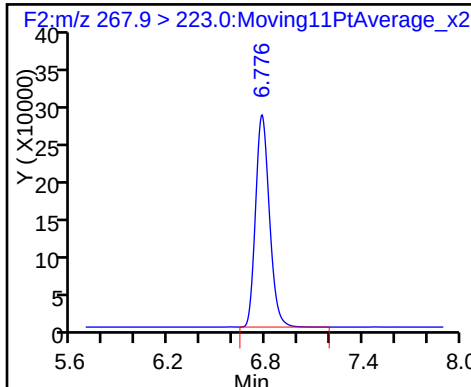
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

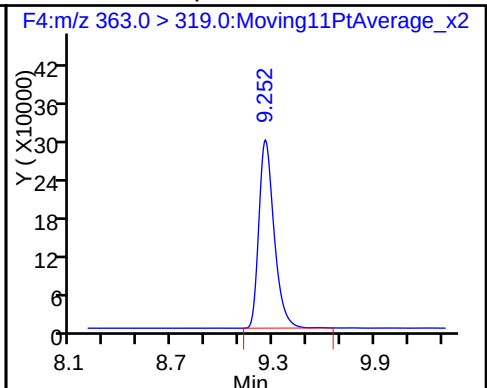
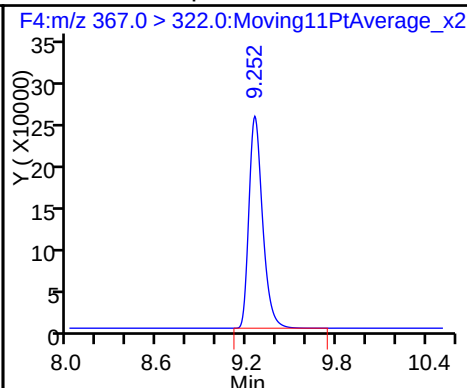
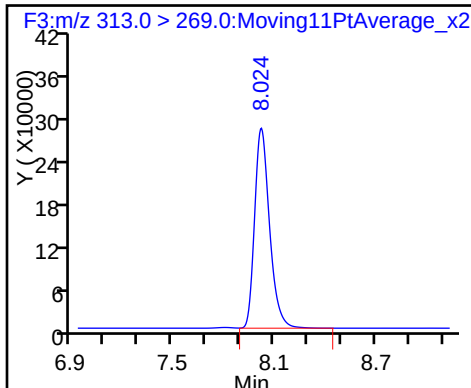
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

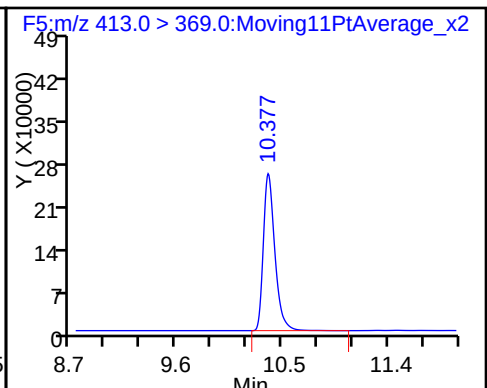
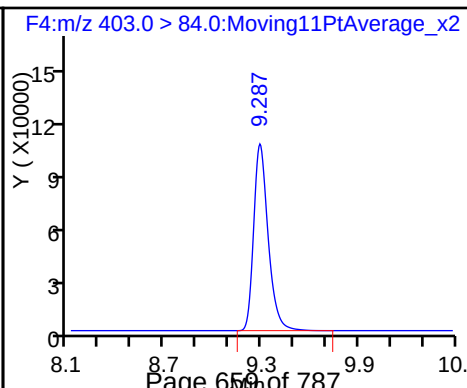
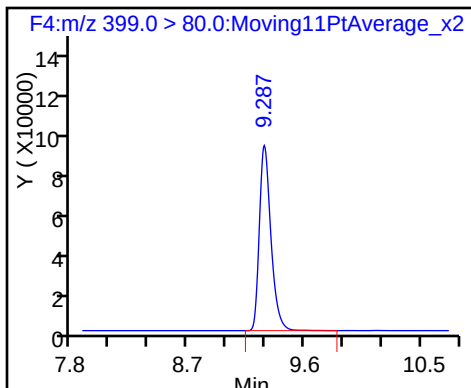
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

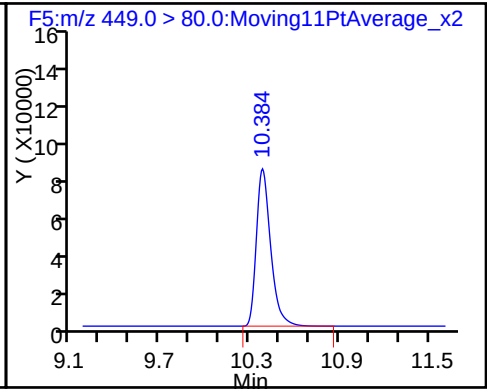
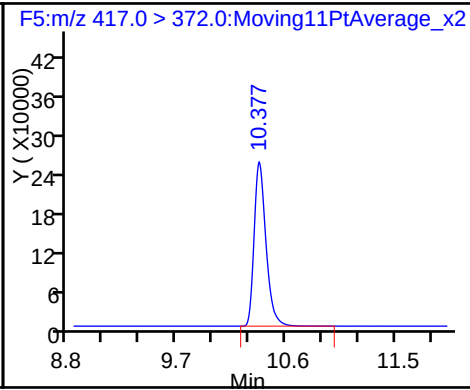
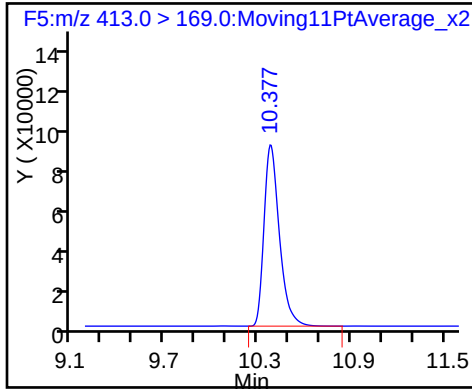
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

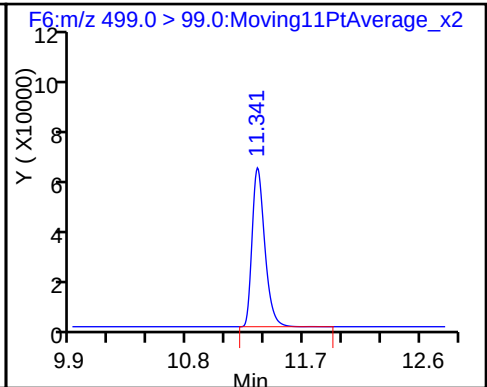
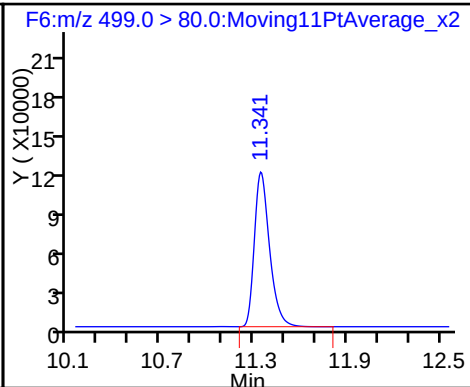
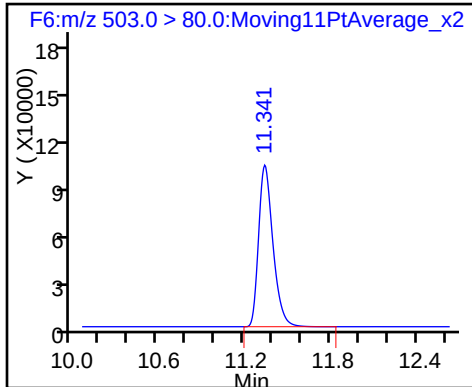
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

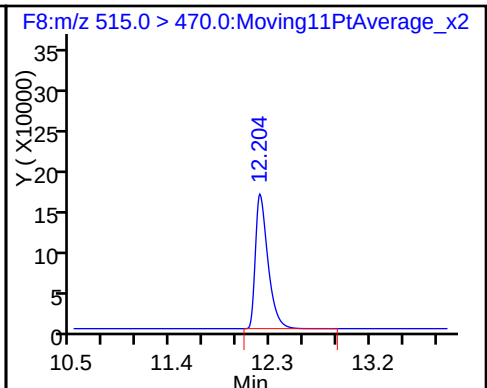
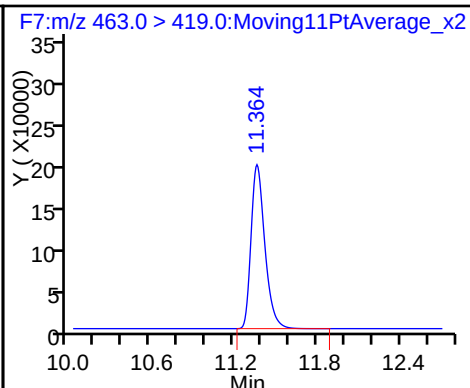
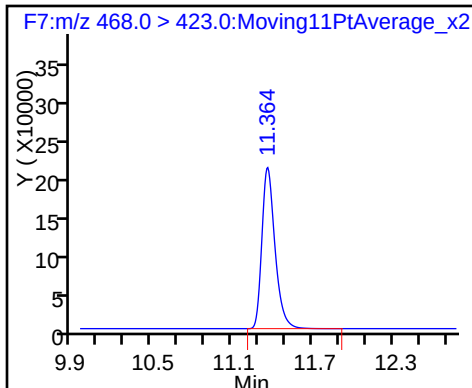
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

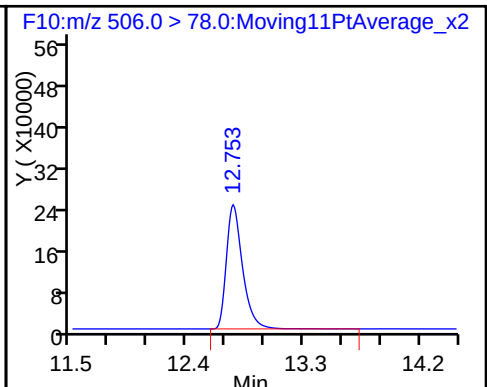
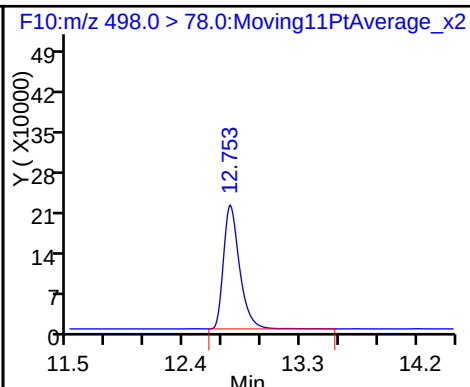
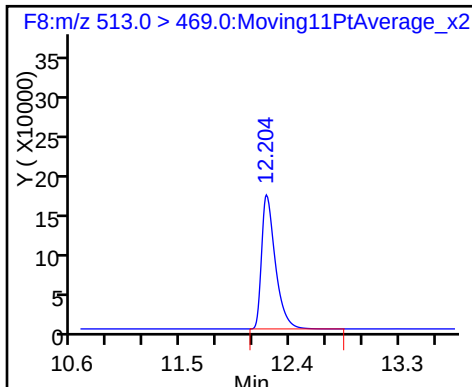
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

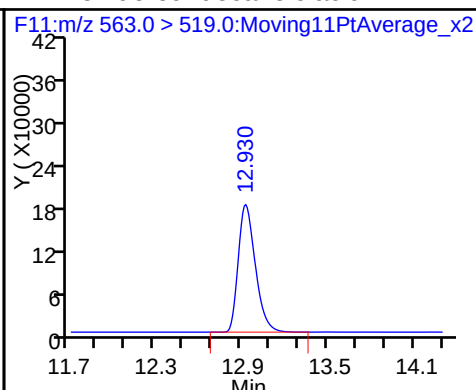
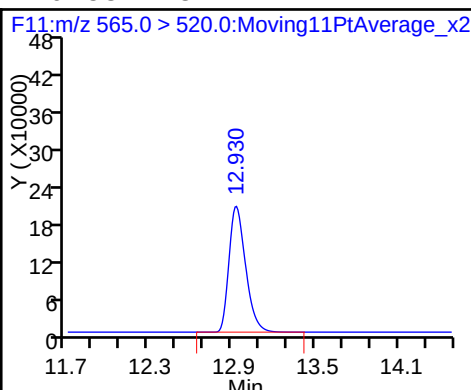
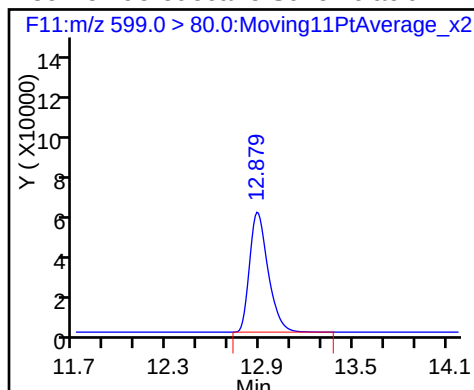
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

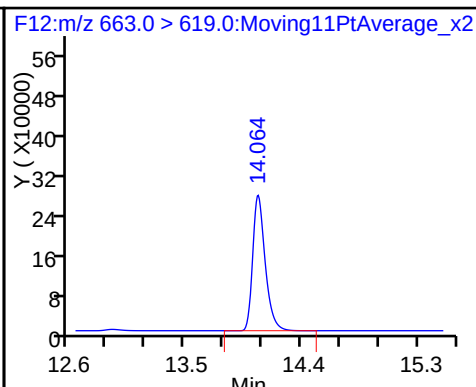
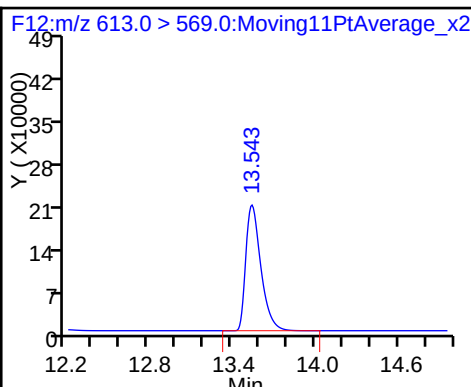
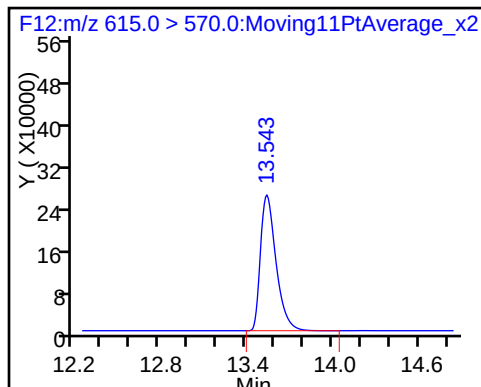
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

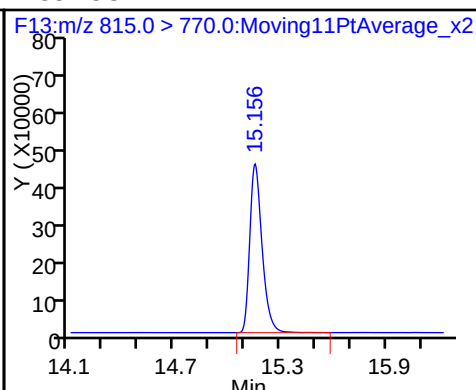
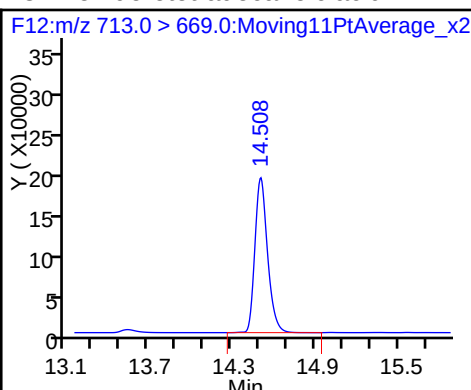
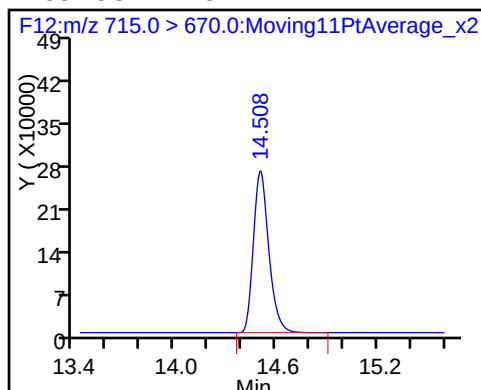
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

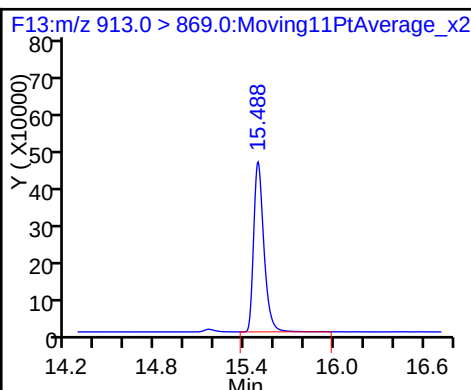
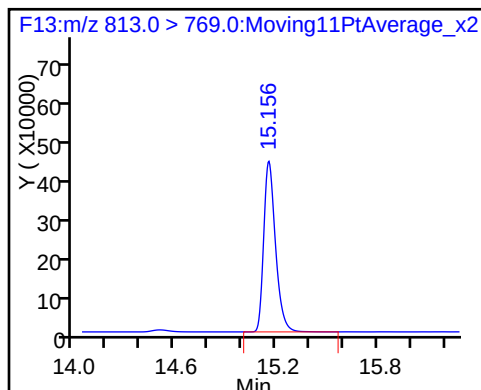
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: CCV 320-101944/5 Calibration Date: 02/29/2016 18:15

Instrument ID: A6 Calib Start Date: 02/28/2016 14:34

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/28/2016 16:42

Lab File ID: 29FEB2016A6B_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.397		20.1	20.0	0.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9360	0.9347		20.0	20.0	-0.1	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.090		17.2	17.7	-2.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.035	1.149		22.2	20.0	11.0	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.175		21.5	20.0	7.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.7184		18.5	18.9	-2.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9419	0.9856		20.9	20.0	4.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.6859		19.3	19.0	1.2	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		1.036		20.1	19.1	5.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8363	0.8705		20.8	20.0	4.1	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9758		19.6	20.0	-2.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8460	0.9199		21.7	20.0	8.7	25.0
Perfluorodecane Sulfonic acid	L2ID		0.6506		20.5	19.3	6.3	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8818		20.5	20.0	2.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7628	0.8028		21.0	20.0	5.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9307	1.074		23.1	20.0	15.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6364	0.5909		18.6	20.0	-7.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.166		21.7	20.0	8.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.997	0.9424		18.9	20.0	-5.5	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_005.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 29-Feb-2016 18:15:13 ALS Bottle#: 12 Worklist Smp#: 5
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.675	5.691	-0.016	1.000	445881	20.1		100	41777	
D 1 13C4 PFBA										
217.0 > 172.0	5.675	5.691	-0.016		797769	44.0		88.0	76995	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.767	6.790	-0.023	1.000	626045	20.0		99.9	161	
D 3 13C5-PFPeA										
267.9 > 223.0	6.763	6.791	-0.028		1674471	46.9		93.8	20015	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.878	6.905	-0.027	1.000	252810	NC			256	
298.9 > 99.0	6.878	6.905	-0.027	1.000	139212		1.82(0.00-0.00)		382	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.878	6.905	-0.027	1.000	252810	17.2		97.5		
D 6 13C2 PFHxA										
315.0 > 270.0	8.002	8.035	-0.033		1377257	47.8		95.6	31771	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.002	8.037	-0.035	1.000	633090	22.2		111	4679	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.083	8.158	-0.075	0.873	187713	NC			6232	
D 8 13C4-PFHpA										
367.0 > 322.0	9.223	9.261	-0.038		1569976	46.9		93.7	83001	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.229	9.262	-0.033	1.000	738103	21.5		108	36.2	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.264	9.296	-0.032	1.000	178339	18.5		97.7		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.264	9.296	-0.032	1.000	178339	NC			9.1	
D 11 18O2 PFHxS										
403.0 > 84.0	9.258	9.297	-0.039		620643	42.7		90.3	49033	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.349	10.388	-0.039	1.000	629828	20.9		105	14.1	
413.0 > 169.0	10.356	10.388	-0.032	1.001	209746		3.00(0.00-0.00)		10.0	
D 12 13C4 PFOA										
417.0 > 372.0	10.349	10.389	-0.040		1597511	44.5		89.0	46874	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.356	10.394	-0.038	1.000	181612	NC			13463	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.356	10.394	-0.038	1.000	181612	19.3		101		
D 16 13C4 PFOS										
503.0 > 80.0	11.312	11.350	-0.038		664710	40.1		83.8	24269	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.312	11.350	-0.038	1.000	275381	20.1		105	175	
499.0 > 99.0	11.320	11.350	-0.030	1.001	152803		1.80(0.00-0.00)		1249	
D 17 13C5 PFNA										
468.0 > 423.0	11.335	11.368	-0.033		1331622	43.3		86.5	96710	
18 Perfluorononanoic acid										
463.0 > 419.0	11.335	11.370	-0.035	1.000	463667	20.8		104	5.3	
D 19 13C2 PFDA										
515.0 > 470.0	12.174	12.212	-0.038		1387285	49.8		99.6	93041	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.181	12.213	-0.032	1.000	541488	19.6		98.0	6533	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.144	12.249	-0.105	1.000	177909	NC			8358	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.732	12.759	-0.027	1.000	659136	21.7		109	38119	
D 23 13C8 FOSA										
506.0 > 78.0	12.732	12.759	-0.027		1791366	44.5		89.0	103748	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.847	12.888	-0.041	1.000	174422	NC			10254	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.847	12.888	-0.041	1.000	174422	20.5		106		
D 26 13C2 PFUnA										
565.0 > 520.0	12.899	12.936	-0.037		1728379	46.5		93.1	34130	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.899	12.938	-0.039	1.000	609654	20.5		103	35906	
D 28 13C2 PFDaA										
615.0 > 570.0	13.505	13.550	-0.045		1871622	45.4		90.7	50134	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.505	13.552	-0.047	1.000	601004	21.0		105	367	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.033	14.075	-0.042	1.000	803828	23.1		115	1348	
31 PFDoS (Perfluoro-1-dodecanesulfona										
699.0 > 80.0	13.974	14.083	-0.109	1.000	185649	NC			8504	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.469	14.516	-0.047		1609565	47.5		95.0	19031	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.477	14.517	-0.040	1.000	442393	18.6		92.9	242	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_005.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.130	15.166	-0.036		1817358	46.8		93.7	14190	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.130	15.166	-0.036	1.000	872990	21.7		109	1890	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.462	15.496	-0.034	1.000	705487	18.9		94.5	1374	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_005.d

Injection Date: 29-Feb-2016 18:15:13

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 12

Worklist Smp#: 5

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

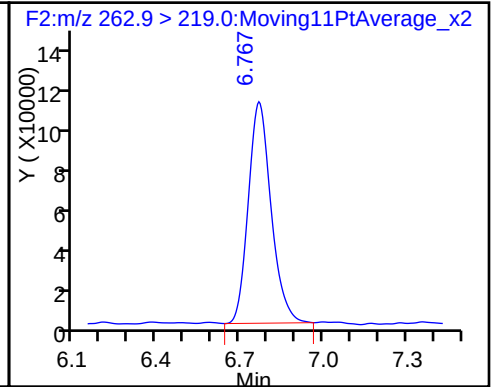
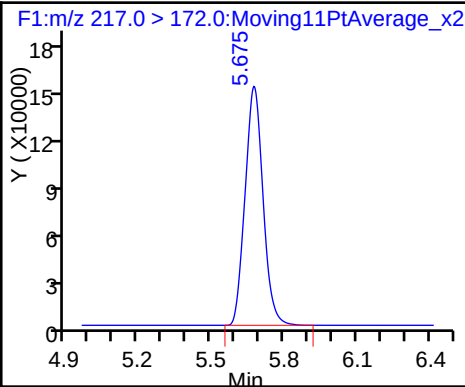
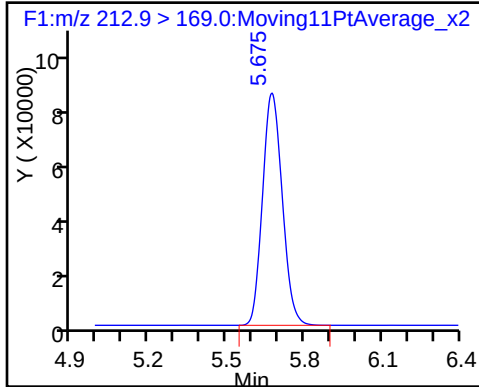
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

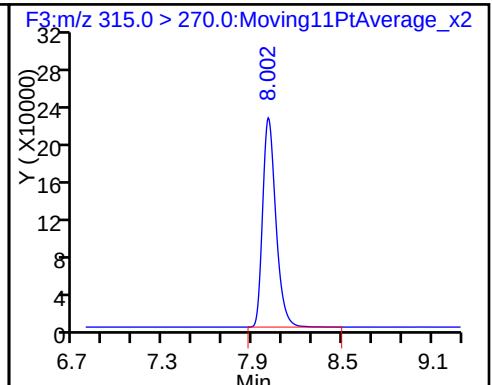
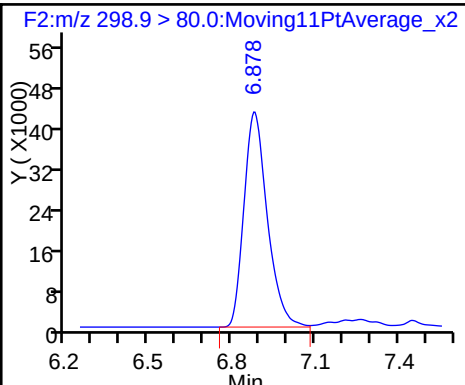
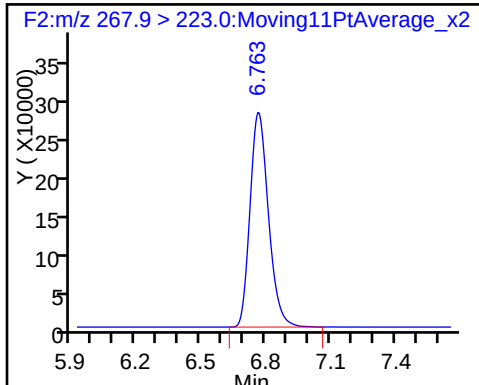
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

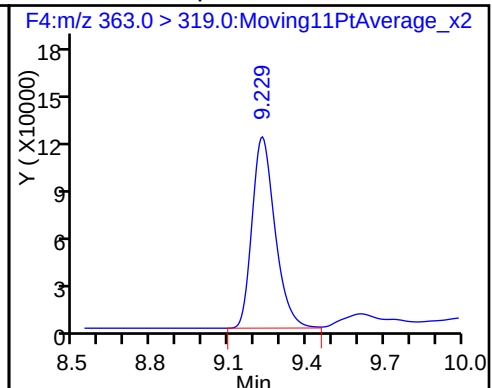
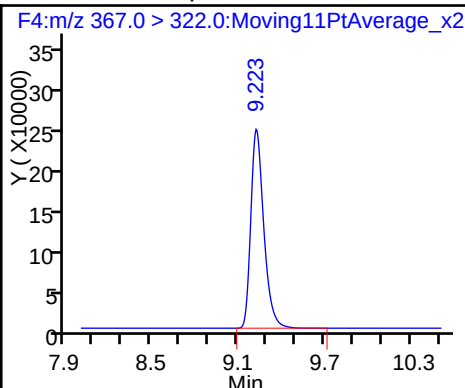
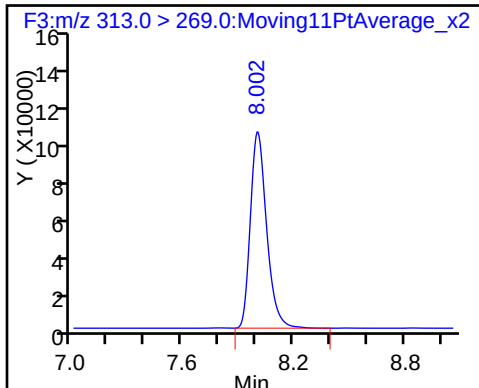
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

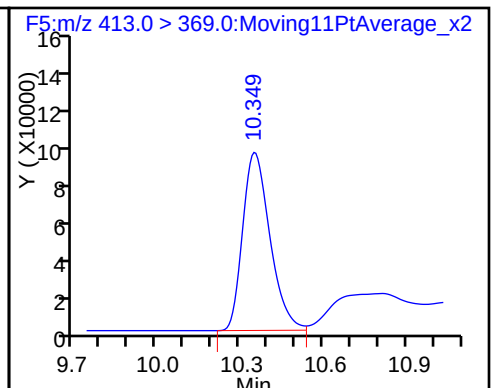
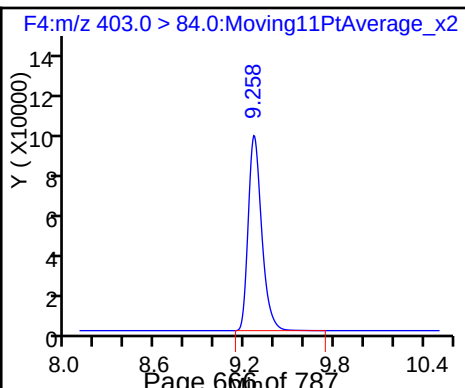
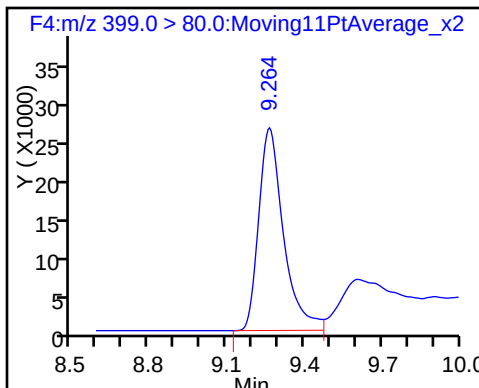
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

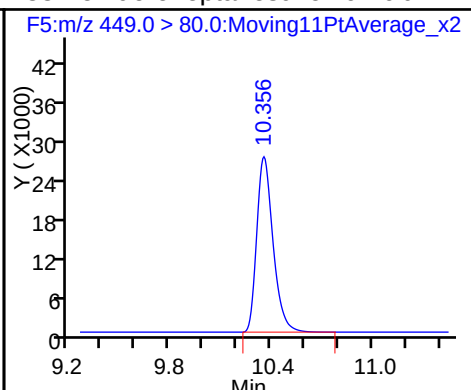
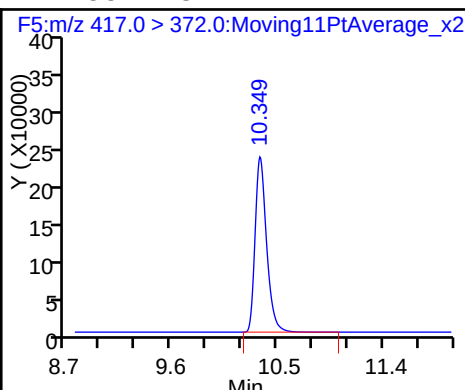
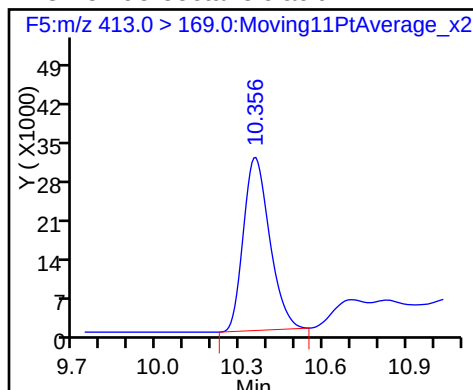
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

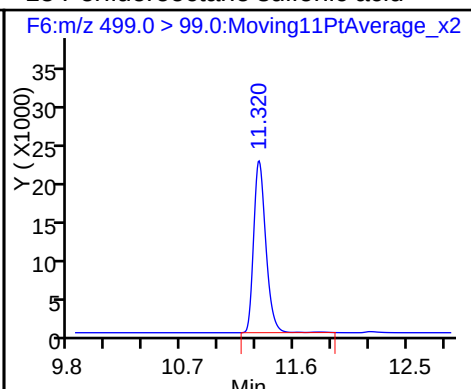
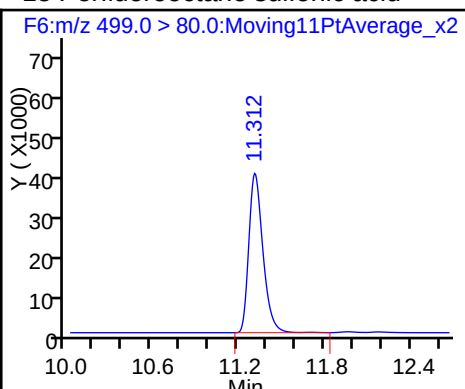
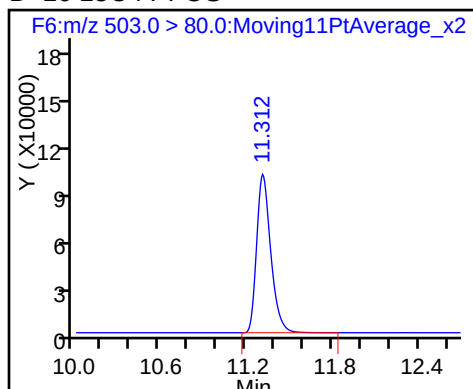
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

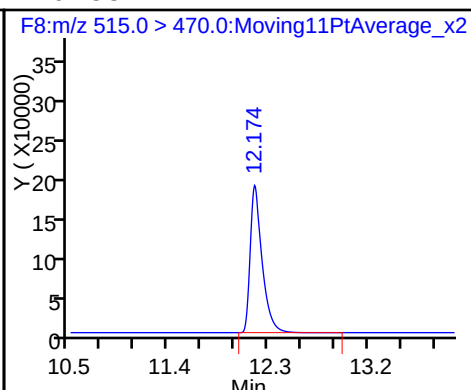
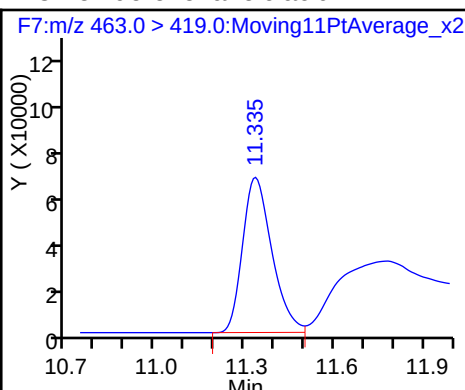
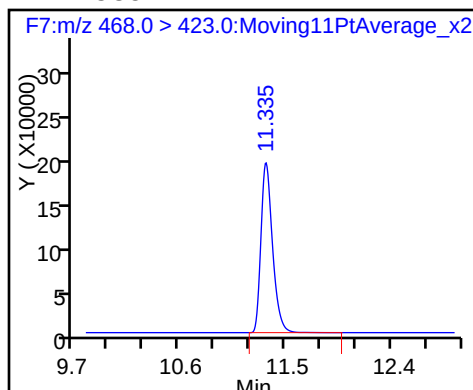
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

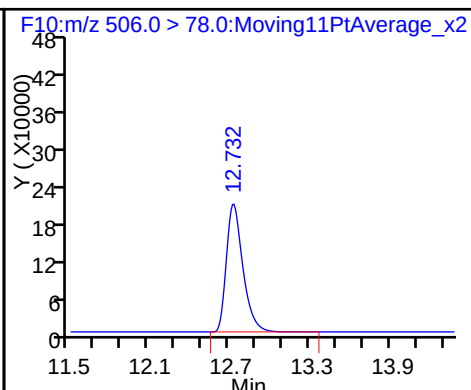
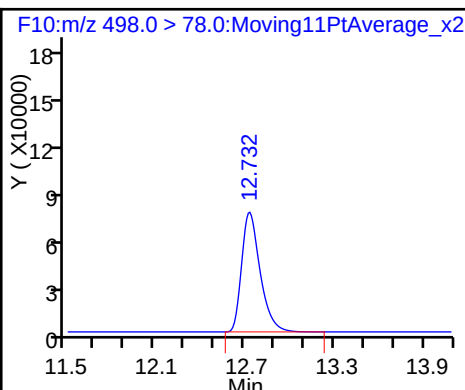
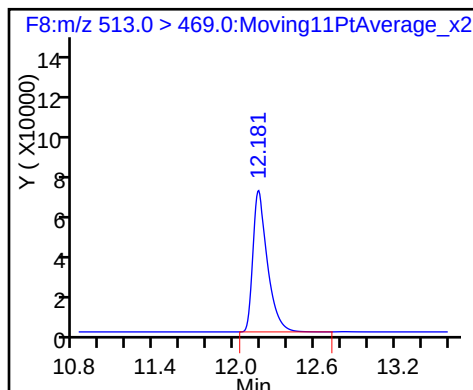
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

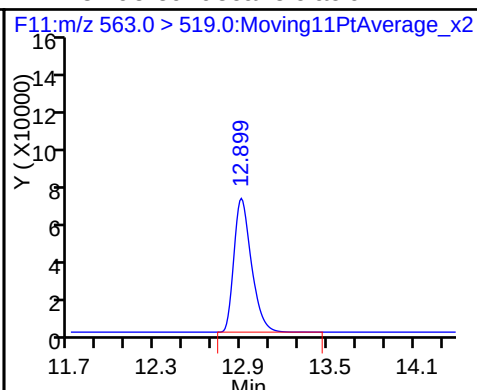
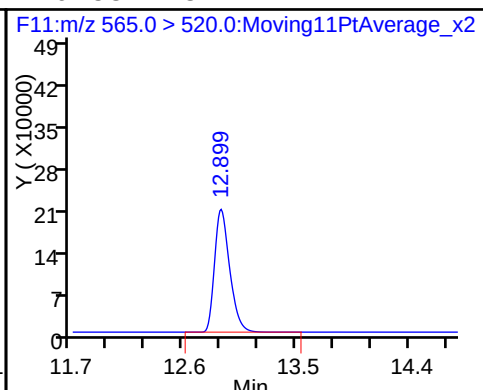
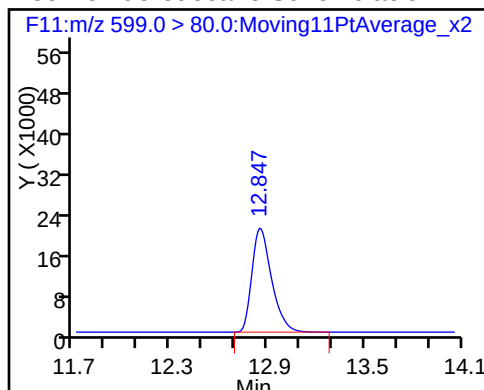
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

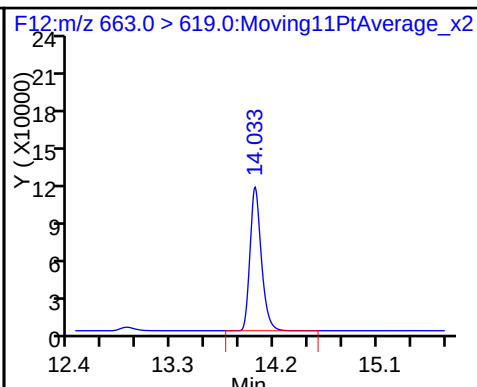
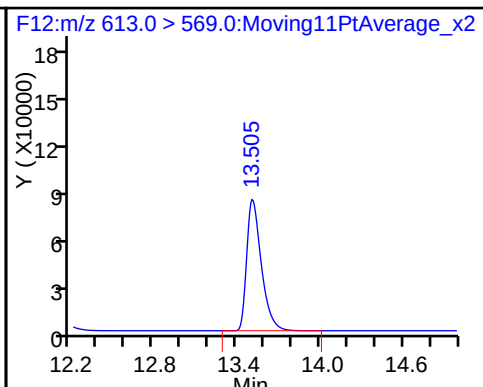
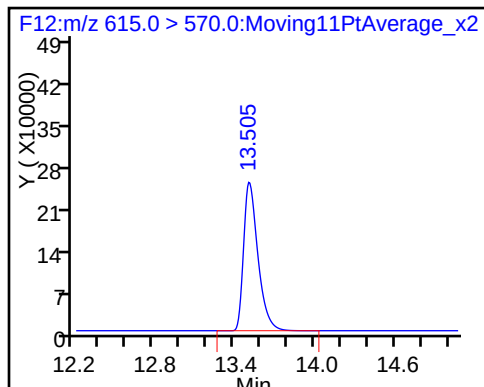
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

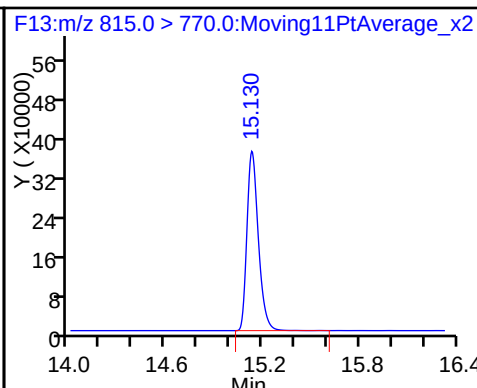
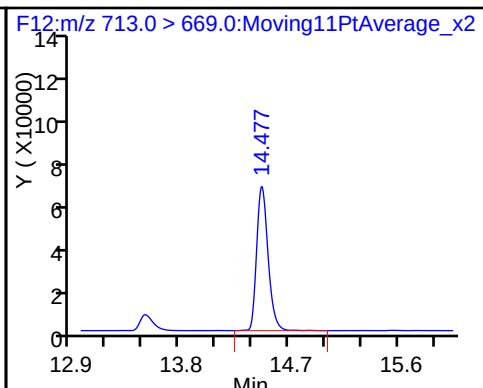
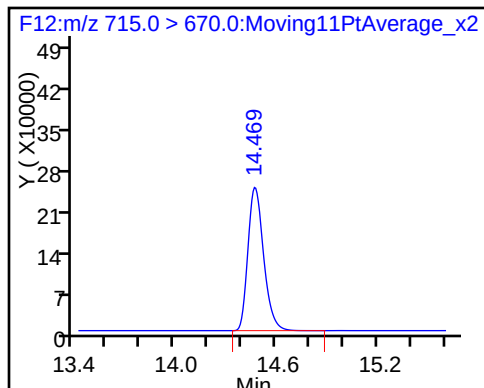
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

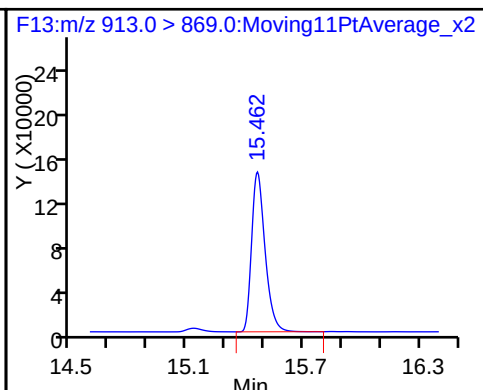
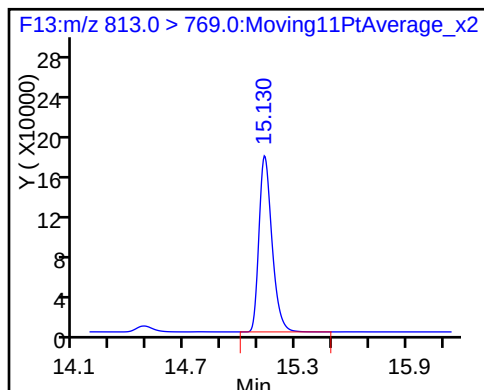
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab Sample ID: CCV 320-101944/6 Calibration Date: 02/29/2016 18:36
 Instrument ID: A6 Calib Start Date: 02/28/2016 14:34
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/28/2016 16:42
 Lab File ID: 29FEB2016A6B_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		0.6218		0.764	1.00	-23.6	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9360	1.090		1.16	1.00	16.4	50.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.225		1.19	0.884	34.6	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.035	0.8401		0.812	1.00	-18.8	50.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.8918		1.14	1.00	13.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		1.037		1.45	0.946	53.6*	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.4627		0.847	0.952	-11.0	50.0
Perfluorooctanoic acid (PFOA)	AveID	0.9419	0.6031		0.640	1.00	-36.0	50.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.7560		0.928	0.956	-2.9	50.0
Perfluorononanoic acid (PFNA)	AveID	0.8363	0.3150		0.377	1.00	-62.3*	50.0
Perfluorodecanoic acid (PFDA)	L2ID		1.383		1.54	1.00	53.9*	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8460	0.5457		0.645	1.00	-35.5	50.0
Perfluorodecane Sulfonic acid	L2ID		0.4625		1.03	0.964	7.0	50.0
Perfluoroundecanoic acid (PFUnA)	L2ID		1.409		1.33	1.00	33.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7628	0.6098		0.799	1.00	-20.1	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9307	1.067		1.15	1.00	14.6	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6364	0.7535		1.18	1.00	18.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		5.362		2.89	1.00	188.8*	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.997	0.8225		0.825	1.00	-17.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_006.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 29-Feb-2016 18:36:25 ALS Bottle#: 10 Worklist Smp#: 6
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:52:22 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

First Level Reviewer: barnettj

Date: 01-Mar-2016 10:48:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.666	5.691	-0.025	1.000	11706	0.7635		76.4	1161	
D 1 13C4 PFBA										
217.0 > 172.0	5.676	5.691	-0.015		941330	51.9		104	82794	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.766	6.790	-0.024	1.000	40921	1.16		116	8.8	
D 3 13C5-PFPeA										
267.9 > 223.0	6.766	6.791	-0.025		1877959	52.6		105	27491	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.882	6.905	-0.023	1.000	16693	NC			8.8	
298.9 > 99.0	6.868	6.905	-0.037	0.998	9802		1.70(0.00-0.00)		8.5	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.882	6.905	-0.023	1.000	16693	1.19		135		
D 6 13C2 PFHxA										
315.0 > 270.0	8.006	8.035	-0.029		1653347	57.4		115	28759	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.006	8.037	-0.031	1.000	27780	0.8115		81.2	2172	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.087	8.158	-0.071	0.873	5899	NC			265	
D 8 13C4-PFHpA										
367.0 > 322.0	9.229	9.261	-0.032		1877941	56.1		112	147858	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.223	9.262	-0.039	1.000	33495	1.14		114	3.4	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.264	9.296	-0.032	1.000	15132	1.45		154		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.264	9.296	-0.032	1.000	15132	NC			0.9	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.0 > 84.0	9.264	9.297	-0.033		729269	50.2		106	14328	
13 Perfluorooctanoic acid										
413.0 > 369.0	10.357	10.388	-0.031	1.000	24814	0.6403		64.0	0.4	
413.0 > 169.0	10.357	10.388	-0.031	1.000	8891		2.79(0.00-0.00)		0.5	
D 12 13C4 PFOA										
417.0 > 372.0	10.357	10.389	-0.032		2057344	57.3		115	151541	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.357	10.394	-0.037	1.000	8260	NC			623	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.357	10.394	-0.037	1.000	8260	0.8474		89.0		
D 16 13C4 PFOS										
503.0 > 80.0	11.320	11.350	-0.030		896410	54.1		113	65659	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.320	11.350	-0.030	1.000	13554	0.9281		97.1	33.1	
499.0 > 99.0	11.327	11.350	-0.023	1.001	4937		2.75(0.00-0.00)		34.3	
D 17 13C5 PFNA										
468.0 > 423.0	11.336	11.368	-0.032		1653750	53.7		107	120477	
18 Perfluorononanoic acid										
463.0 > 419.0	11.350	11.370	-0.020	1.000	10418	0.3766		37.7	0.1	
D 19 13C2 PFDA										
515.0 > 470.0	12.181	12.212	-0.031		1665658	59.8		120	44080	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.181	12.213	-0.032	1.000	46083	1.54		154	3101	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.166	12.249	-0.083	1.000	8180	NC			1154	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.732	12.759	-0.027	1.000	23568	0.6450		64.5	1395	
D 23 13C8 FOSA										
506.0 > 78.0	12.732	12.759	-0.027		2159369	53.7		107	83873	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.847	12.888	-0.041	1.000	8361	NC			530	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.847	12.888	-0.041	1.000	8361	1.03		107		
D 26 13C2 PFUnA										
565.0 > 520.0	12.899	12.936	-0.037		2029226	54.6		109	60423	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.899	12.938	-0.039	1.000	57193	1.33		133	3555	
D 28 13C2 PFDaA										
615.0 > 570.0	13.515	13.550	-0.035		2177428	52.8		106	15515	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.515	13.552	-0.037	1.000	26556	0.7995		79.9	11.5	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.033	14.075	-0.042	1.000	46447	1.15		115	17.4	
31 PFDaS (Perfluoro-1-dodecanesulfonate)										
699.0 > 80.0	13.984	14.083	-0.099	1.000	4605	NC			69.6	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.477	14.516	-0.039		1841857	54.4		109	14831	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
32 Perfluorotetradecanoic acid	713.0 > 669.0	14.485	14.517	-0.032	1.000	32813	1.18	118	15.0	
D 35 13C2-PFHxDA	815.0 > 770.0	15.135	15.166	-0.031		2108570	54.3	109	8233	
34 Perfluorohexadecanoic acid	813.0 > 769.0	15.135	15.166	-0.031	1.000	233511	2.89	289	167	
36 Perfluorooctadecanoic acid	913.0 > 869.0	15.457	15.496	-0.039	1.000	35819	0.8249	82.5	54.0	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L2_00019

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_006.d

Injection Date: 29-Feb-2016 18:36:25

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: JRB

ALS Bottle#: 10

Worklist Smp#: 6

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

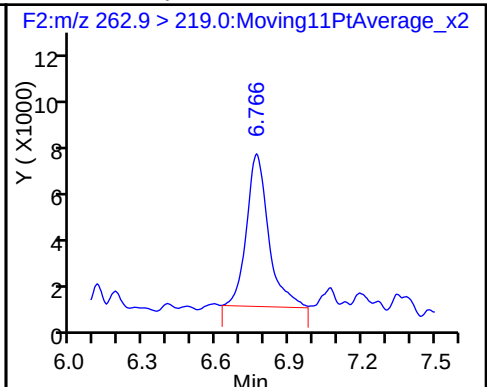
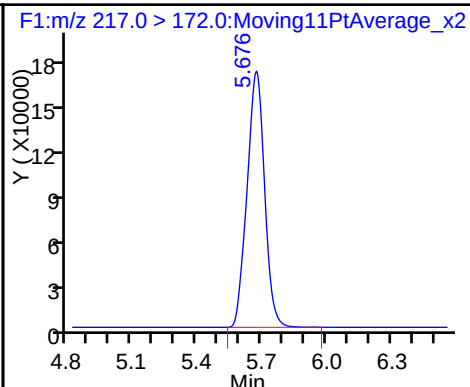
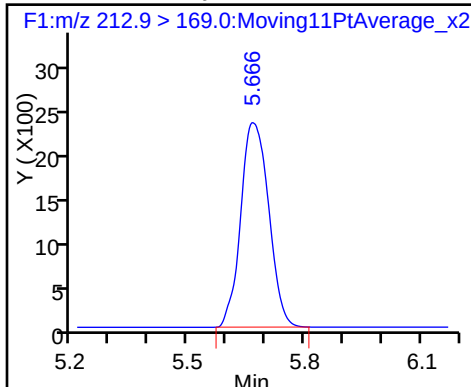
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

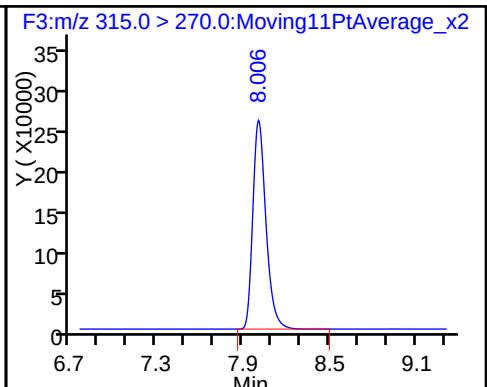
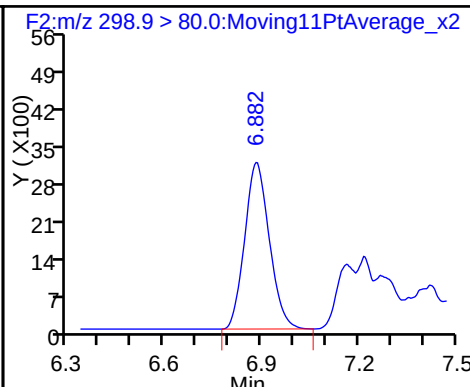
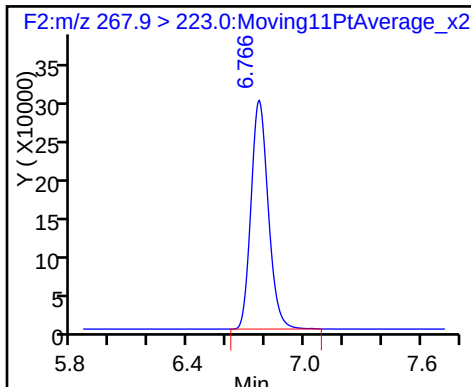
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

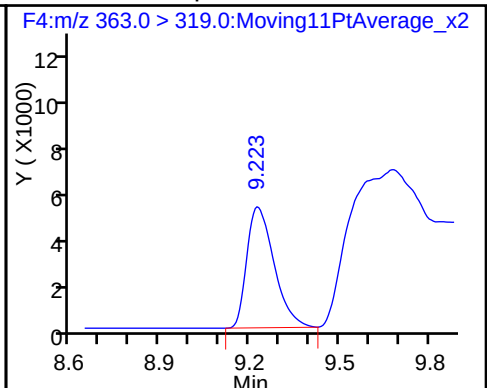
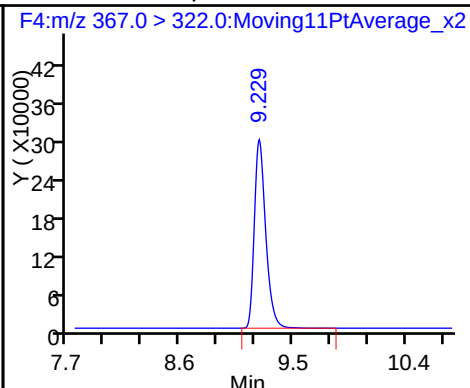
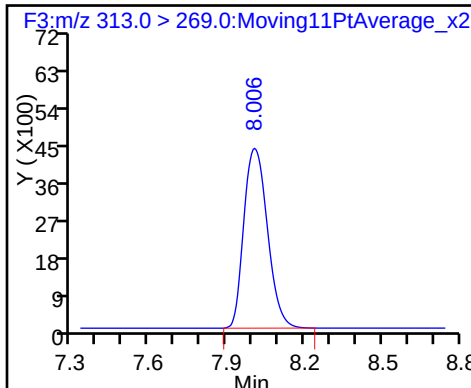
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

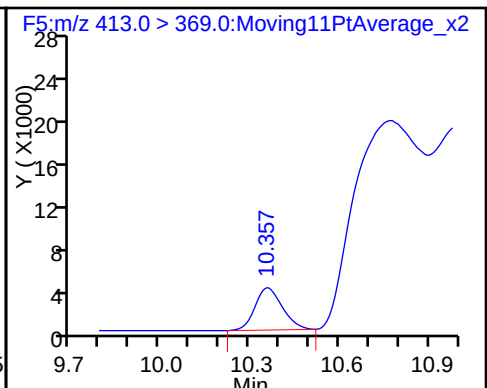
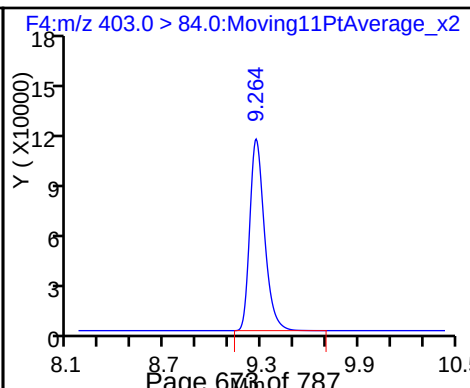
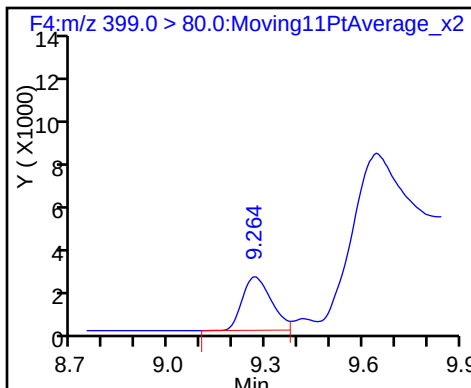
9 Perfluoroheptanoic acid



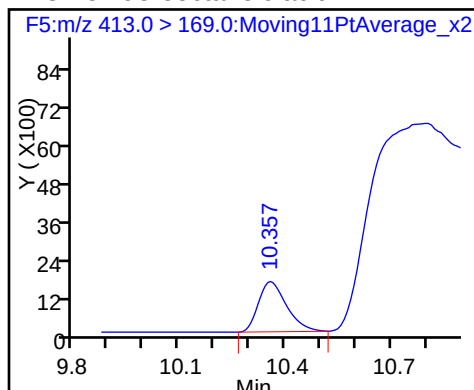
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

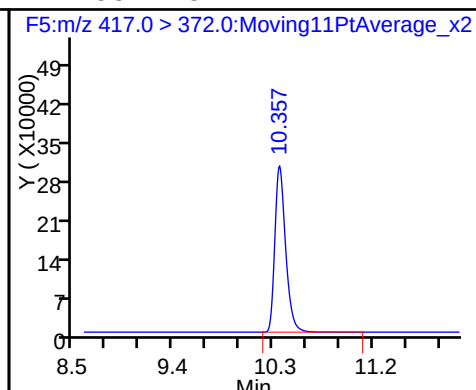
13 Perfluorooctanoic acid



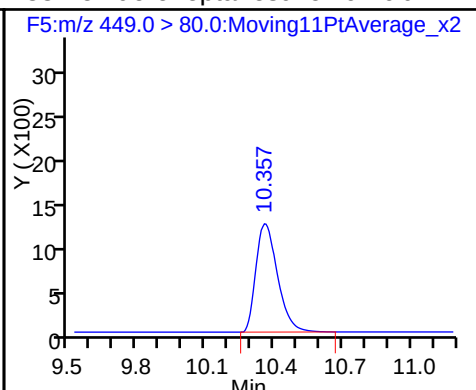
13 Perfluorooctanoic acid



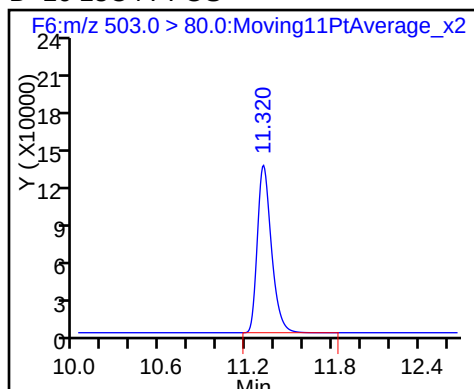
D 12 13C4 PFOA



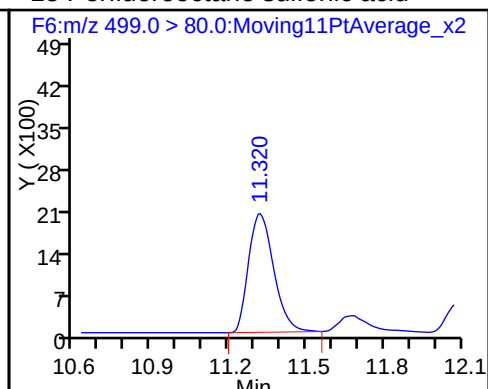
38 Perfluoroheptanesulfonic Acid



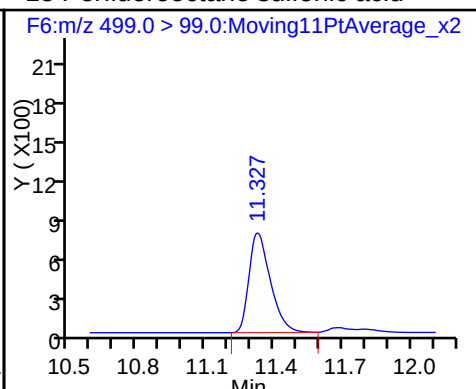
D 16 13C4 PFOS



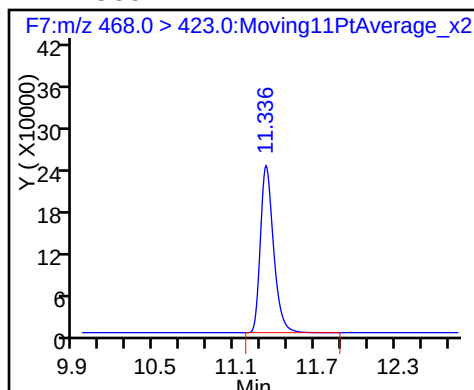
15 Perfluorooctane sulfonic acid



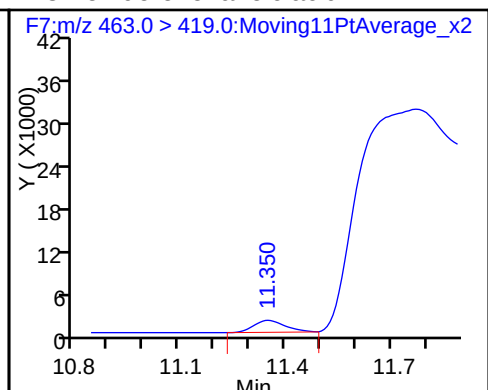
15 Perfluorooctane sulfonic acid



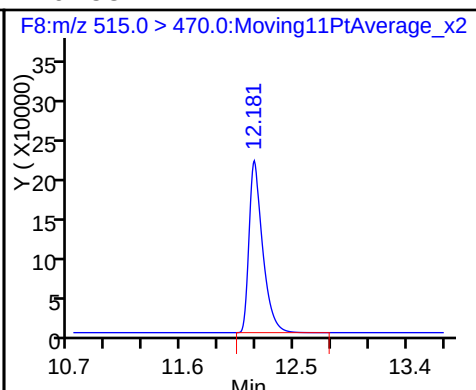
D 17 13C5 PFNA



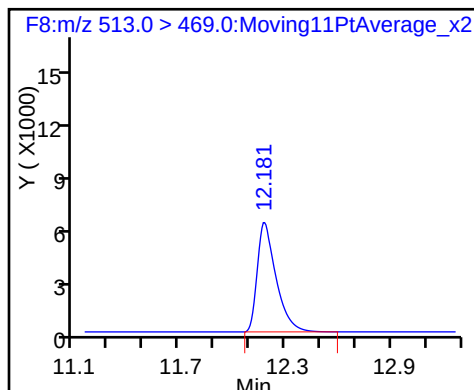
18 Perfluorononanoic acid



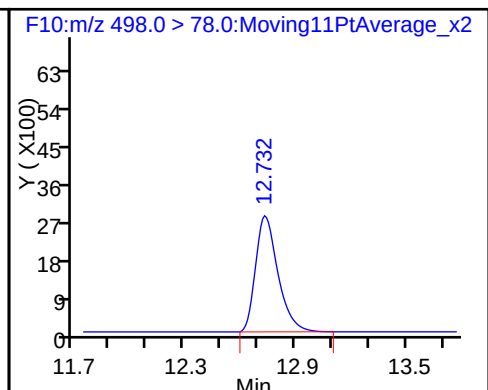
D 19 13C2 PFDA



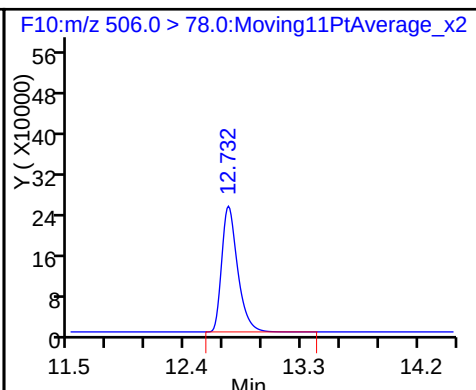
20 Perfluorodecanoic acid



24 Perfluorooctane Sulfonamide



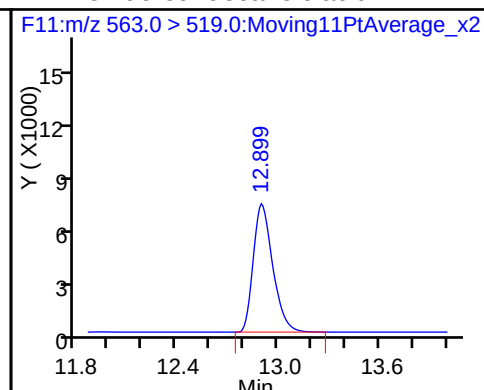
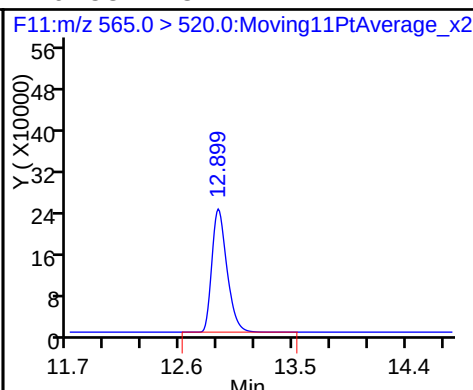
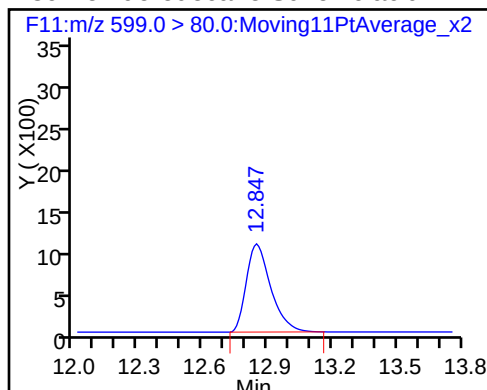
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

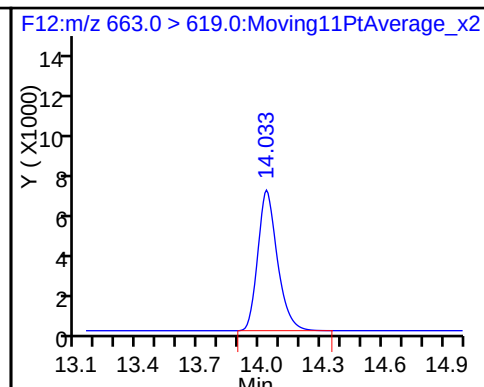
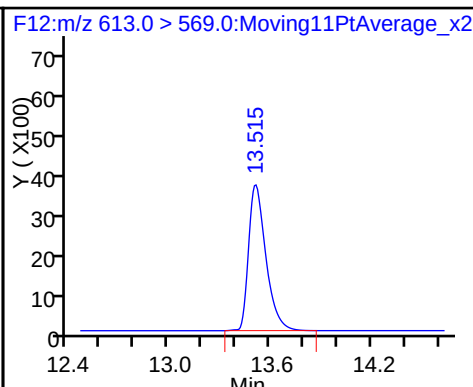
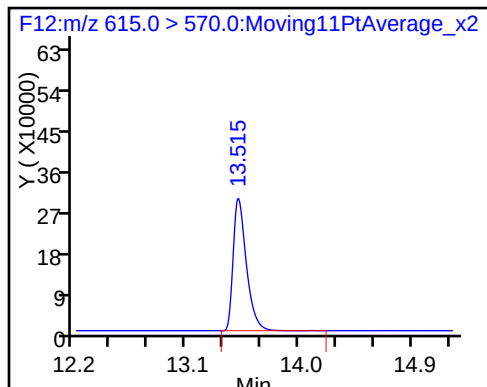
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

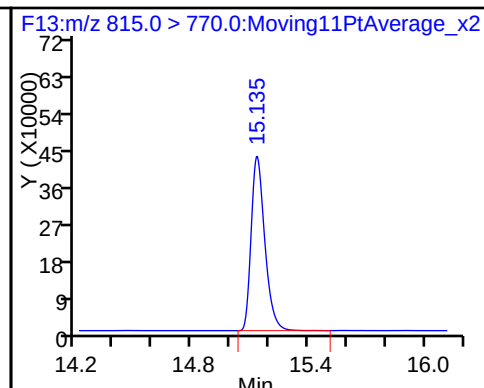
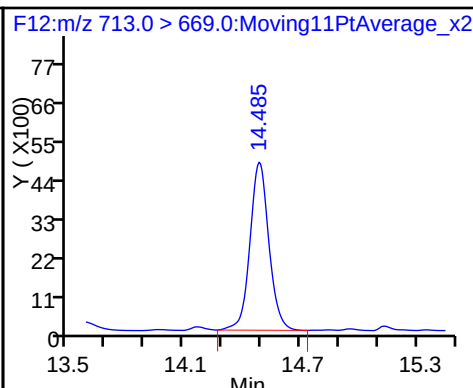
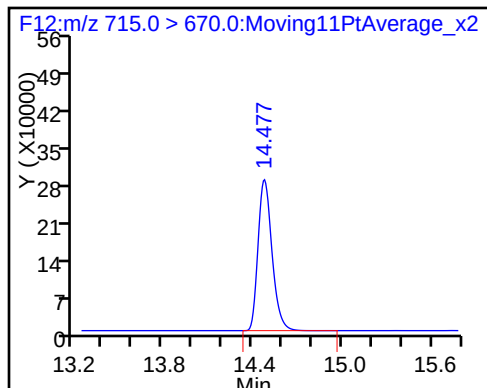
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

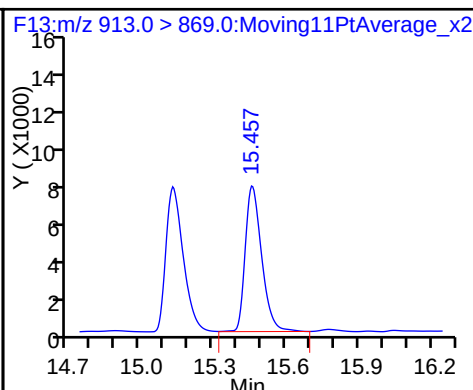
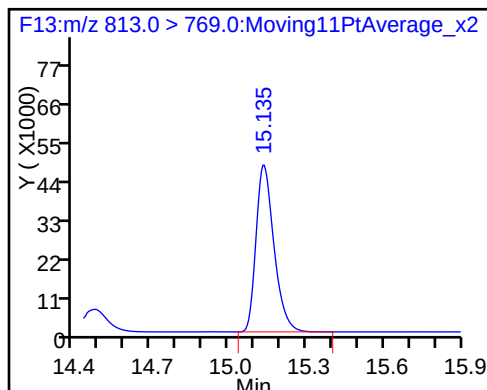
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Lab Sample ID: CCV 320-101944/17 Calibration Date: 02/29/2016 22:29
 Instrument ID: A6 Calib Start Date: 02/28/2016 14:34
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/28/2016 16:42
 Lab File ID: 29FEB2016A6B_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.383		49.2	50.0	-1.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9360	0.9637		51.5	50.0	3.0	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.108		43.4	44.2	-1.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.035	1.089		52.6	50.0	5.1	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		0.997		45.3	50.0	-9.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.6402		41.0	47.3	-13.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9419	0.9737		51.7	50.0	3.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.5571		38.9	47.6	-18.3	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.9903		47.9	47.8	0.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8363	0.8357		50.0	50.0	-0.0	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9396		47.0	50.0	-6.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8460	0.9294		54.9	50.0	9.9	25.0
Perfluorodecane Sulfonic acid	L2ID		0.5280		41.3	48.2	-14.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.8480		49.8	50.0	-0.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7628	0.7590		49.8	50.0	-0.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9307	1.007		54.1	50.0	8.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6364	0.5634		44.3	50.0	-11.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8726		43.1	50.0	-13.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.997	0.6648		33.3	50.0	-33.3*	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_017.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 29-Feb-2016 22:29:58 ALS Bottle#: 13 Worklist Smp#: 17
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:50:38 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.672	5.691	-0.019	1.000	991527	49.2		98.3	10433	
D 1 13C4 PFBA										
217.0 > 172.0	5.668	5.691	-0.023		717008	39.5		79.1	72729	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.767	6.790	-0.023	1.000	1447373	51.5		103	357	
D 3 13C5-PFPeA										
267.9 > 223.0	6.767	6.791	-0.024		1501911	42.1		84.1	29244	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.882	6.905	-0.023	1.000	583015	NC			497	
298.9 > 99.0	6.882	6.905	-0.023	1.000	308286		1.89(0.00-0.00)		422	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.882	6.905	-0.023	1.000	583015	43.4		98.3		
D 6 13C2 PFHxA										
315.0 > 270.0	8.012	8.035	-0.023		1235065	42.9		85.8	100267	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.012	8.037	-0.025	1.000	1344449	52.6		105	2641	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.088	8.158	-0.070	0.873	412504	NC			33901	
D 8 13C4-PFHpA										
367.0 > 322.0	9.229	9.261	-0.032		1388004	41.4		82.9	109532	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.235	9.262	-0.027	1.000	1384284	45.3		90.5	183	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.264	9.296	-0.032	1.000	360530	41.0		86.7		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.264	9.296	-0.032	1.000	360530	NC			20.9	
D 11 18O2 PFHxS										
403.0 > 84.0	9.264	9.297	-0.033		563147	38.8		82.0	29494	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.356	10.388	-0.032	1.000	1306555	51.7		103	23.7	
413.0 > 169.0	10.356	10.388	-0.032	1.000	456208		2.86(0.00-0.00)		37.3	
D 12 13C4 PFOA										
417.0 > 372.0	10.356	10.389	-0.033		1341896	37.4		74.7	97084	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.363	10.394	-0.031	1.000	367667	NC			27041	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.363	10.394	-0.031	1.000	367667	38.9		81.7		
D 16 13C4 PFOS										
503.0 > 80.0	11.320	11.350	-0.030		662718	40.0		83.6	47350	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.320	11.350	-0.030	1.000	656309	47.9		100	160	
499.0 > 99.0	11.320	11.350	-0.030	1.000	326394		2.01(0.00-0.00)		3928	
D 17 13C5 PFNA										
468.0 > 423.0	11.335	11.368	-0.033		1213069	39.4		78.8	88489	
18 Perfluorononanoic acid										
463.0 > 419.0	11.335	11.370	-0.035	1.000	1013731	50.0		99.9	15.5	
D 19 13C2 PFDA										
515.0 > 470.0	12.181	12.212	-0.031		1212697	43.5		87.1	81071	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.181	12.213	-0.032	1.000	1139395	47.0		94.0	50591	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.151	12.249	-0.098	1.000	363415	NC			25633	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.732	12.759	-0.027	1.000	1452216	54.9		110	23943	
D 23 13C8 FOSA										
506.0 > 78.0	12.732	12.759	-0.027		1562603	38.8		77.7	90461	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.857	12.888	-0.031	1.000	352851	NC			21096	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.857	12.888	-0.031	1.000	352851	41.3		85.6		
D 26 13C2 PFUnA										
565.0 > 520.0	12.899	12.936	-0.037		1427104	38.4		76.9	83939	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.899	12.938	-0.039	1.000	1210128	49.8		99.5	36071	
D 28 13C2 PFDaA										
615.0 > 570.0	13.505	13.550	-0.045		1593224	38.6		77.2	43185	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.514	13.552	-0.038	1.000	1209218	49.8		99.5	992	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.033	14.075	-0.042	1.000	1604858	54.1		108	3062	
31 PFDoS (Perfluoro-1-dodecanesulfona										
699.0 > 80.0	13.974	14.083	-0.109	1.000	358614	NC			24420	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.470	14.516	-0.046		1367416	40.4		80.7	23249	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.470	14.517	-0.047	1.000	897619	44.3		88.5	548	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_017.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.130	15.166	-0.036		1361573	35.1		70.2	18398	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.130	15.166	-0.036	1.000	1390183	43.1		86.1	3182	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.457	15.496	-0.039	1.000	1059169	33.3		66.7	2059	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L5_00016

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_017.d

Injection Date: 29-Feb-2016 22:29:58

Instrument ID: A6

Lims ID: CCV L5

Client ID:

Operator ID: JRB

ALS Bottle#: 13

Worklist Smp#: 17

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

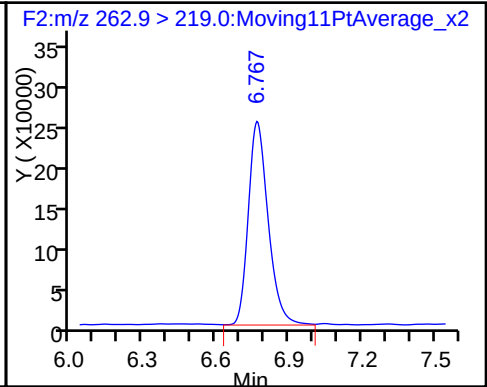
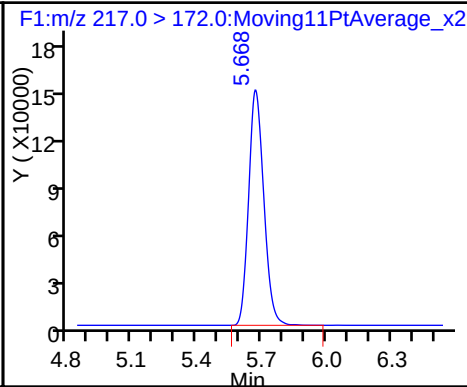
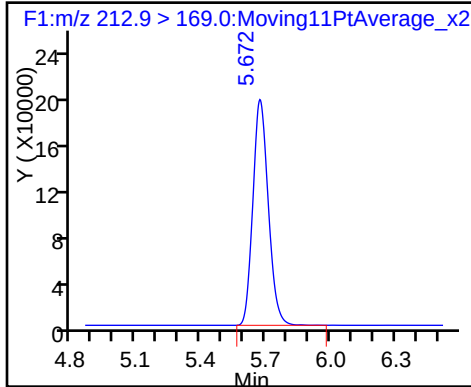
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

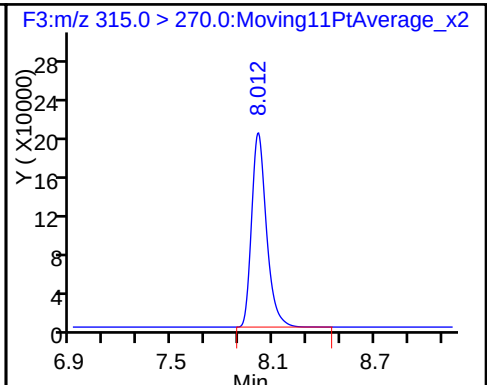
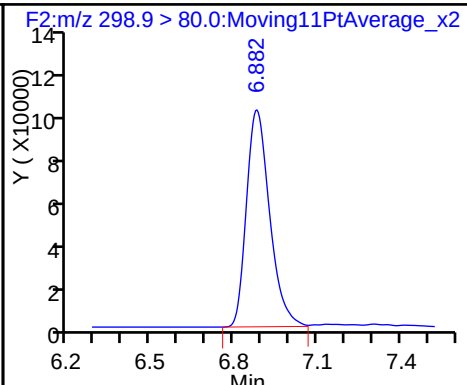
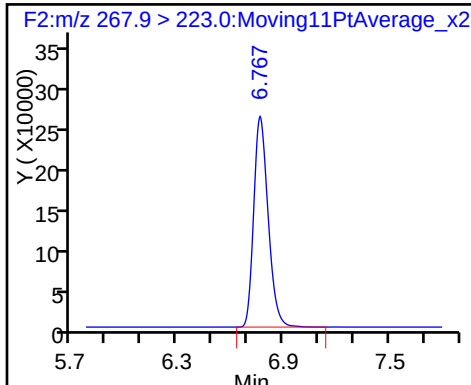
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

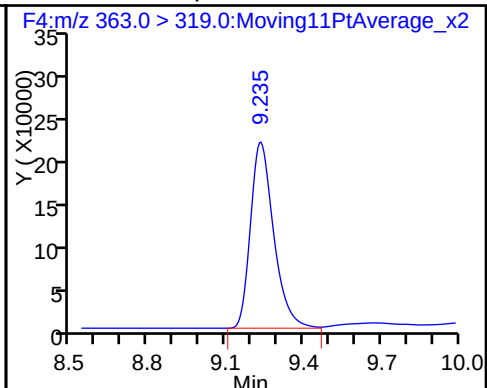
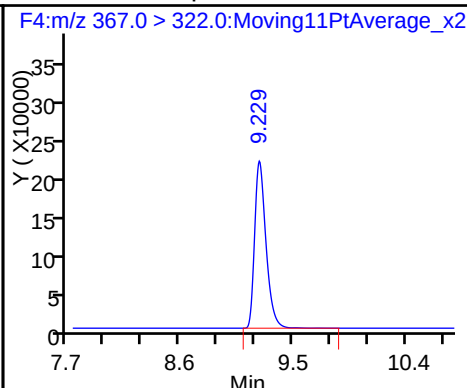
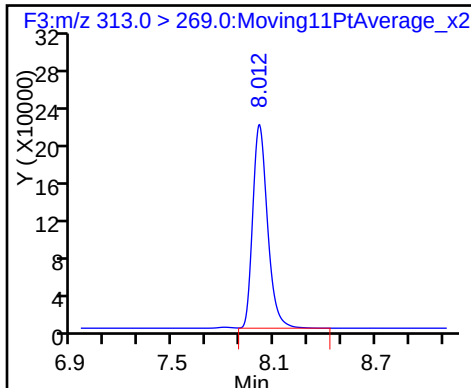
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

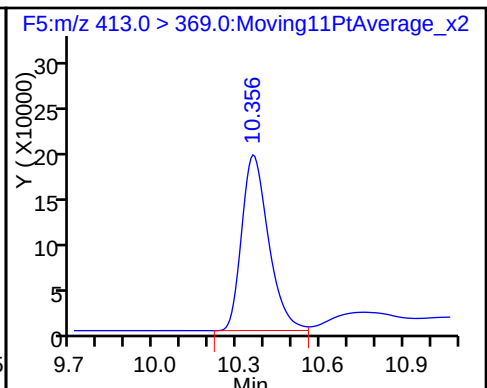
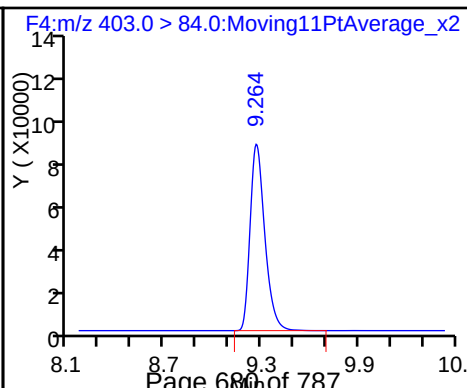
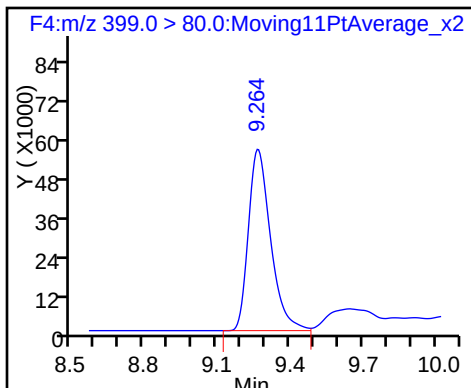
9 Perfluoroheptanoic acid



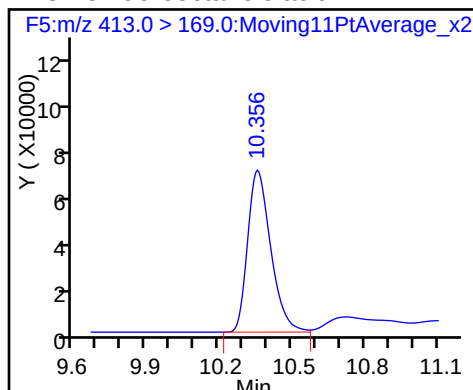
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

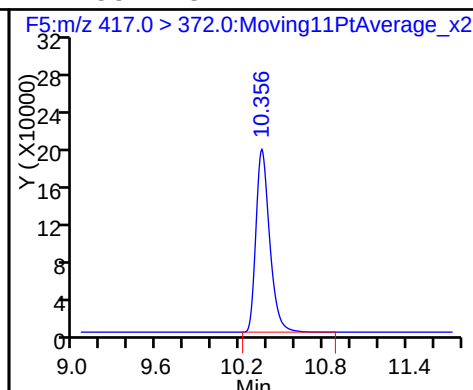
13 Perfluorooctanoic acid



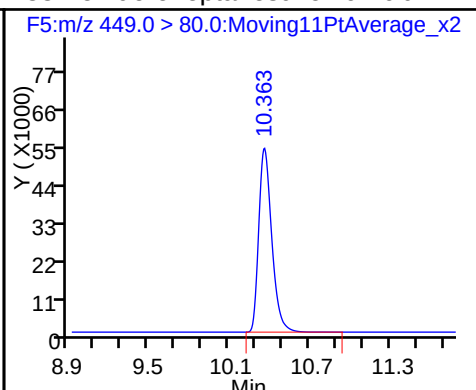
13 Perfluorooctanoic acid



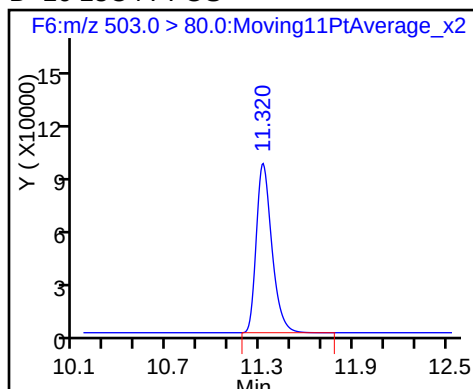
D 12 13C4 PFOA



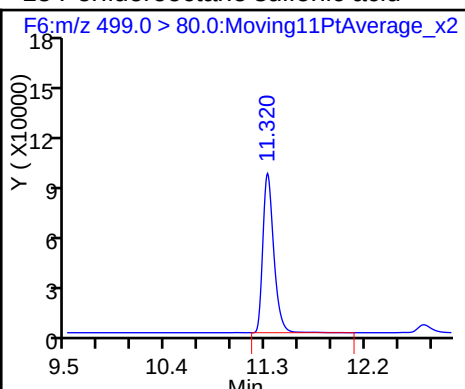
38 Perfluoroheptanesulfonic Acid



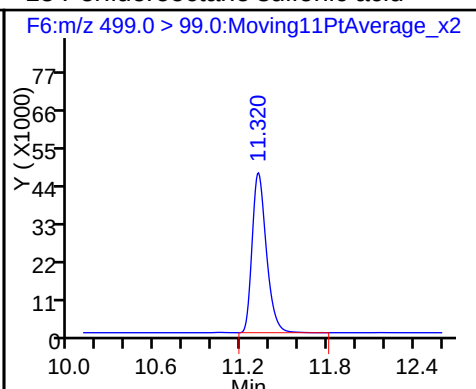
D 16 13C4 PFOS



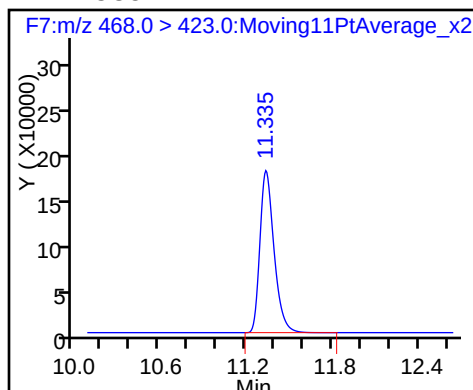
15 Perfluorooctane sulfonic acid



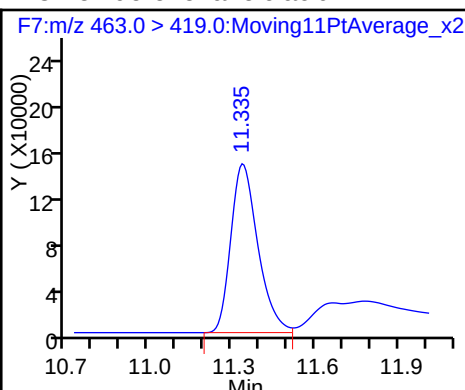
15 Perfluorooctane sulfonic acid



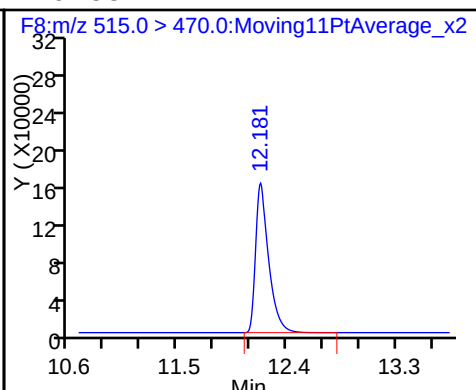
D 17 13C5 PFNA



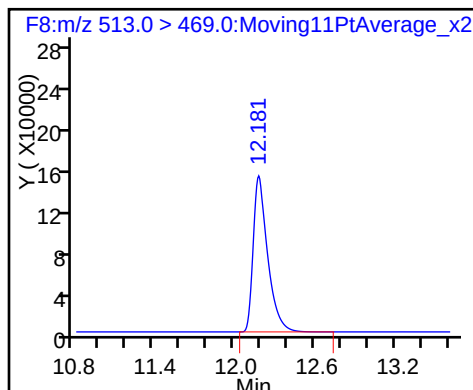
18 Perfluorononanoic acid



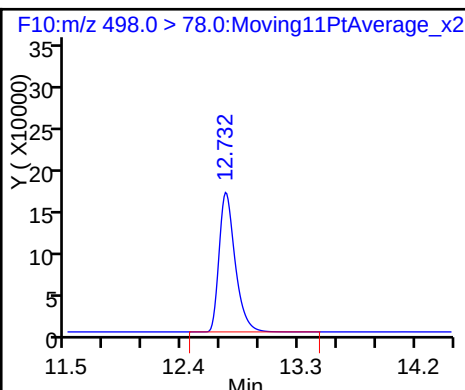
D 19 13C2 PFDA



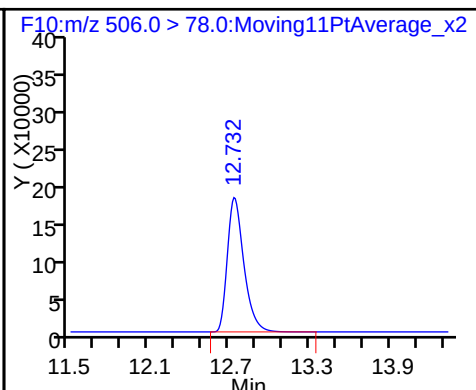
20 Perfluorodecanoic acid



24 Perfluorooctane Sulfonamide



D 23 13C8 FOSA

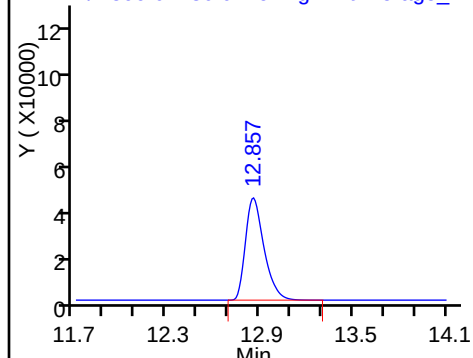


39 Perfluorodecane Sulfonic acid

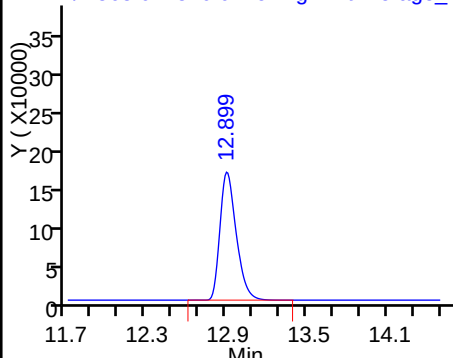
D 26 13C2 PFUnA

27 Perfluoroundecanoic acid

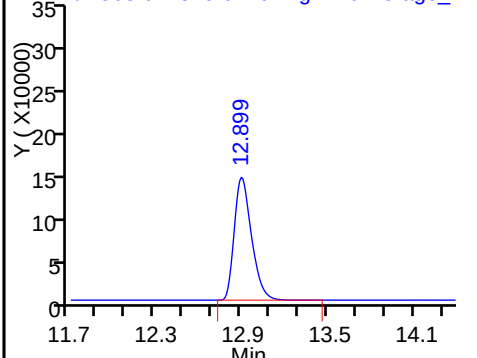
F11:m/z 599.0 > 80.0:Moving11PtAverage_x2



F11:m/z 565.0 > 520.0:Moving11PtAverage_x2



F11:m/z 563.0 > 519.0:Moving11PtAverage_x2

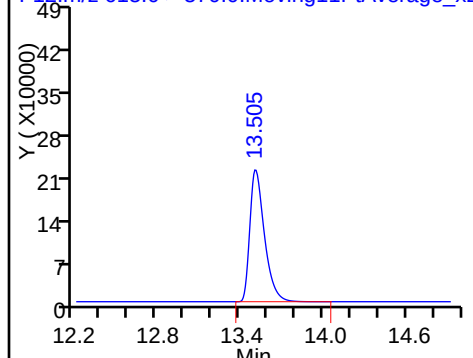


D 28 13C2 PFDaA

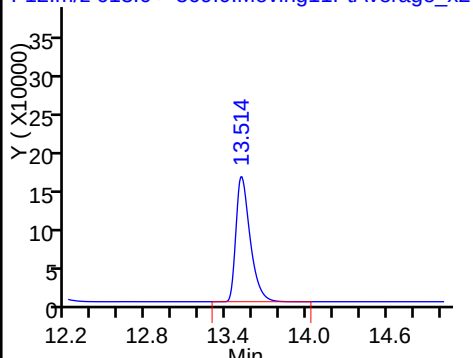
29 Perfluorododecanoic acid

30 Perfluorotridecanoic acid

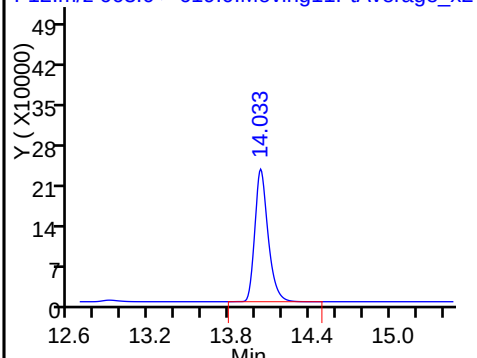
F12:m/z 615.0 > 570.0:Moving11PtAverage_x2



F12:m/z 613.0 > 569.0:Moving11PtAverage_x2



F12:m/z 663.0 > 619.0:Moving11PtAverage_x2

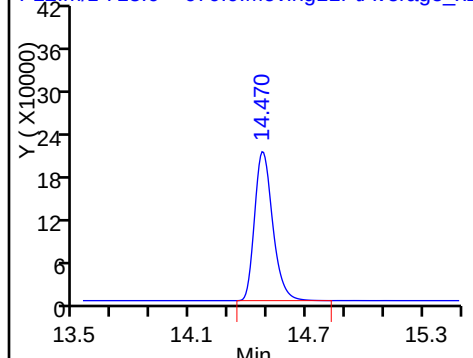


D 33 13C2-PFTeDA

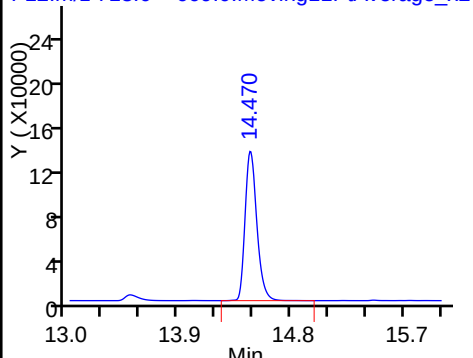
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA

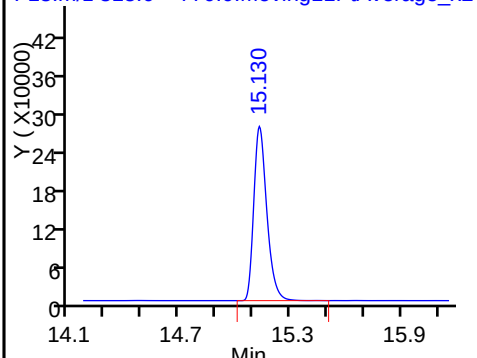
F12:m/z 715.0 > 670.0:Moving11PtAverage_x2



F12:m/z 713.0 > 669.0:Moving11PtAverage_x2



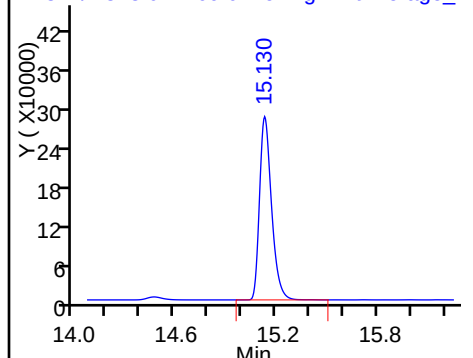
F13:m/z 815.0 > 770.0:Moving11PtAverage_x2



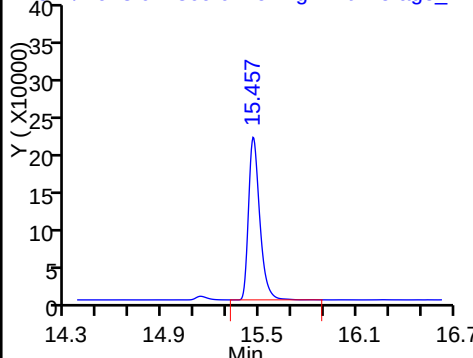
34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid

F13:m/z 813.0 > 769.0:Moving11PtAverage_x2



F13:m/z 913.0 > 869.0:Moving11PtAverage_x2



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Lab Sample ID: CCV 320-101944/28 Calibration Date: 03/01/2016 02:23

Instrument ID: A6 Calib Start Date: 02/28/2016 14:34

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 02/28/2016 16:42

Lab File ID: 29FEB2016A6B_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	L2ID		1.387		19.9	20.0	-0.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9360	1.017		21.7	20.0	8.6	25.0
Perfluorobutanesulfonic acid (PFBS)	L2ID		1.021		16.2	17.7	-8.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.035	1.063		20.5	20.0	2.7	25.0
Perfluoroheptanoic acid (PFHpA)	L2ID		1.174		21.5	20.0	7.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	L2ID		0.6841		17.6	18.9	-6.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	0.9419	0.9184		19.5	20.0	-2.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	L2ID		0.5216		14.7	19.0	-22.8	25.0
Perfluorooctanesulfonic acid (PFOS)	L2ID		0.9257		18.0	19.1	-5.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.8363	0.9050		21.6	20.0	8.2	25.0
Perfluorodecanoic acid (PFDA)	L2ID		0.9560		19.2	20.0	-3.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.8460	0.9519		22.5	20.0	12.5	25.0
Perfluorodecane Sulfonic acid	L2ID		0.5408		17.1	19.3	-11.4	25.0
Perfluoroundecanoic acid (PFUnA)	L2ID		0.9262		21.6	20.0	7.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.7628	0.7635		20.0	20.0	0.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9307	1.156		24.8	20.0	24.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.6364	0.5439		17.1	20.0	-14.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.101		20.4	20.0	1.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.997	0.9705		19.5	20.0	-2.7	25.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_028.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 01-Mar-2016 02:23:32 ALS Bottle#: 12 Worklist Smp#: 28
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Sublist: chrom-PFAC_A6*sub5
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:52:05 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.663	5.691	-0.028	1.000	436385	19.9		99.6	12978	
D 1 13C4 PFBA										
217.0 > 172.0	5.666	5.691	-0.025		786551	43.4		86.8	47267	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.753	6.790	-0.037	1.000	668729	21.7		109	162	
D 3 13C5-PFPeA										
267.9 > 223.0	6.758	6.791	-0.033		1644257	46.1		92.1	19365	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.905	-0.033	1.000	230052	NC			192	
298.9 > 99.0	6.872	6.905	-0.033	1.000	116418		1.98(0.00-0.00)		250	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.872	6.905	-0.033	1.000	230052	16.2		91.4		
D 6 13C2 PFHxA										
315.0 > 270.0	7.991	8.035	-0.044		1360152	47.2		94.4	42303	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.991	8.037	-0.046	1.000	578228	20.5		103	1750	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.067	8.158	-0.091	0.872	158983	NC			8587	
D 8 13C4-PFHpA										
367.0 > 322.0	9.217	9.261	-0.044		1597971	47.7		95.4	41164	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.217	9.262	-0.045	1.000	750226	21.5		107	57.8	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.252	9.296	-0.044	1.000	164930	17.6		93.1		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.252	9.296	-0.044	1.000	164930	NC			21.4	
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		602694	41.5		87.7	23382	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.342	10.388	-0.046	1.000	618162	19.5		97.5	12.5	
413.0 > 169.0	10.342	10.388	-0.046	1.000	213279		2.90(0.00-0.00)		19.3	
D 12 13C4 PFOA										
417.0 > 372.0	10.342	10.389	-0.047		1682667	46.9		93.7	27157	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.349	10.394	-0.045	1.000	148386	NC			7248	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.349	10.394	-0.045	1.000	148386	14.7		77.2		
D 16 13C4 PFOS										
503.0 > 80.0	11.305	11.350	-0.045		714149	43.1		90.1	34238	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.305	11.350	-0.045	1.000	264423	18.0		94.3	213	
499.0 > 99.0	11.313	11.350	-0.037	1.001	143748		1.84(0.00-0.00)		1808	
D 17 13C5 PFNA										
468.0 > 423.0	11.321	11.368	-0.047		1380827	44.9		89.7	98531	
18 Perfluorononanoic acid										
463.0 > 419.0	11.328	11.370	-0.042	1.000	499881	21.6		108	8.1	
D 19 13C2 PFDA										
515.0 > 470.0	12.173	12.212	-0.039		1426765	51.2		102	95208	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.173	12.213	-0.040	1.000	545592	19.2		96.1	72819	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.143	12.249	-0.106	1.000	144199	NC			10161	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.722	12.759	-0.037	1.000	626934	22.5		113	72301	
D 23 13C8 FOSA										
506.0 > 78.0	12.722	12.759	-0.037		1646467	40.9		81.8	11756	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.847	12.888	-0.041	1.000	155770	NC			9103	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.847	12.888	-0.041	1.000	155770	17.1		88.6		
D 26 13C2 PFUnA										
565.0 > 520.0	12.888	12.936	-0.048		1688898	45.5		91.0	12307	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.899	12.938	-0.039	1.000	625690	21.6		108	8103	
D 28 13C2 PFDaA										
615.0 > 570.0	13.505	13.550	-0.045		1833433	44.4		88.9	20483	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.505	13.552	-0.047	1.000	559943	20.0		100	793	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.025	14.075	-0.050	1.000	847689	24.8		124	1934	
31 PFDoS (Perfluoro-1-dodecanesulfona										
699.0 > 80.0	13.974	14.083	-0.109	1.000	149731	NC			4139	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.470	14.516	-0.046		1605925	47.4		94.8	12851	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.470	14.517	-0.047	1.000	398847	17.1		85.5	232	

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_028.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.125	15.166	-0.041		1942597	50.1		100	11808	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.125	15.166	-0.041	1.000	807797	20.4		102	1740	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.457	15.496	-0.039	1.000	711764	19.5		97.3	772	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC-L4_00017

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_028.d

Injection Date: 01-Mar-2016 02:23:32

Instrument ID: A6

Lims ID: CCV L4

Client ID:

Operator ID: JRB

ALS Bottle#: 12

Worklist Smp#: 28

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

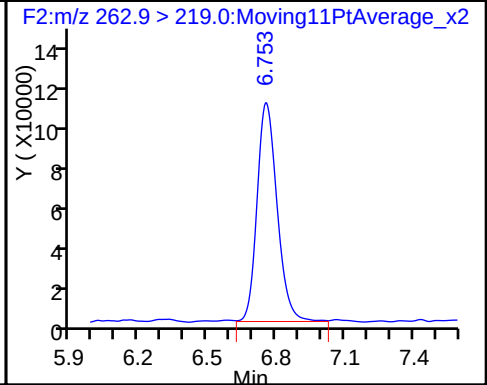
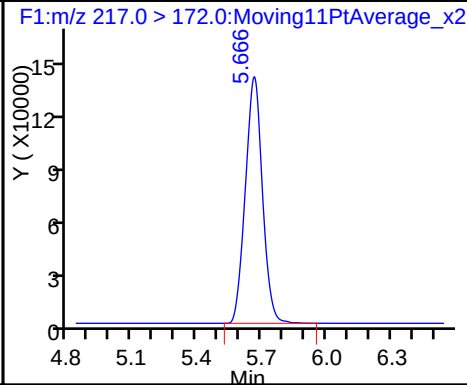
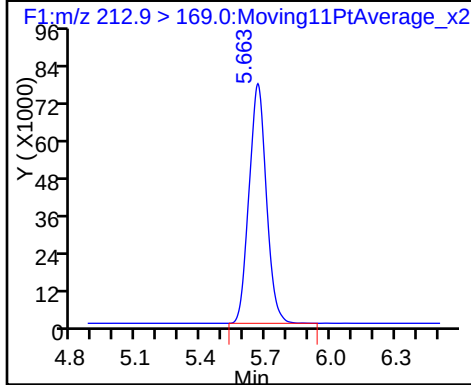
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

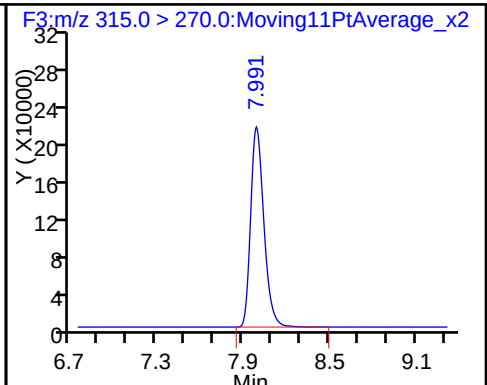
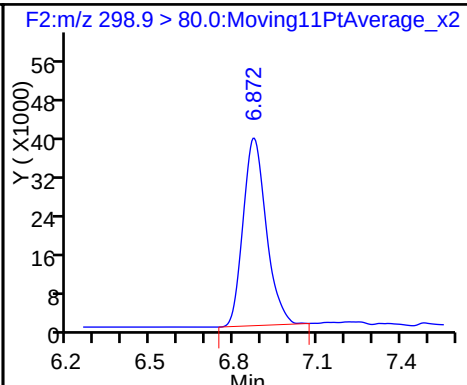
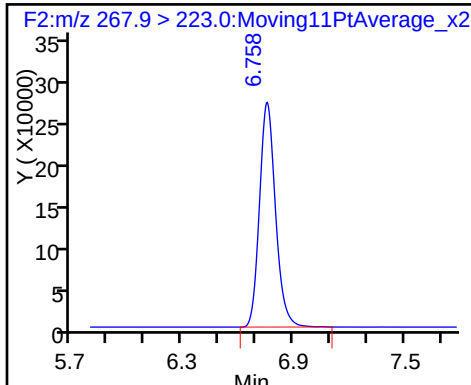
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

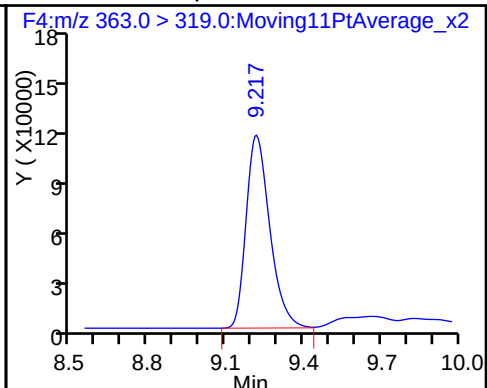
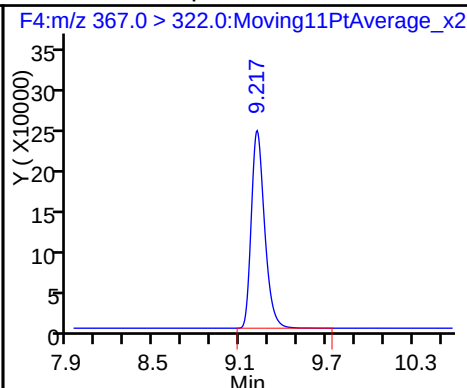
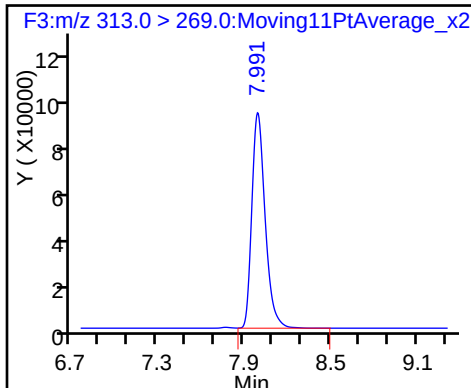
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

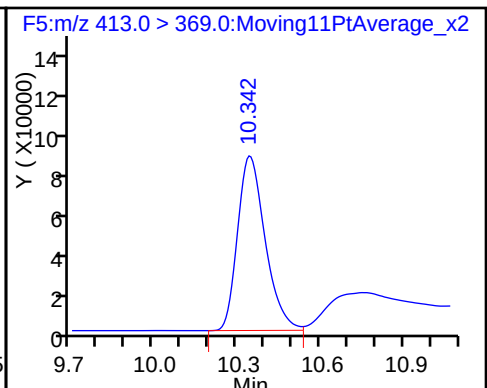
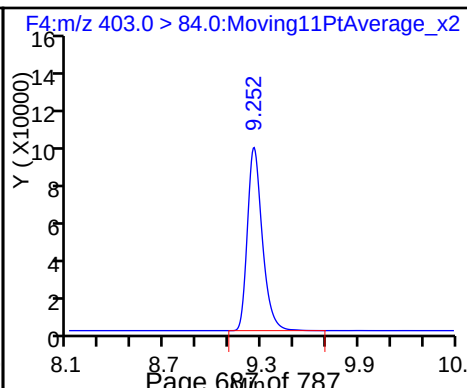
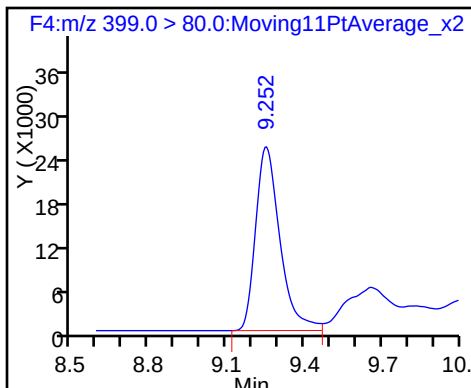
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

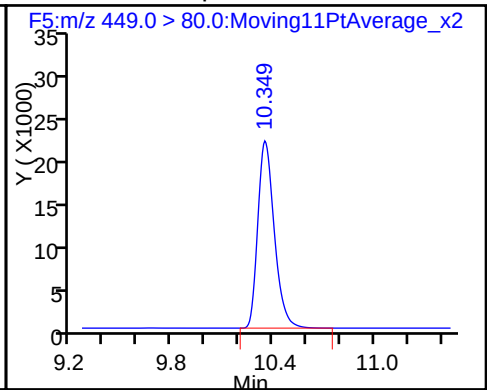
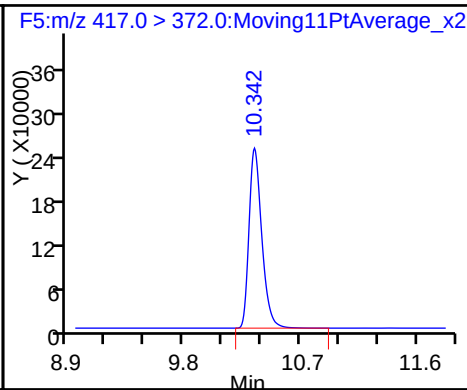
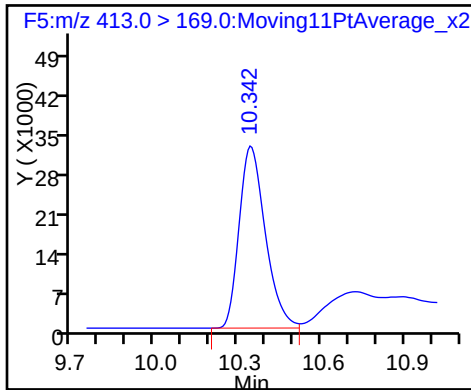
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

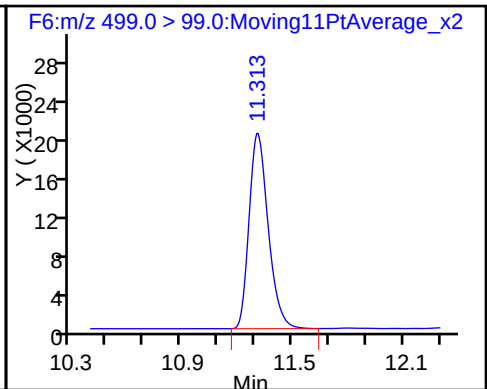
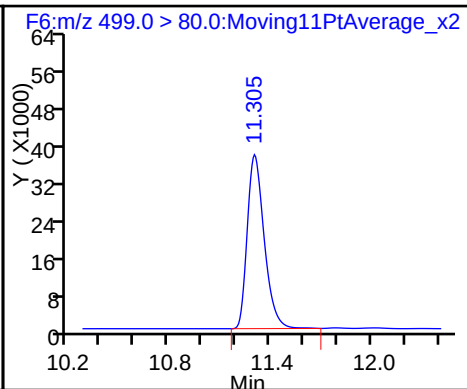
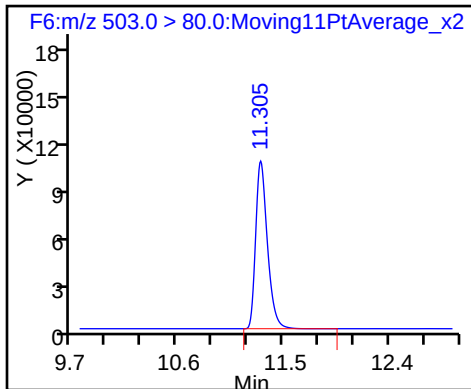
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

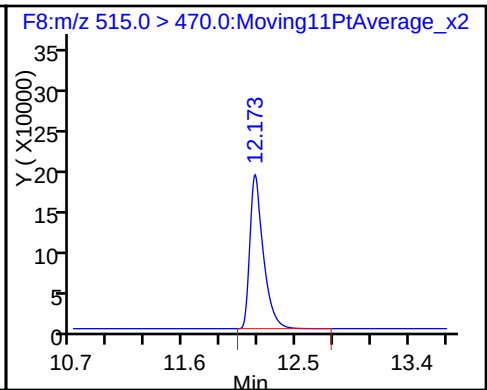
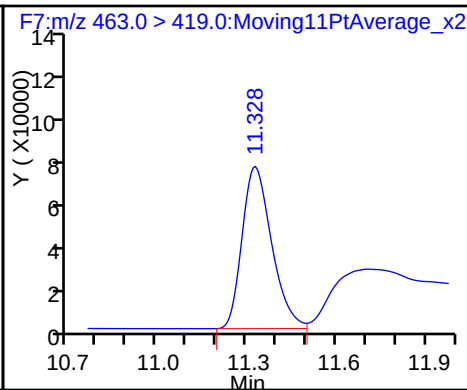
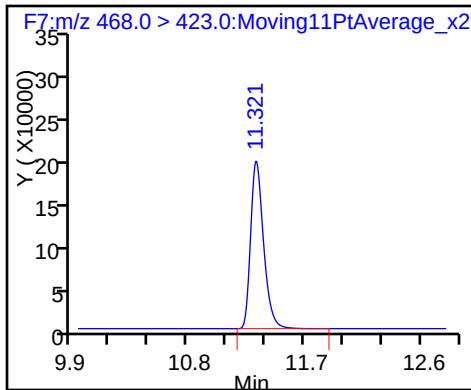
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

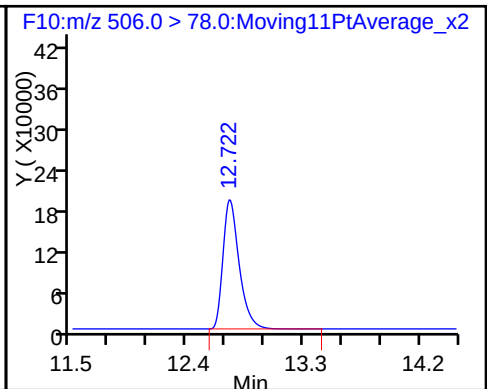
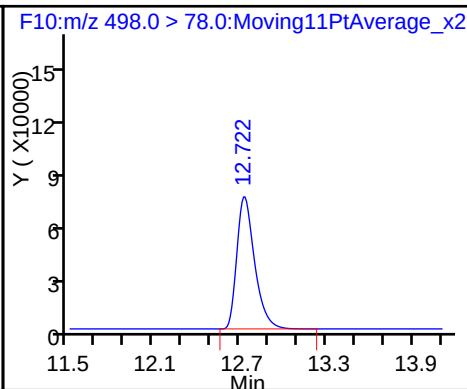
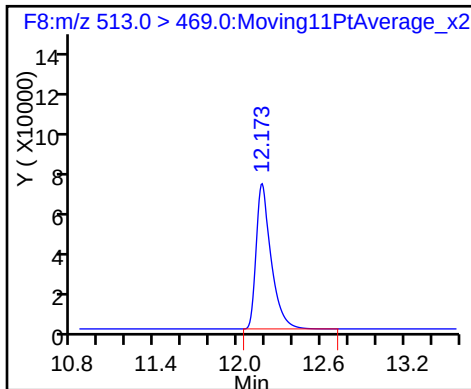
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

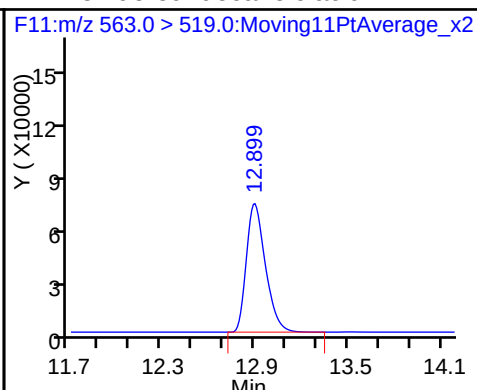
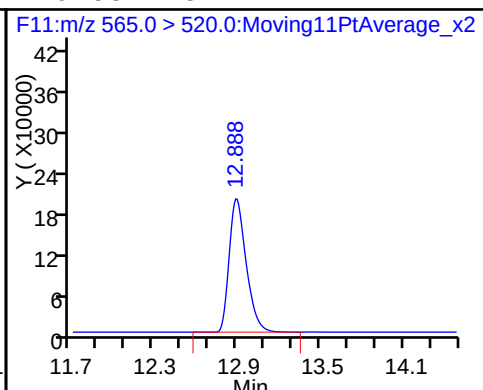
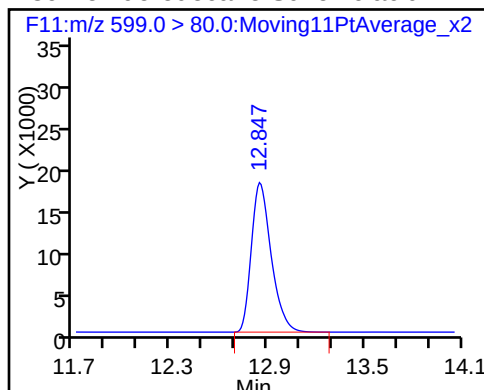
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

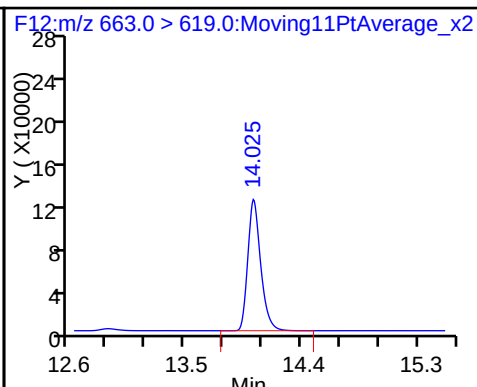
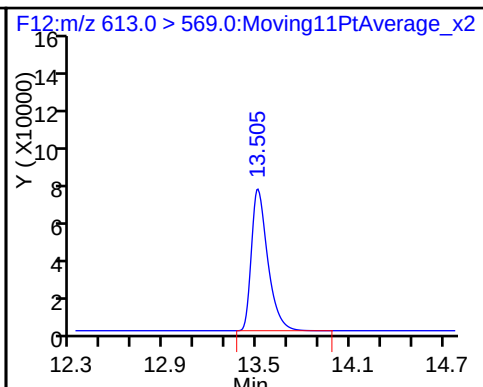
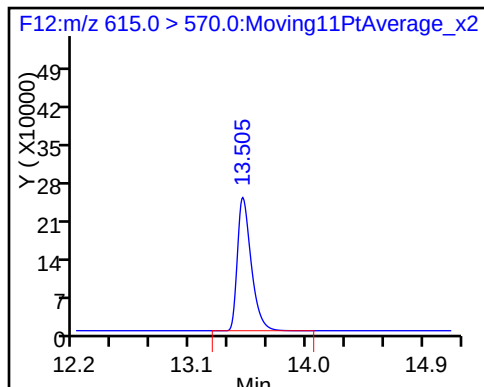
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

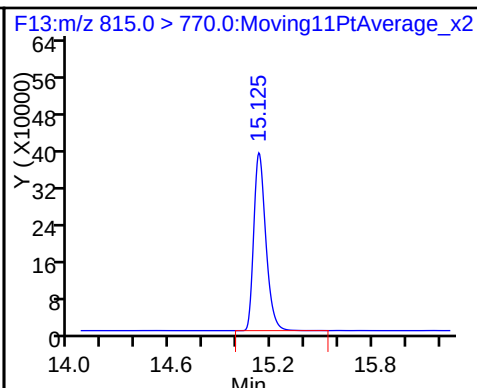
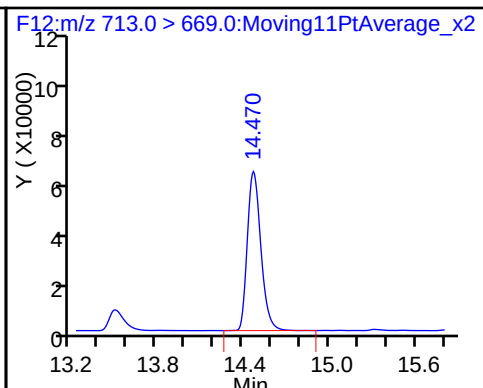
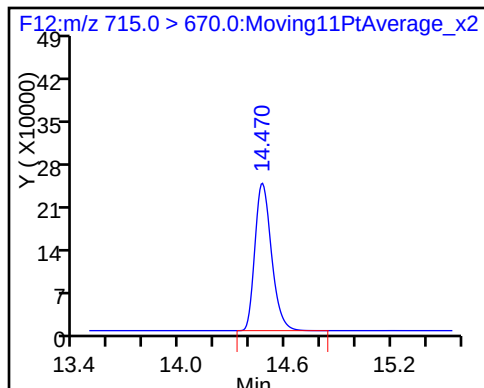
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

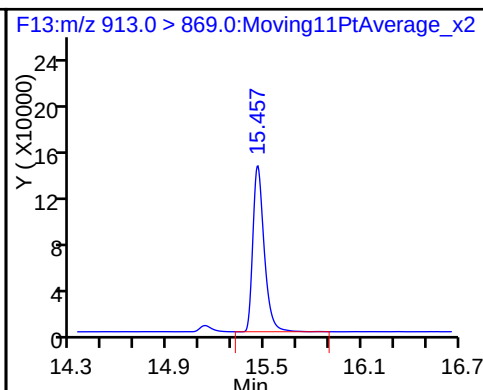
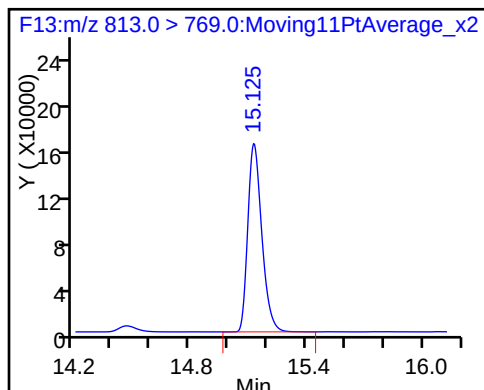
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-101543/1-A
 Matrix: Water Lab File ID: 26FEB2016A4A_015.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/25/2016 10:17
 Sample wt/vol: 500 (mL) Date Analyzed: 02/26/2016 20:38
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	114		25-150
STL00990	13C4 PFOA	116		25-150
STL00991	13C4 PFOS	141		25-150
STL01892	13C4-PFHxA	110		25-150
STL00995	13C5 PFNA	109		25-150
STL00994	18O2 PFHxS	113		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_015.d
 Lims ID: MB 320-101543/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 26-Feb-2016 20:38:22 ALS Bottle#: 1 Worklist Smp#: 11
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-101543/1-A box 21
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:18:18 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:15:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.125	6.043	0.082	1.000	20152	0.4286			9.6	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.125	6.043	0.082	1.000	20152	0.4329			9.6	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.125	6.043	0.082	1.000	20152	0.4329			9.6	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.125	6.043	0.082		20152	0.2869		0.6	9.6	
D 1 13C4 PFBA										
216.7 > 171.5	6.198	6.043	0.155		4798721	52.1		104	13168	
D 3 13C5-PFPeA										
267.6 > 222.7	7.502	7.272	0.230		3148738	52.2		104	6089	
D 6 13C2 PFHxA										
314.6 > 269.7	8.870	8.604	0.266		4582219	56.9		114	8769	
D 8 13C4-PFHpA										
366.6 > 321.6	10.114	9.856	0.258		3736481	55.0		110	6575	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.156	9.892	0.264	1.000	7584	0.1823				
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.156	9.892	0.264	1.000	7584	NC			19.8	
D 11 18O2 PFHxS										
402.5 > 83.6	10.148	9.892	0.256		1940684	53.5		113	3810	
D 12 13C4 PFOA										
416.5 > 371.6	11.190	10.958	0.232		4539499	57.9		116	7096	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.199	10.958	0.241	1.000	4416	0.0926			2.8	
D 16 13C4 PFOS										
502.4 > 79.7	12.085	11.876	0.209		1097750	67.3		141	3087	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 17 13C5 PFNA										
467.5 > 422.6	12.106	11.898	0.208		3522545	54.4		109	6952	
D 19 13C2 PFDA										
514.4 > 469.5	12.882	12.693	0.189		4715461	58.4		117	6190	
D 23 13C8 FOSA										
505.4 > 77.6	13.411	13.222	0.189		3879224	34.3		68.6	4681	
D 26 13C2 PFUnA										
564.3 > 519.5	13.541	13.369	0.172		4344590	56.3		113	4004	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.541	13.372	0.169	1.000	11508	0.1206			15.9	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.088	13.937	0.151	1.000	9132	0.1239			7.3	
D 28 13C2 PFDoA										
614.4 > 569.4	14.088	13.939	0.149		4595153	53.9		108	3249	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.561	14.430	0.131	1.000	10525	0.1460			8.7	
31 PFDoS (Perflouro-1-dodecanesulfona										
698.6 > 79.7	14.506	14.727	-0.221	1.000	1699	NC			6.0	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.966	14.841	0.125	1.000	17441	0.5087			19.6	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.966	14.844	0.122		3525659	51.1		102	2880	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_015.d

Injection Date: 26-Feb-2016 20:38:22

Instrument ID: A4

Lims ID: MB 320-101543/1-A

Client ID:

Operator ID: JRB

ALS Bottle#: 1

Worklist Smp#: 11

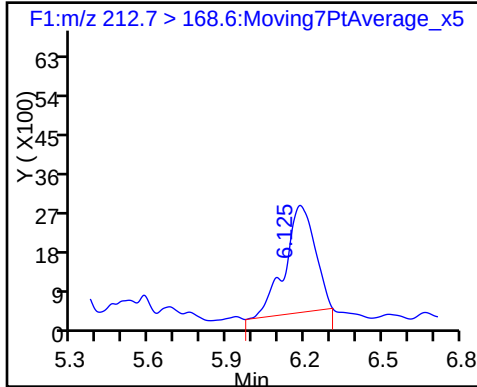
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

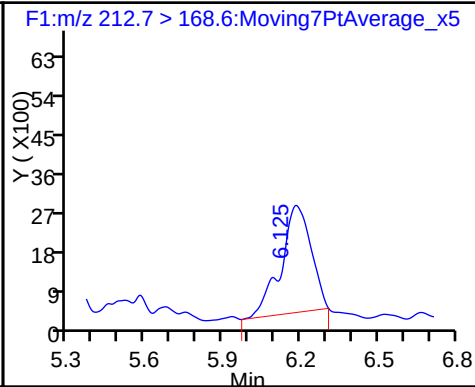
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

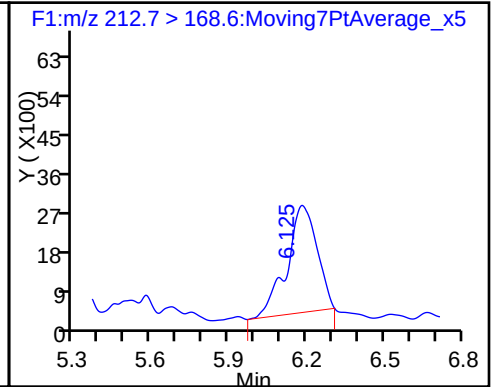
2 Perfluorobutyric acid



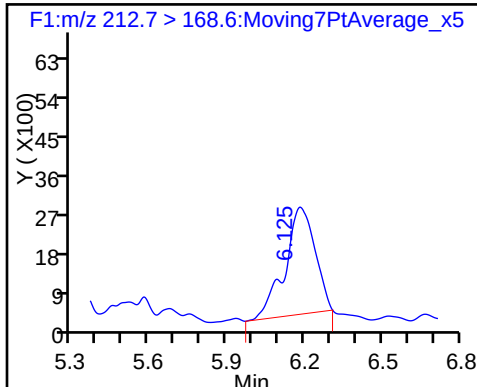
36 Perfluorooctadecanoic acid



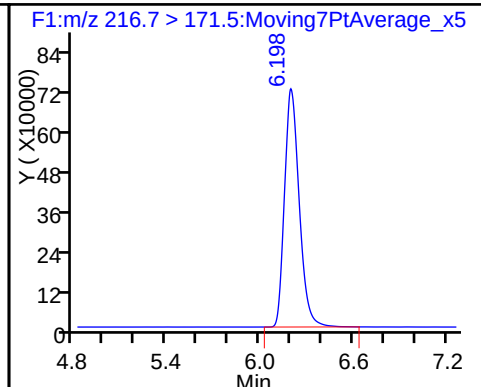
34 Perfluorohexadecanoic acid



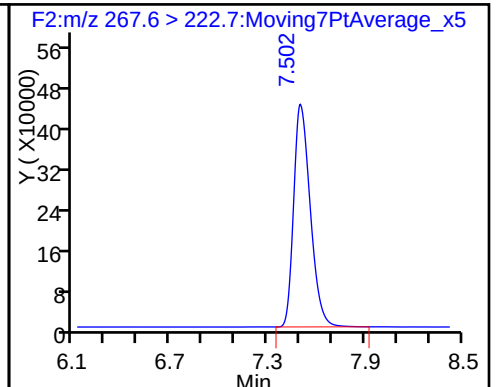
D 35 13C2-PFHxDA



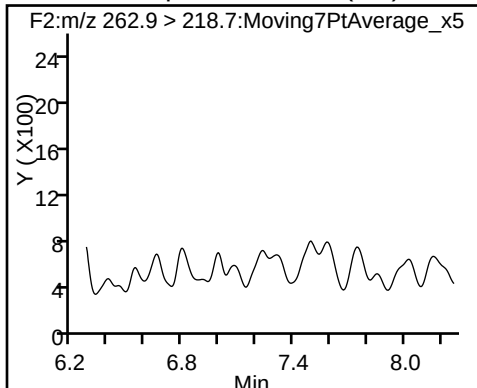
D 1 13C4 PFBA



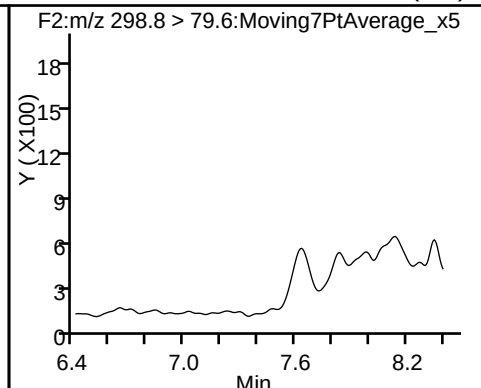
D 3 13C5-PFPeA



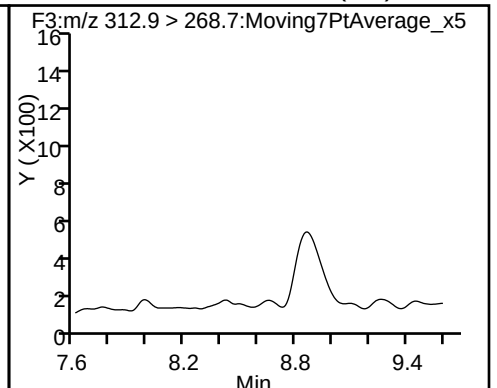
4 Perfluoropentanoic acid (ND)



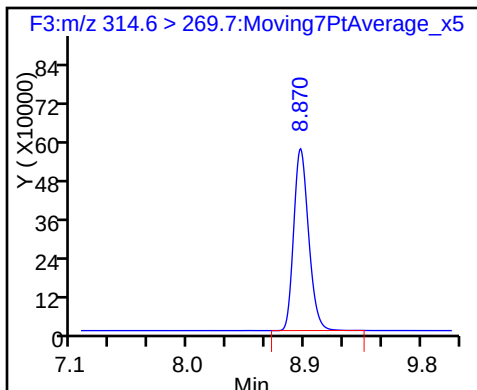
51 Perfluorobutanesulfonic acid (ND)



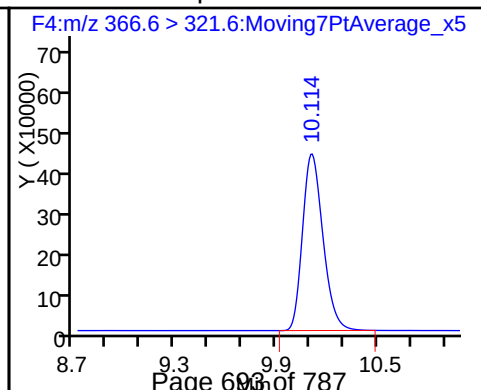
7 Perfluorohexanoic acid (ND)



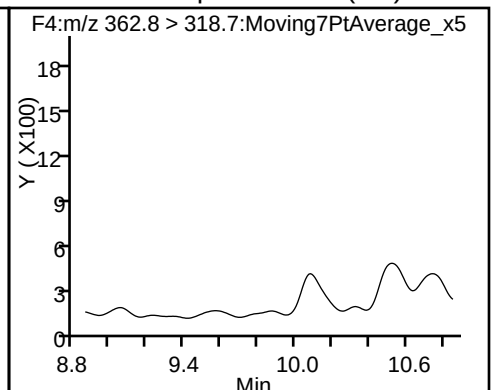
D 6 13C2 PFHxA



D 8 13C4-PFHpA



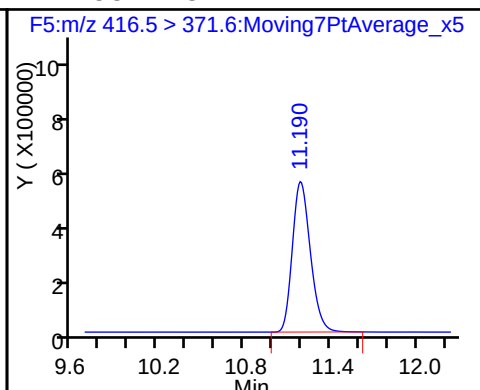
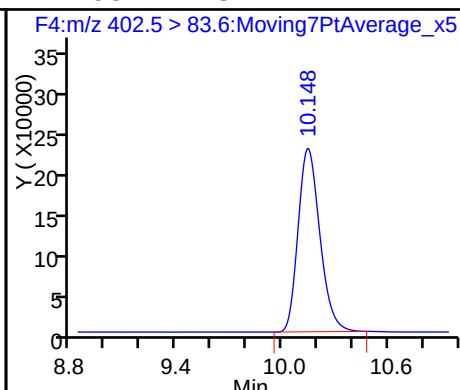
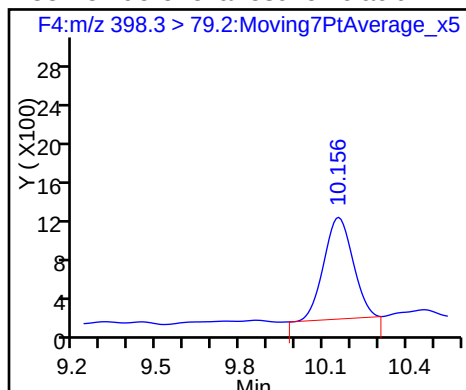
9 Perfluoroheptanoic acid (ND)



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

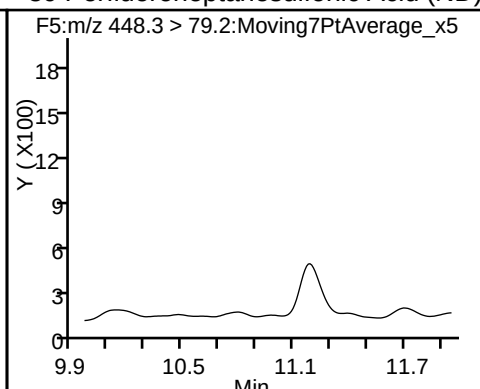
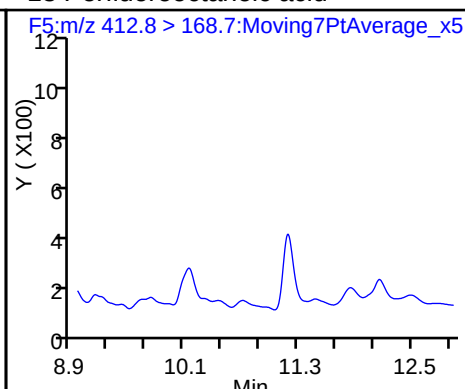
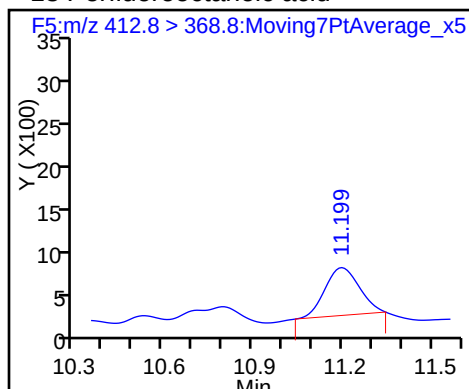
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

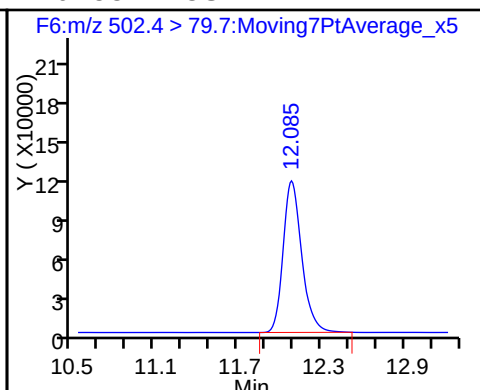
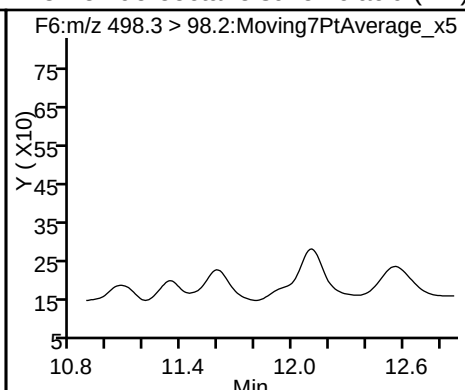
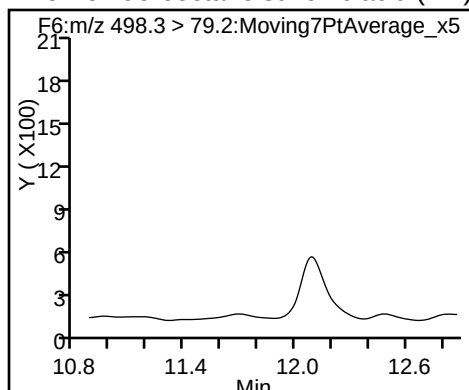
39 Perfluoroheptanesulfonic Acid (ND)



15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)

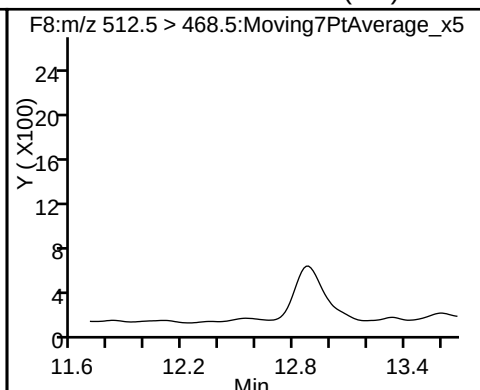
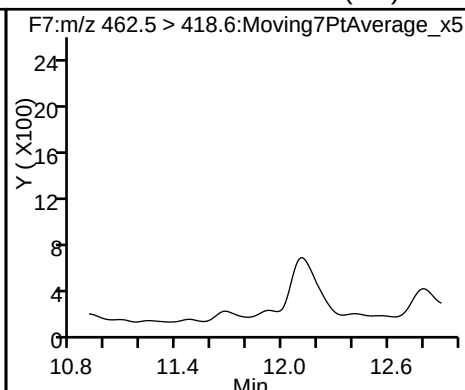
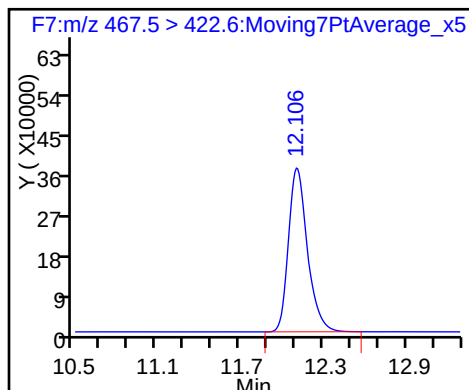
D 16 13C4 PFOS



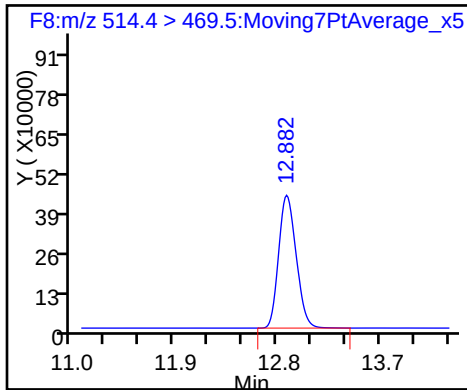
D 17 13C5 PFNA

18 Perfluorononanoic acid (ND)

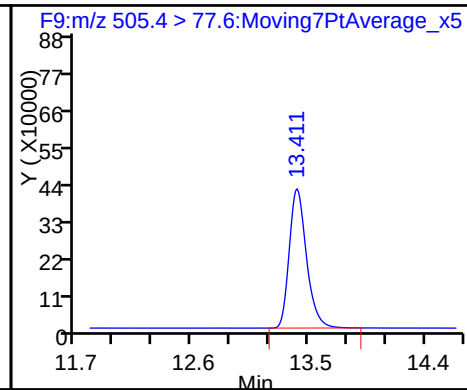
20 Perfluorodecanoic acid (ND)



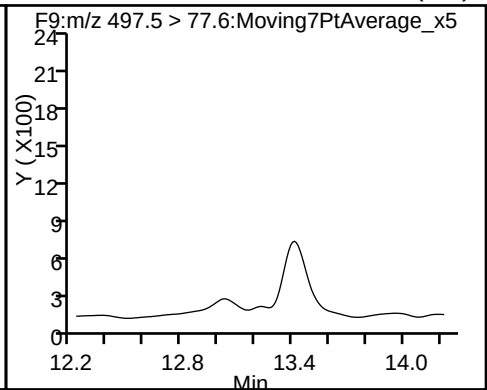
D 19 13C2 PFDA



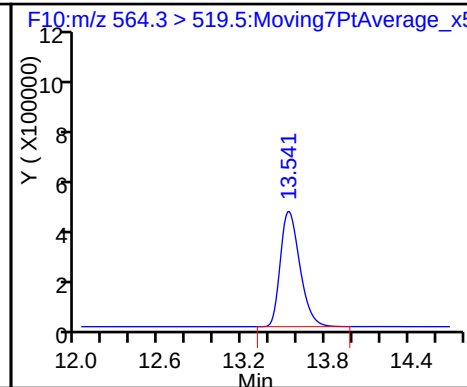
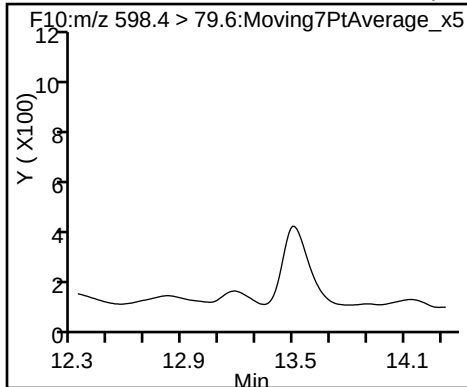
D 23 13C8 FOSA



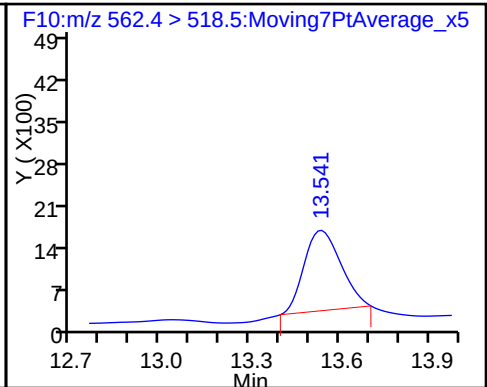
24 Perfluorooctane Sulfonamide (ND)



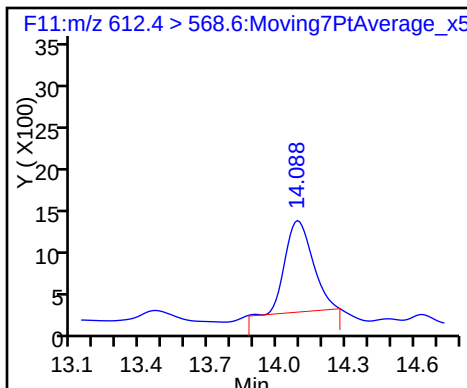
49 Perfluorodecane Sulfonic acid (ND) D 26 13C2 PFUnA



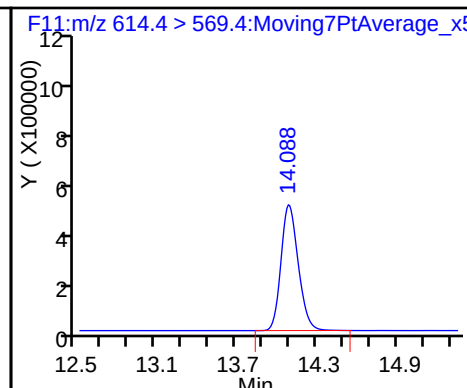
27 Perfluoroundecanoic acid



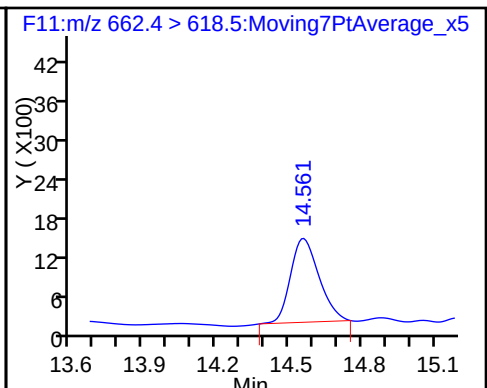
29 Perfluorododecanoic acid



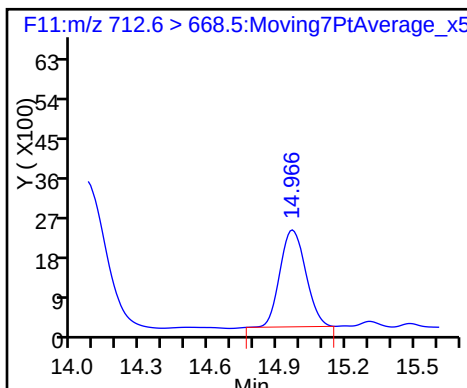
D 28 13C2 PFDoA



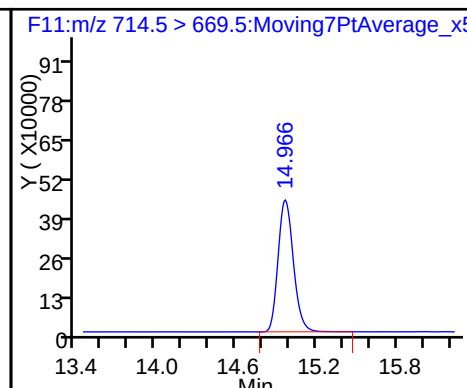
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-101659/1-A
 Matrix: Water Lab File ID: 26FEB2016A4A_038.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 500 (mL) Date Analyzed: 02/27/2016 10:31
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	111		25-150
STL00991	13C4 PFOS	98		25-150
STL01892	13C4-PFHpA	99		25-150
STL00995	13C5 PFNA	113		25-150
STL00994	18O2 PFHxS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_038.d
 Lims ID: MB 320-101659/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 27-Feb-2016 10:31:23 ALS Bottle#: 22 Worklist Smp#: 34
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-101659/1-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 12:03:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
38 2-(N-methylperfluoro-1-octanesulfo	212.7 > 168.6	6.073	5.996	0.077	13092	NR				
2 Perfluorobutyric acid	212.7 > 168.6	6.073	6.043	0.030	1.000	13092	0.3143		11.0	
36 Perfluorooctadecanoic acid	212.7 > 168.6	6.073	6.043	0.030	1.000	13092	0.2959		11.0	
34 Perfluorohexadecanoic acid	212.7 > 168.6	6.073	6.043	0.030	1.000	13092	0.2959		11.0	
D 35 13C2-PFHxDA	212.7 > 168.6	6.073	6.043	0.030		13092	0.1864	0.4	11.0	
D 1 13C4 PFBA	216.7 > 171.5	6.146	6.043	0.103		4251586	46.2	92.3	14770	
D 3 13C5-PFPeA	267.6 > 222.7	7.419	7.272	0.147		2794808	46.3	92.7	6573	
D 6 13C2 PFHxA	314.6 > 269.7	8.815	8.604	0.211		3846143	47.7	95.4	7973	
D 8 13C4-PFHpA	366.6 > 321.6	10.105	9.856	0.249		3366922	49.6	99.2	6180	
10 Perfluorohexane Sulfonate	398.3 > 79.2	10.148	9.892	0.256	1.000	5446	NC		11.3	
D 11 18O2 PFHxS	402.5 > 83.6	10.139	9.892	0.247		1683901	46.4	98.1	2696	
D 12 13C4 PFOA	416.5 > 371.6	11.300	10.958	0.342		4341709	55.4	111	11377	
D 16 13C4 PFOS	502.4 > 79.7	12.296	11.876	0.420		765763	47.0	98.3	2818	
D 17 13C5 PFNA	467.5 > 422.6	12.322	11.898	0.424		3654184	56.4	113	6063	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C2 PFDA										
514.4 > 469.5	13.130	12.693	0.437		4619585	57.2		114	6817	
D 23 13C8 FOSA										
505.4 > 77.6	13.646	13.222	0.424		670640	5.93		11.9	1543	
D 26 13C2 PFUnA										
564.3 > 519.5	13.778	13.369	0.409		4120075	53.4		107	4711	
D 28 13C2 PFDaA										
614.4 > 569.4	14.331	13.939	0.392		4367616	51.2		102	3868	
D 33 13C2-PFTeDA										
714.5 > 669.5	15.164	14.844	0.320		3252464	47.1		94.2	2767	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_038.d

Injection Date: 27-Feb-2016 10:31:23

Instrument ID: A4

Lims ID: MB 320-101659/1-A

Client ID:

Operator ID: JRB

ALS Bottle#: 22

Worklist Smp#: 34

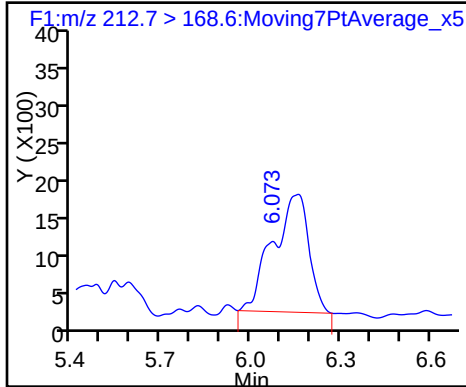
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

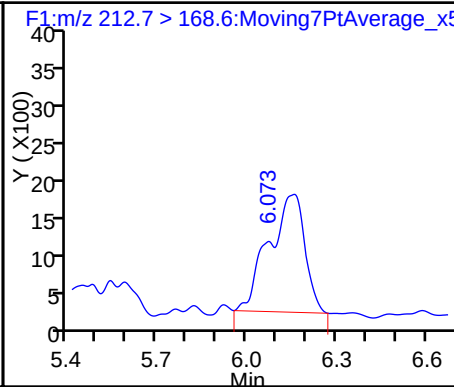
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

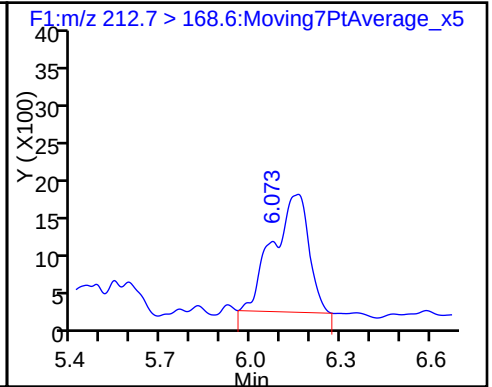
2 Perfluorobutyric acid



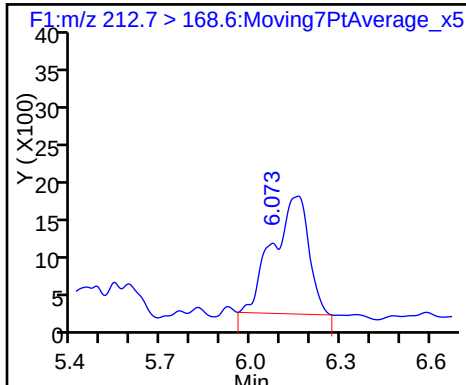
36 Perfluorooctadecanoic acid



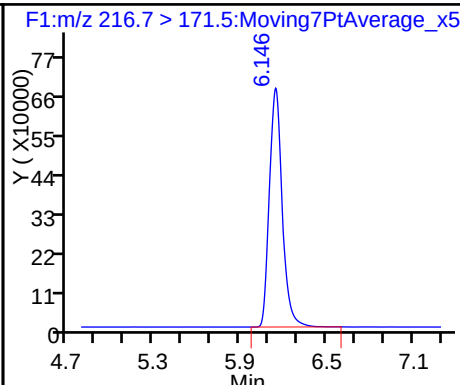
34 Perfluorohexadecanoic acid



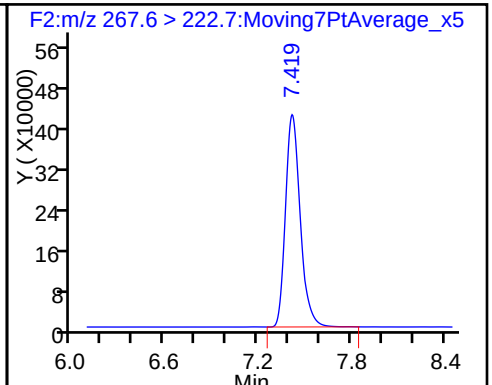
D 35 13C2-PFHxDA



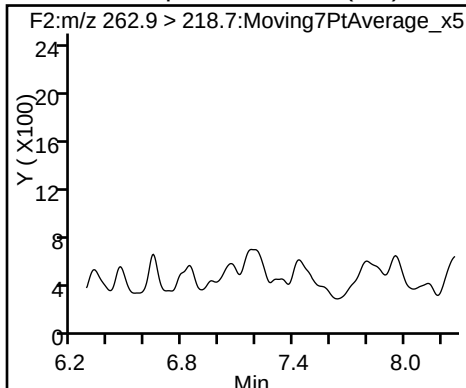
D 1 13C4 PFBA



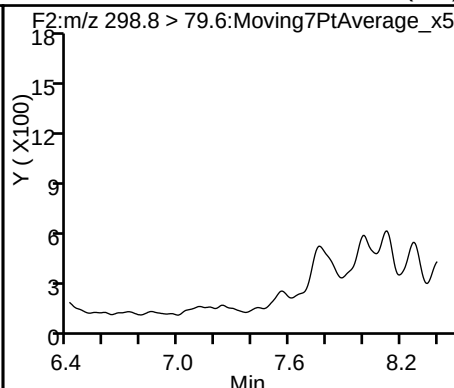
D 3 13C5-PFPeA



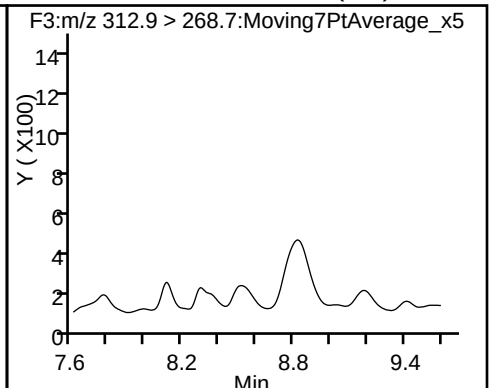
4 Perfluoropentanoic acid (ND)



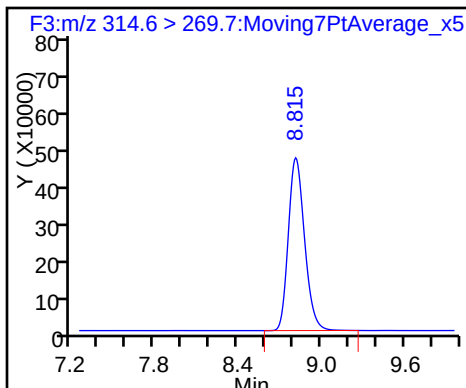
51 Perfluorobutanesulfonic acid (ND)



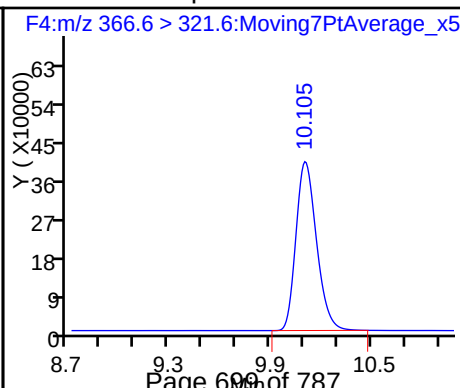
7 Perfluorohexanoic acid (ND)



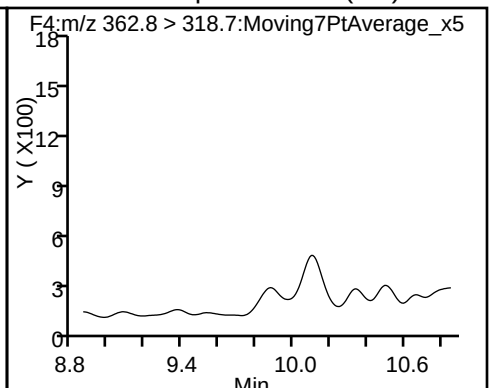
D 6 13C2 PFHxA



D 8 13C4-PFHpA

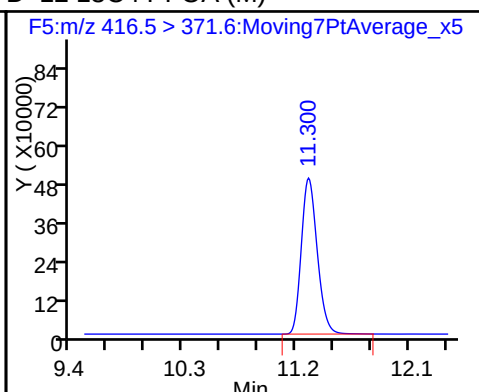
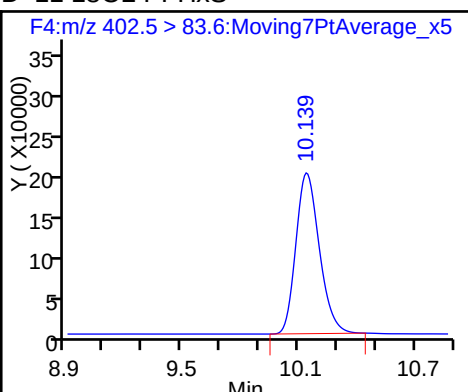
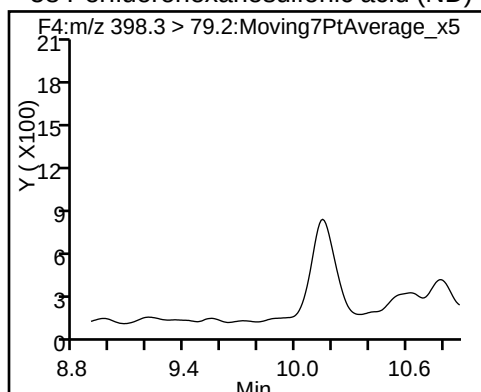


9 Perfluoroheptanoic acid (ND)



58 Perfluorohexanesulfonic acid (ND) D 11 18O2 PFHxS

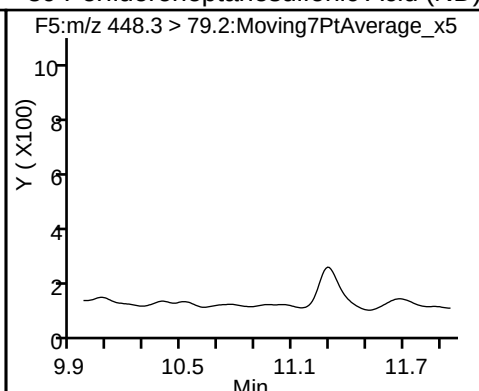
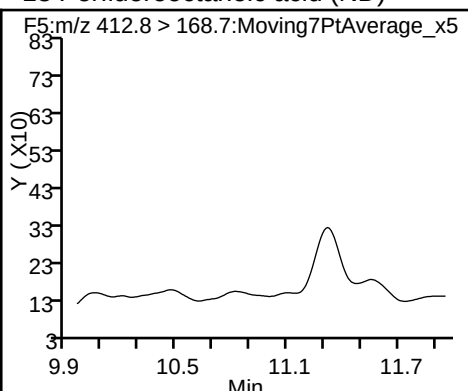
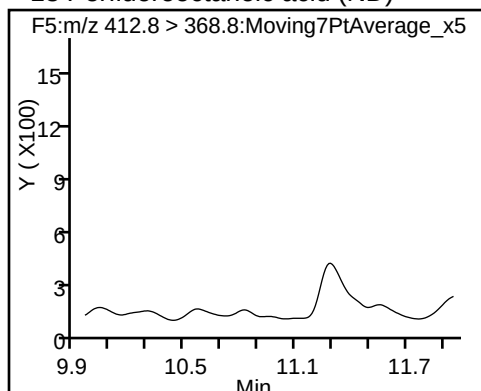
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid (ND)

13 Perfluorooctanoic acid (ND)

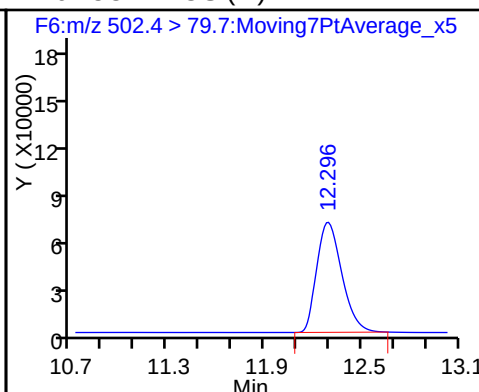
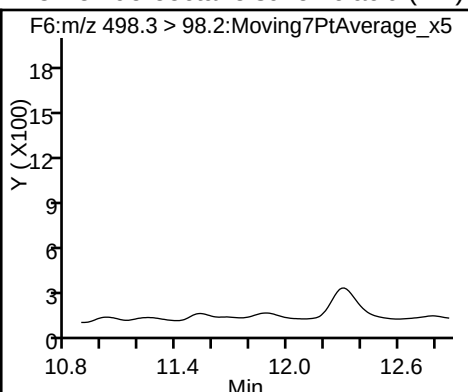
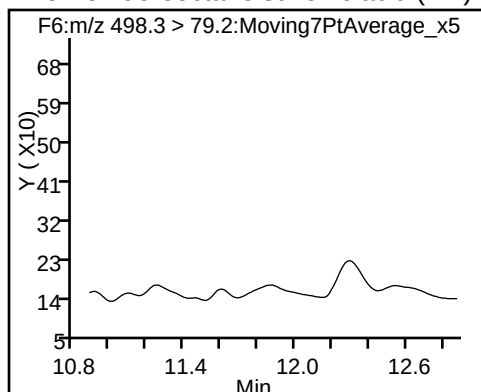
39 Perfluoroheptanesulfonic Acid (ND)



15 Perfluorooctane sulfonic acid (ND)

15 Perfluorooctane sulfonic acid (ND)

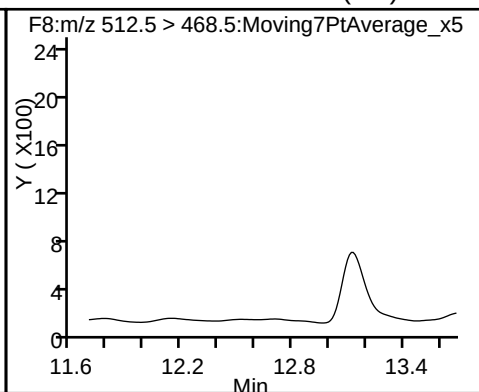
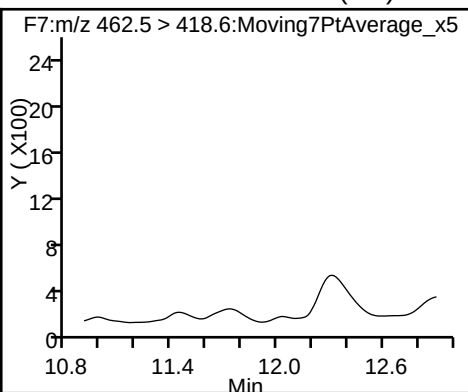
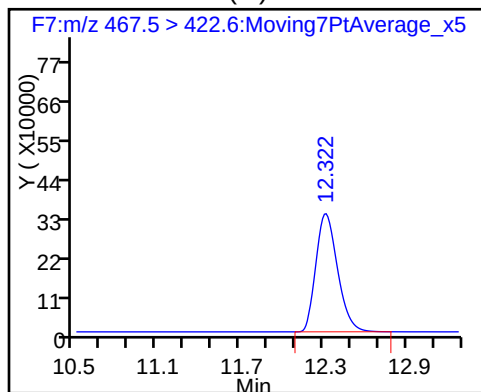
D 16 13C4 PFOS (M)



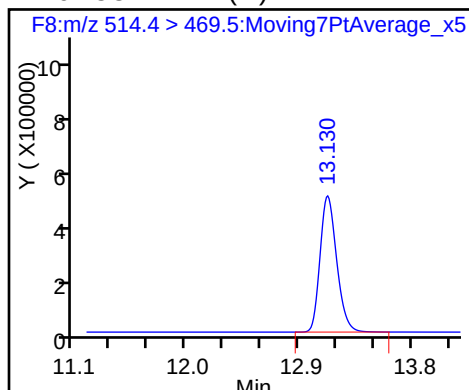
D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (ND)

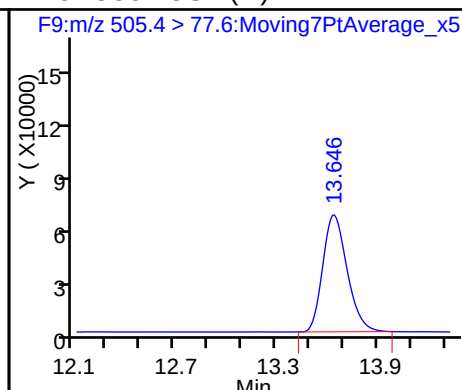
20 Perfluorodecanoic acid (ND)



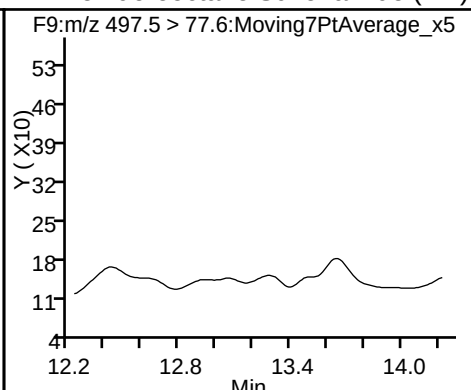
D 19 13C2 PFDA (M)



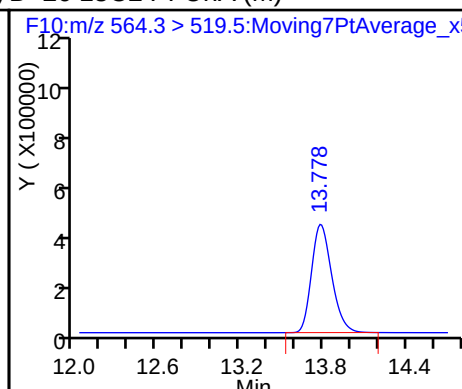
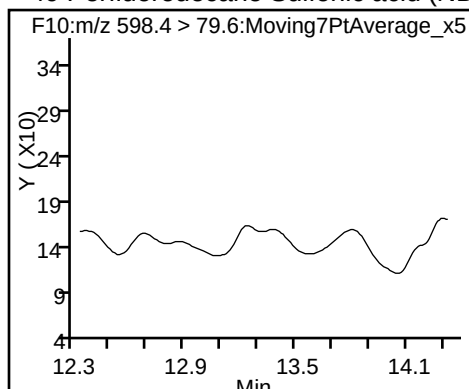
D 23 13C8 FOSA (M)



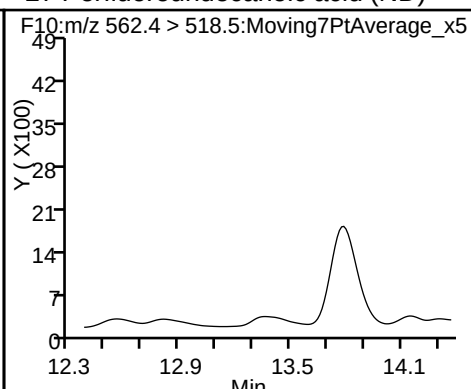
24 Perfluorooctane Sulfonamide (ND)



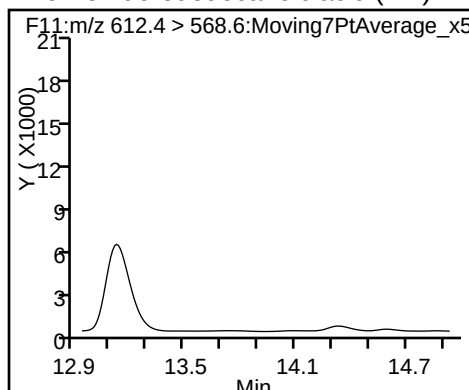
49 Perfluorodecane Sulfonic acid (ND) D 26 13C2 PFUnA (M)



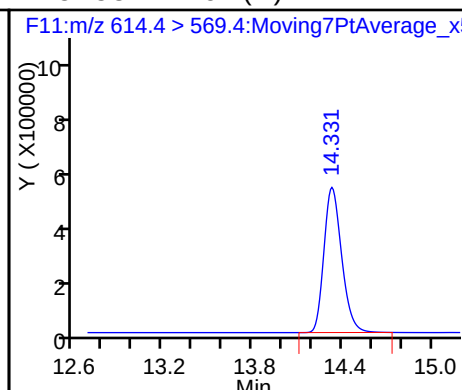
27 Perfluoroundecanoic acid (ND)



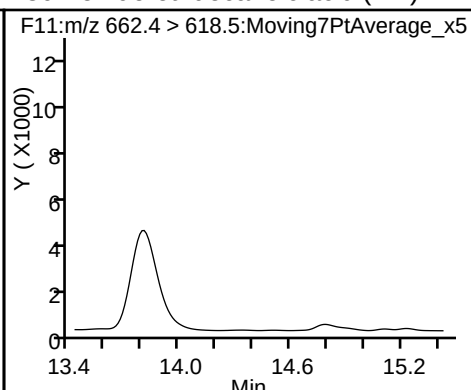
29 Perfluorododecanoic acid (ND)



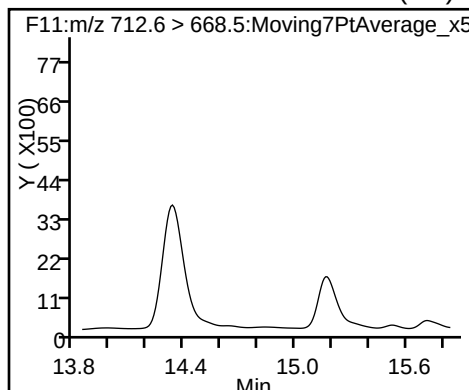
D 28 13C2 PFDoA (M)



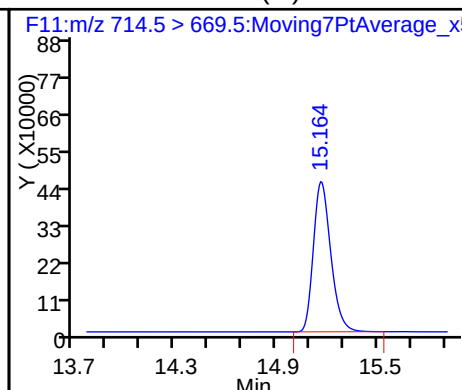
30 Perfluorotridecanoic acid (ND)



32 Perfluorotetradecanoic acid (ND)



D 33 13C2-PFTeDA (M)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-101659/1-A RA
 Matrix: Water Lab File ID: 29FEB2016A6B_008.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 500 (mL) Date Analyzed: 02/29/2016 19:18
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	107		25-150
STL00990	13C4 PFOA	106		25-150
STL00991	13C4 PFOS	109		25-150
STL01892	13C4-PFHpA	109		25-150
STL00995	13C5 PFNA	99		25-150
STL00994	18O2 PFHxS	106		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_008.d
 Lims ID: MB 320-101659/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 29-Feb-2016 19:18:52 ALS Bottle#: 3 Worklist Smp#: 8
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-101659/1-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.660	5.691	-0.031	1.000	2951	0.4412			99.1	
D 1 13C4 PFBA										
217.0 > 172.0	5.675	5.691	-0.016		891259	49.2		98.3	71071	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.763	6.790	-0.027	1.000	10248	0.2869			1.7	
D 3 13C5-PFPeA										
267.9 > 223.0	6.758	6.791	-0.033		1908026	53.4		107	15779	
D 6 13C2 PFHxA										
315.0 > 270.0	7.993	8.035	-0.042		1540112	53.5		107	117459	
7 Perfluorohexanoic acid										
313.0 > 269.0	7.993	8.037	-0.044	1.000	1503	0.0471			176	
D 8 13C4-PFHpA										
367.0 > 322.0	9.215	9.261	-0.046		1832570	54.7		109	94548	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.233	9.262	-0.029	1.000	1555	0.3711			0.1	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.303	9.296	0.007	1.000	1350	0.2461				
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.303	9.296	0.007	1.000	1350	NC			0.1	
D 11 18O2 PFHxS										
403.0 > 84.0	9.250	9.297	-0.047		727494	50.1		106	23006	
D 12 13C4 PFOA										
417.0 > 372.0	10.344	10.389	-0.045		1899733	52.9		106	35149	
D 16 13C4 PFOS										
503.0 > 80.0	11.307	11.350	-0.043		867294	52.3		109	63826	
D 17 13C5 PFNA										
468.0 > 423.0	11.322	11.368	-0.046		1530908	49.7		99.5	111770	
D 19 13C2 PFDA										
515.0 > 470.0	12.168	12.212	-0.044		1673930	60.1		120	112337	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorodecanoic acid										
513.0 > 469.0	12.183	12.213	-0.030	1.000	9007	0.4286			1261	
D 23 13C8 FOSA										
506.0 > 78.0	12.726	12.759	-0.033		220462	5.48		11.0	12776	
D 26 13C2 PFUnA										
565.0 > 520.0	12.893	12.936	-0.043		2050236	55.2		110	60897	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.893	12.938	-0.045	1.000	23548	0.3472			1388	
D 28 13C2 PFDaA										
615.0 > 570.0	13.507	13.550	-0.043		2058516	49.9		99.8	139990	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.464	14.516	-0.052		1652374	48.8		97.6	11590	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.464	14.517	-0.053	1.000	13352	0.5096			7.5	
D 35 13C2-PFHxDA										
815.0 > 770.0	15.127	15.166	-0.039		2212040	57.0		114	20682	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.127	15.166	-0.039	1.000	175708	1.74			498	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.464	15.496	-0.032	1.000	2025	0.0493			3.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_008.d

Injection Date: 29-Feb-2016 19:18:52

Instrument ID: A6

Lims ID: MB 320-101659/1-A

Client ID:

Operator ID: JRB

ALS Bottle#: 3

Worklist Smp#: 8

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

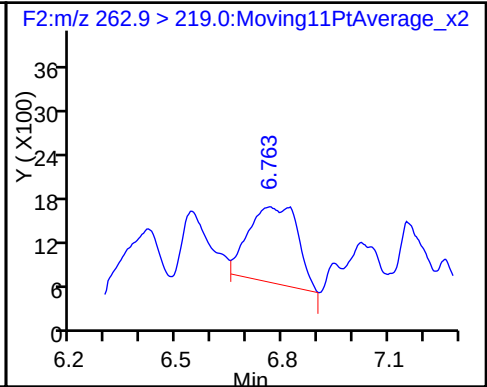
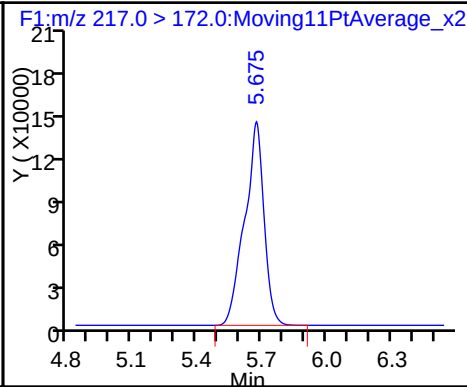
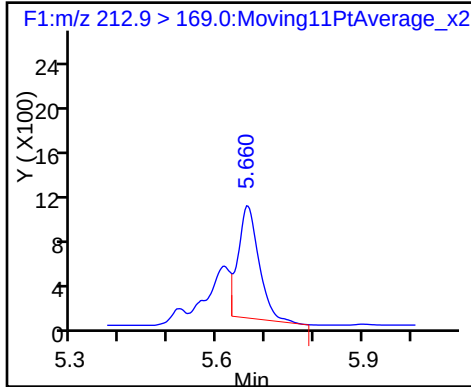
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

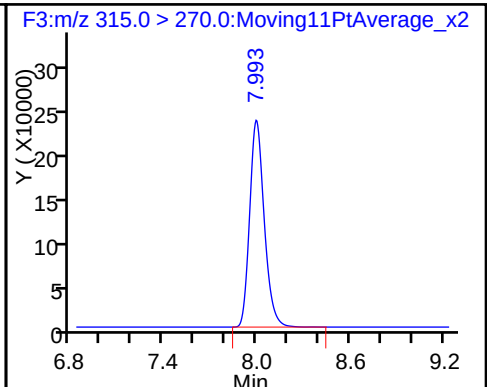
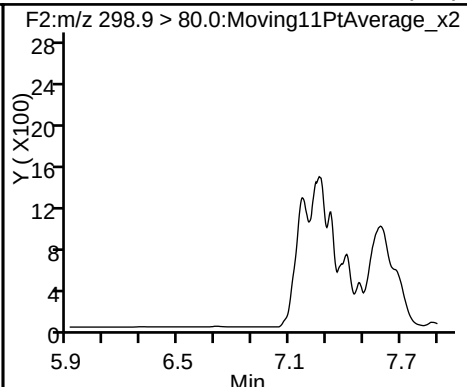
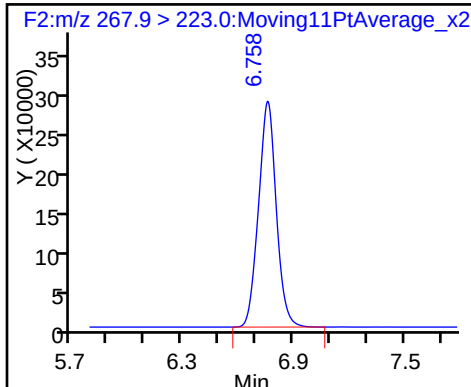
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid (ND)

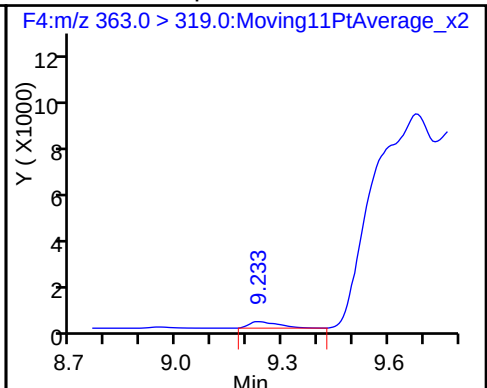
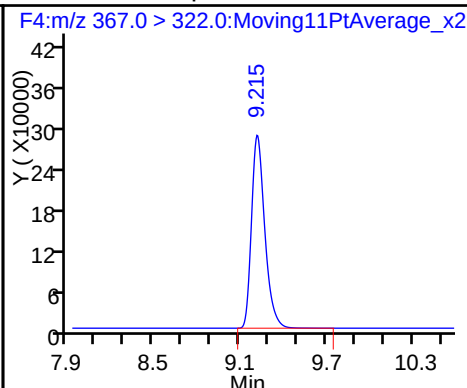
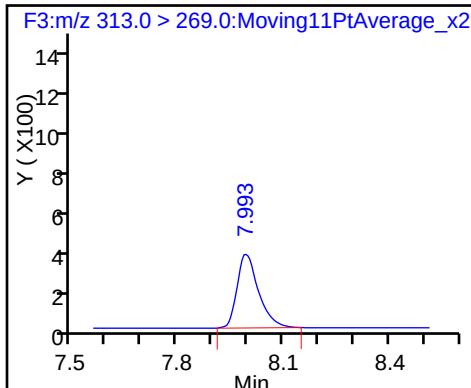
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

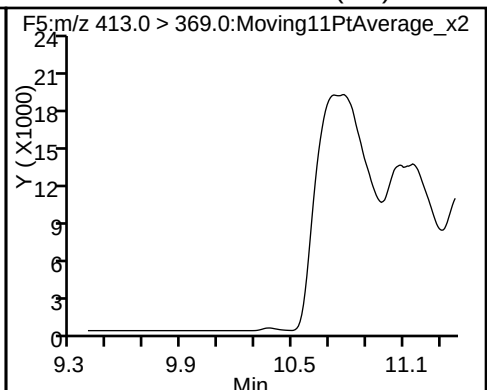
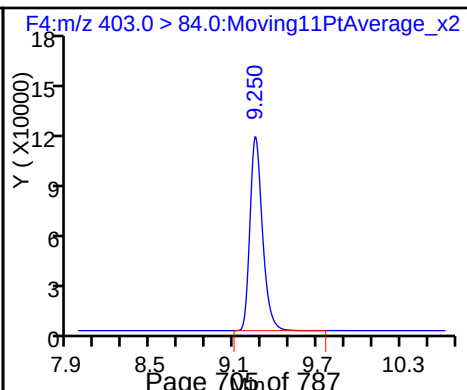
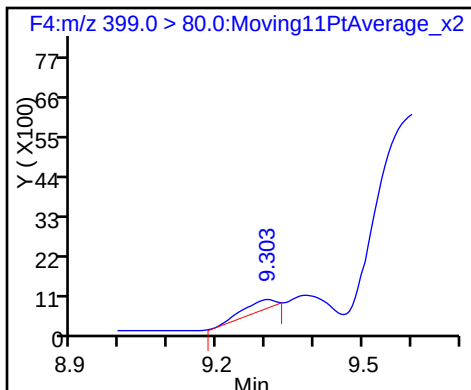
9 Perfluoroheptanoic acid



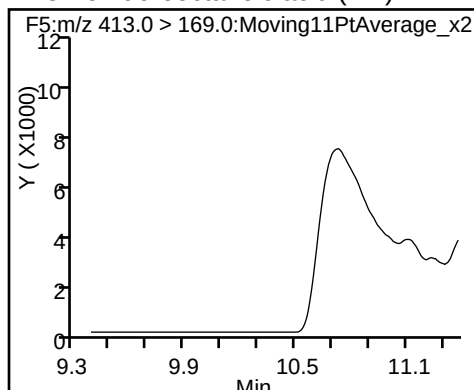
41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

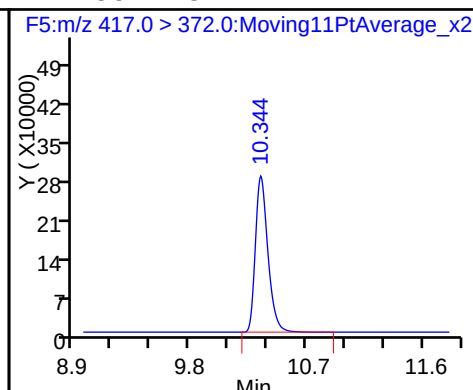
13 Perfluorooctanoic acid (ND)



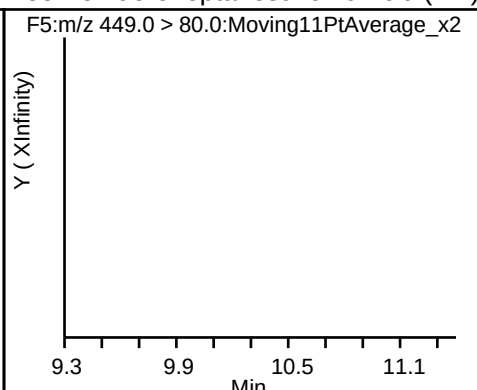
13 Perfluorooctanoic acid (ND)



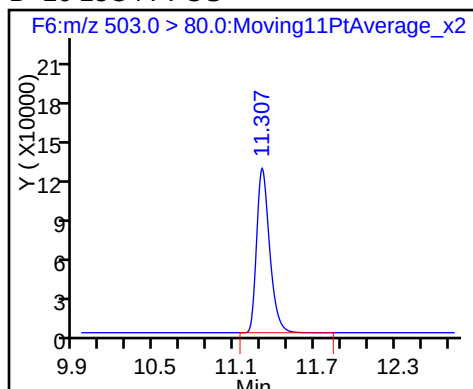
D 12 13C4 PFOA



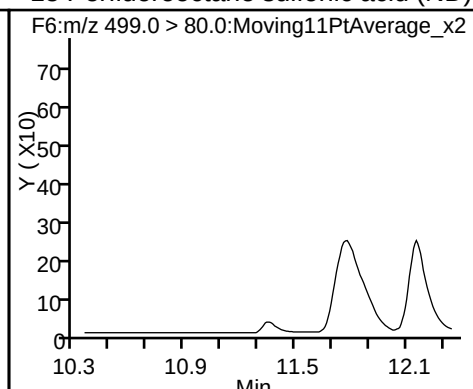
38 Perfluoroheptanesulfonic Acid (ND)



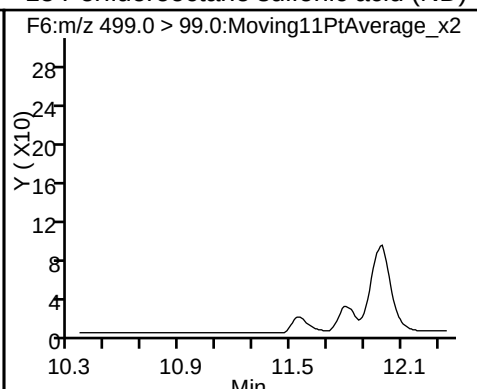
D 16 13C4 PFOS



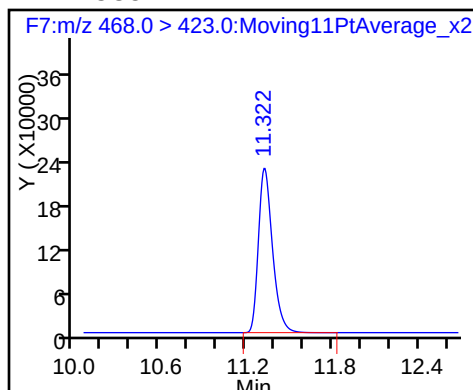
15 Perfluorooctane sulfonic acid (ND)



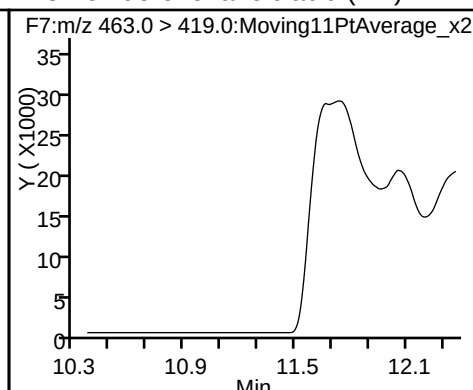
15 Perfluorooctane sulfonic acid (ND)



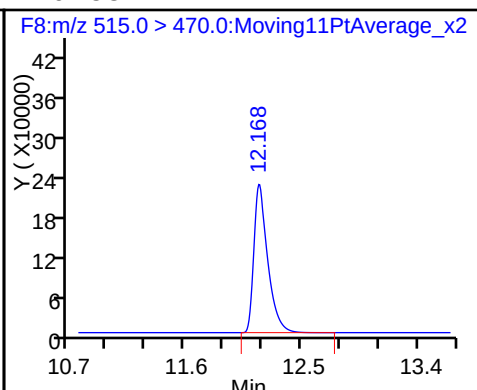
D 17 13C5 PFNA



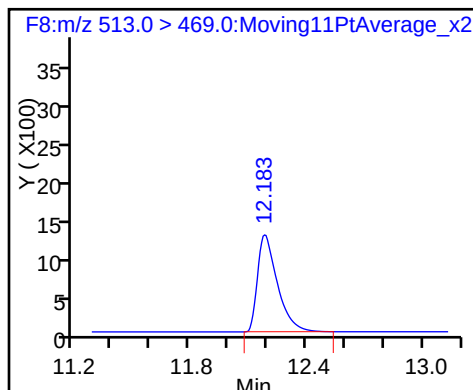
18 Perfluorononanoic acid (ND)



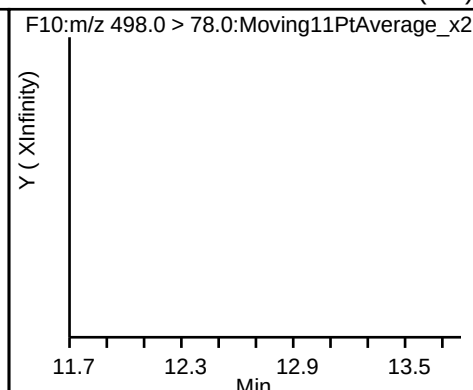
D 19 13C2 PFDA



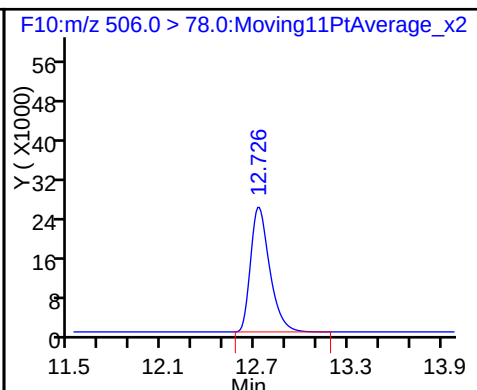
20 Perfluorodecanoic acid



24 Perfluorooctane Sulfonamide (ND)

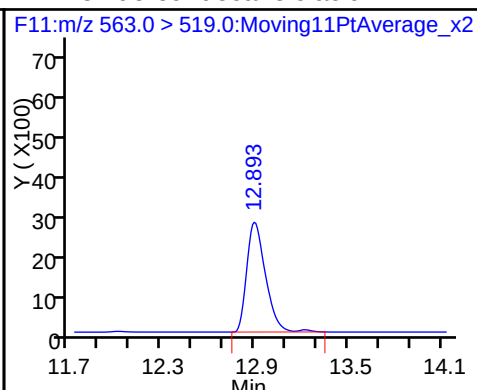
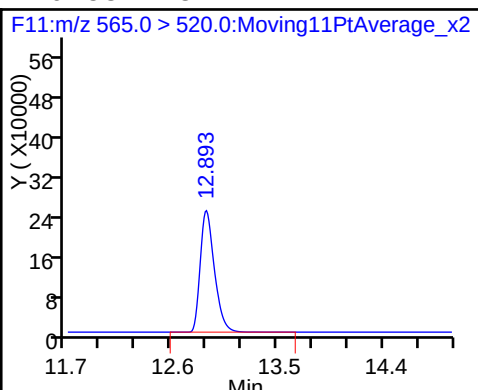
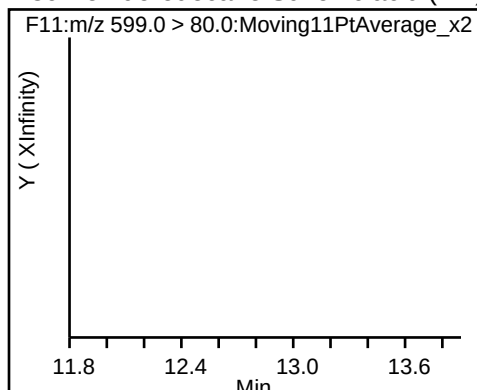


D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid (ND) D 26 13C2 PFUnA

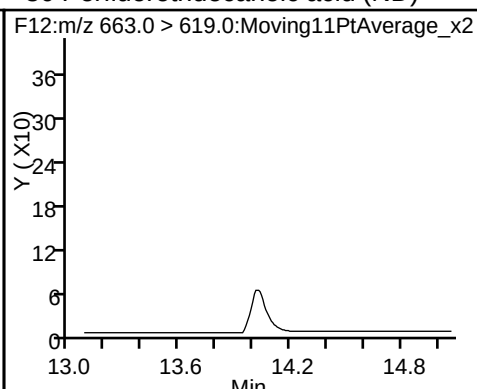
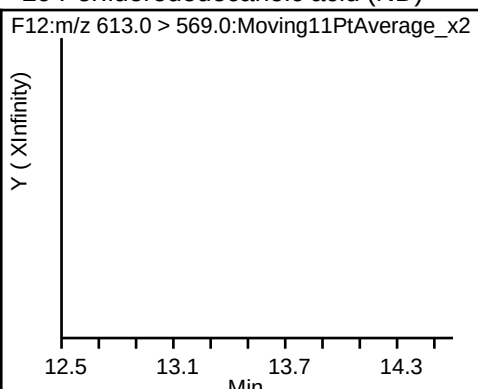
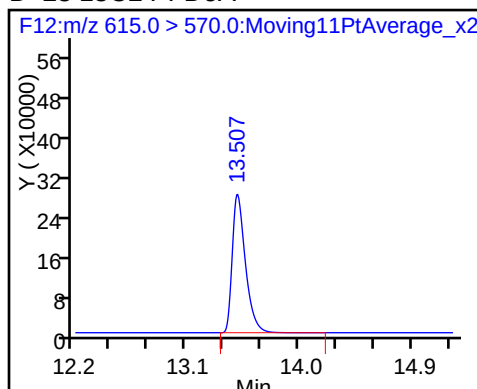
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid (ND)

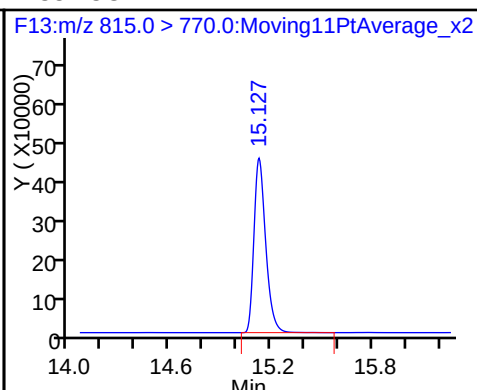
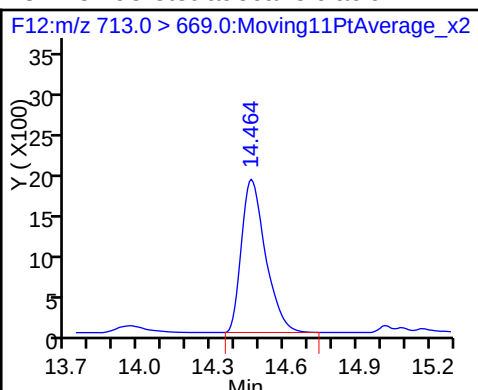
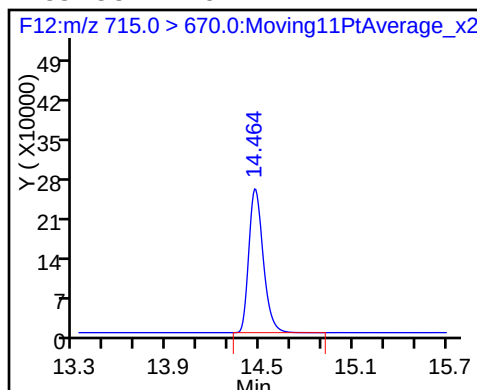
30 Perfluorotridecanoic acid (ND)



D 33 13C2-PFTeDA

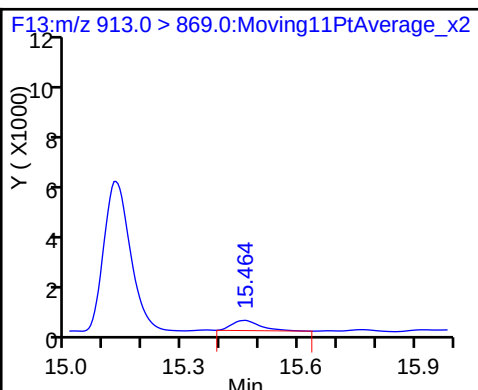
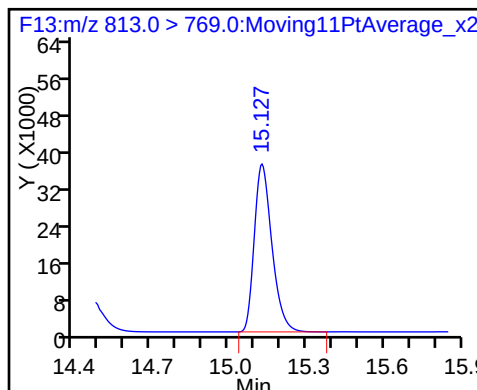
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-101543/2-A
 Matrix: Water Lab File ID: 26FEB2016A4A_016.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/25/2016 10:17
 Sample wt/vol: 500 (mL) Date Analyzed: 02/26/2016 20:59
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	42.3		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.8		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	30.7		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	40.7		2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28.7		4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	40.6		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	103		25-150
STL00990	13C4 PFOA	99		25-150
STL00991	13C4 PFOS	134		25-150
STL01892	13C4-PFHpA	108		25-150
STL00995	13C5 PFNA	100		25-150
STL00994	18O2 PFHxS	106		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_016.d
 Lims ID: LCS 320-101543/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 26-Feb-2016 20:59:33 ALS Bottle#: 2 Worklist Smp#: 12
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: LCS 320-101543/2-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:18:18 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:16:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.212	6.043	0.169	1.000	917835	20.4		102	1405	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.212	6.043	0.169	1.000	917835	22.8		114	1405	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.212	6.043	0.169	1.000	917835	22.8		114	1405	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.212	6.043	0.169		917835	13.1		26.1	1405	
D 1 13C4 PFBA										
216.7 > 171.5	6.217	6.043	0.174		4595018	49.9		99.8	14840	
D 3 13C5-PFPeA										
267.6 > 222.7	7.528	7.272	0.256		2924679	48.5		97.0	5549	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.528	7.275	0.253	1.000	526739	18.2		90.9	252	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.673	7.404	0.269	1.000	486982	NC			678	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.673	7.404	0.269	1.000	486982	21.2		120		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.901	8.604	0.297	1.000	745383	19.4		97.0	1305	
D 6 13C2 PFHxA										
314.6 > 269.7	8.901	8.604	0.297		4142881	51.4		103	6458	
D 8 13C4-PFHpA										
366.6 > 321.6	10.139	9.856	0.283		3676626	54.1		108	5725	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.139	9.859	0.280	1.000	724791	18.4		91.9	1049	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.165	9.892	0.273	1.000	598006	15.4		81.2		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.165	9.892	0.273	1.000	598006	NC			1328	
D 11 18O2 PFHxS										
402.5 > 83.6	10.173	9.892	0.281		1815003	50.0		106	3609	
D 12 13C4 PFOA										
416.5 > 371.6	11.217	10.958	0.259		3898747	49.7		99.5	8230	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.217	10.958	0.259	1.000	830925	20.3		101	547	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.217	10.960	0.257	1.000	720771	NC			3725	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.217	10.960	0.257	1.000	720771	13.7		71.9		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.105	11.874	0.231	1.000	1166322	14.3		75.0	2047	
498.3 > 98.2	12.105	11.874	0.231	1.000	666702		1.75(0.00-0.00)		1747	
D 16 13C4 PFOS										
502.4 > 79.7	12.105	11.876	0.229		1040387	63.8		134	2444	
D 17 13C5 PFNA										
467.5 > 422.6	12.126	11.898	0.228		3250383	50.2		100	4866	
18 Perfluorononanoic acid										
462.5 > 418.6	12.136	11.899	0.237	1.000	1383992	20.4		102	1609	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.895	12.693	0.202	1.000	1354975	19.4		96.9	1815	
D 19 13C2 PFDA										
514.4 > 469.5	12.907	12.693	0.214		3974119	49.2		98.4	4956	
21 PFNS (Perflouro-1-nonanesulfonate)										
548.6 > 79.6	12.857	12.831	0.026	1.000	508500	NC			1749	
D 23 13C8 FOSA										
505.4 > 77.6	13.432	13.222	0.210		3180087	28.1		56.2	2631	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.432	13.222	0.210	1.000	1180666	20.3		101	1530	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.505	13.324	0.181	1.000	548360	NC			1457	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.505	13.324	0.181	1.000	548360	15.9		82.3		
D 26 13C2 PFUnA										
564.3 > 519.5	13.553	13.369	0.184		3633748	47.1		94.2	4307	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.553	13.372	0.181	1.000	1620183	20.3		102	1897	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.109	13.937	0.172	1.000	1280861	20.1		100	898	
D 28 13C2 PFDaA										
614.4 > 569.4	14.109	13.939	0.170		3981698	46.7		93.4	2575	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.579	14.430	0.149	1.000	1191555	19.1		95.3	843	
31 PFDaS (Perflouro-1-dodecanesulfona										
698.6 > 79.7	14.524	14.727	-0.203	1.000	257923	NC			799	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.975	14.841	0.134	1.000	514558	17.3		86.6	477	
D 33 13C2-PFTeDA										
714.5 > 669.5	14.975	14.844	0.131		3277304	47.5		94.9	2385	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_016.d

Injection Date: 26-Feb-2016 20:59:33

Instrument ID: A4

Lims ID: LCS 320-101543/2-A

Client ID:

Operator ID: JRB

ALS Bottle#: 2

Worklist Smp#: 12

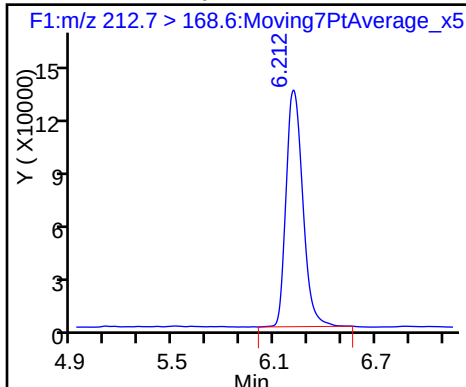
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

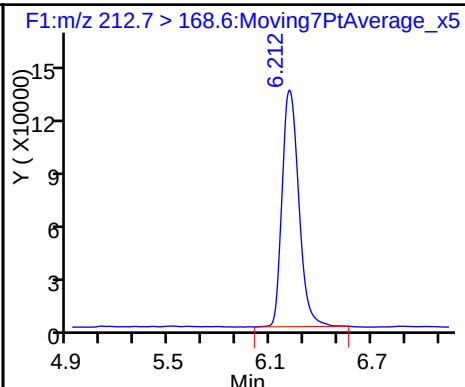
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

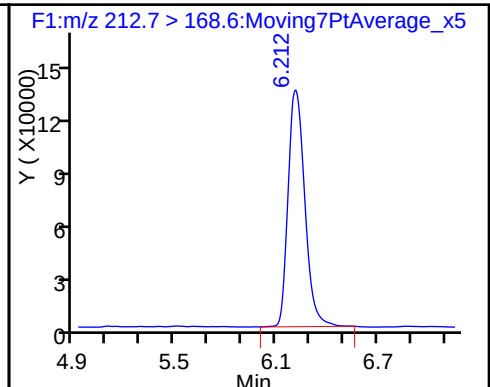
2 Perfluorobutyric acid



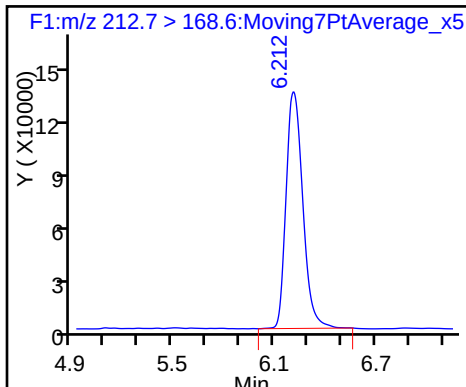
36 Perfluorooctadecanoic acid



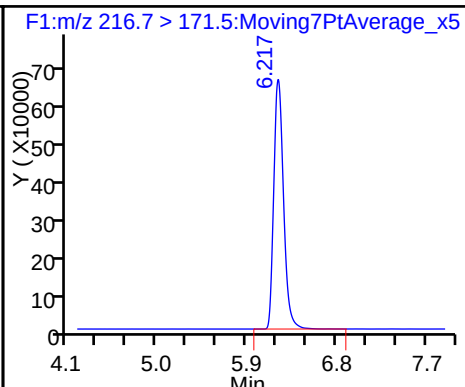
34 Perfluorohexadecanoic acid



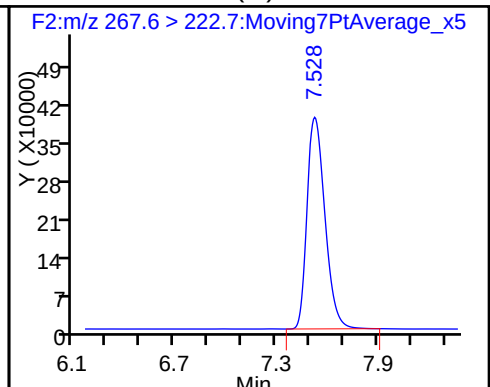
D 35 13C2-PFHxDA



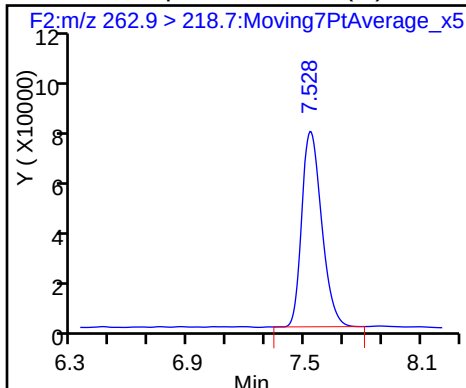
D 1 13C4 PFBA



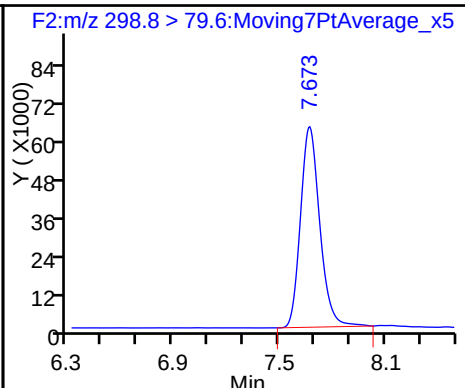
D 3 13C5-PFPeA (M)



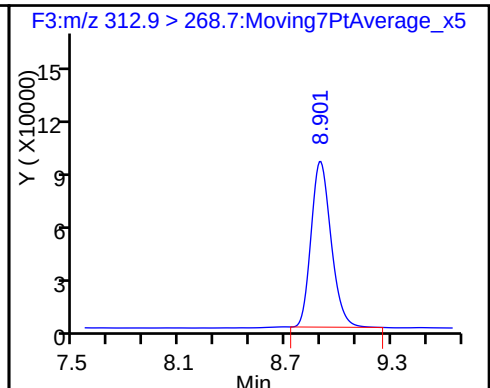
4 Perfluoropentanoic acid (M)



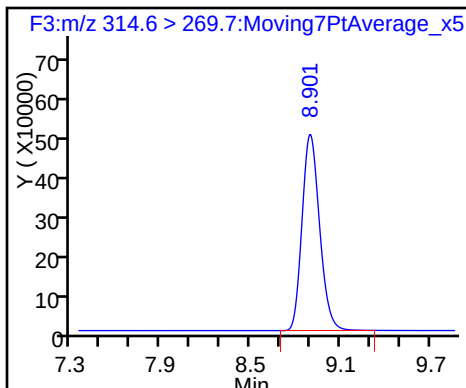
51 Perfluorobutanesulfonic acid



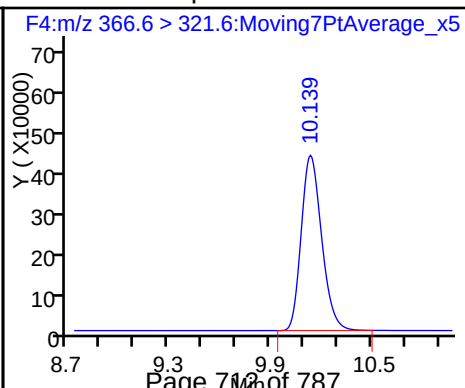
7 Perfluorohexanoic acid



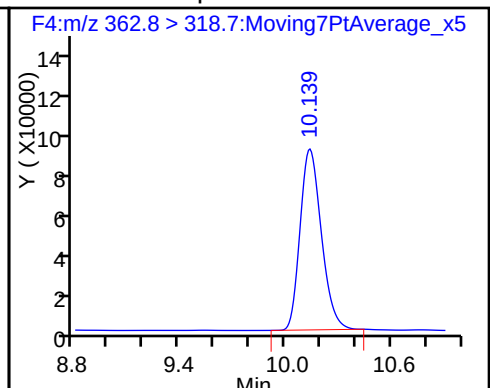
D 6 13C2 PFHxA



D 8 13C4-PFHpA



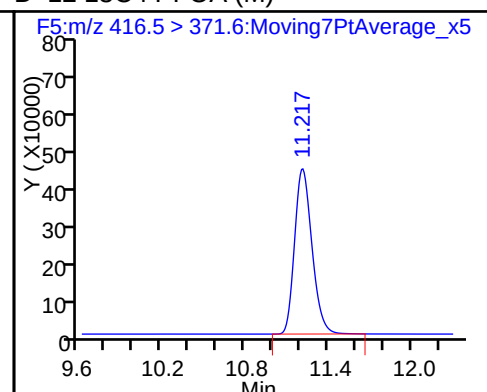
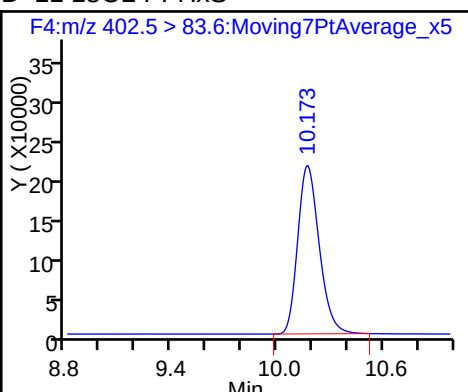
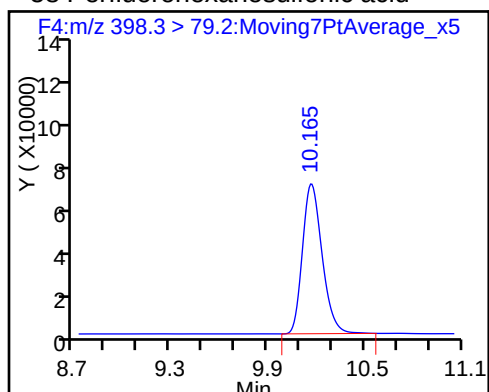
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

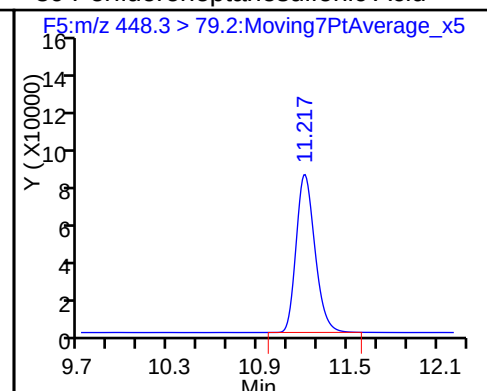
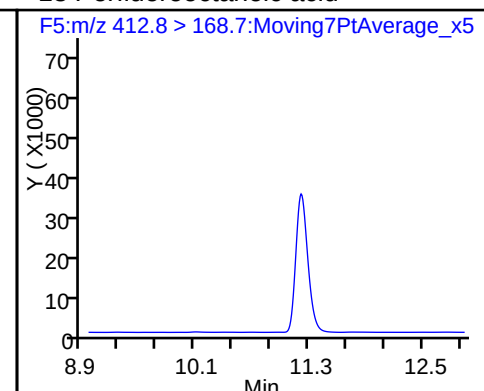
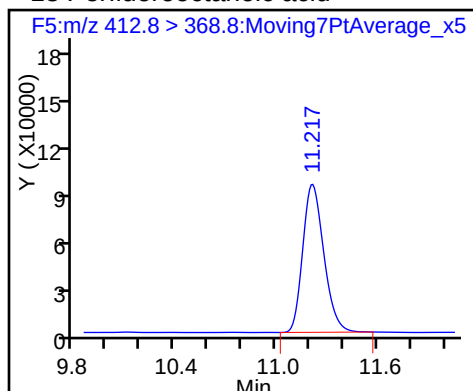
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

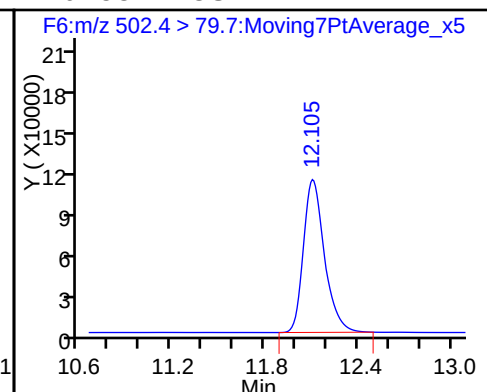
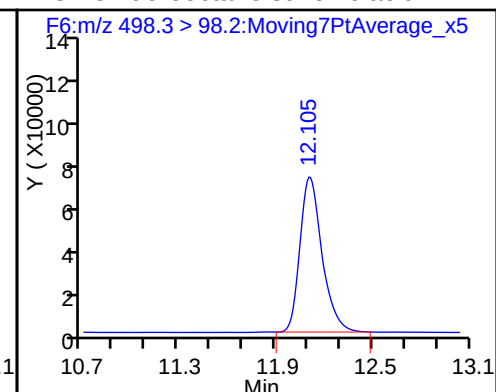
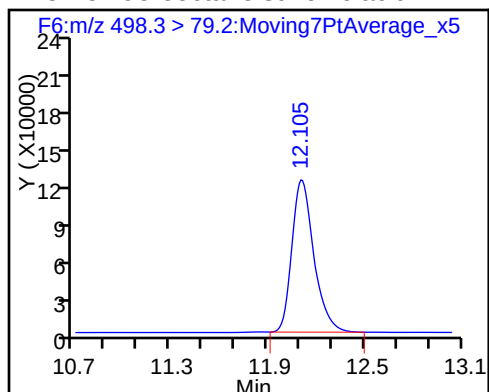
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

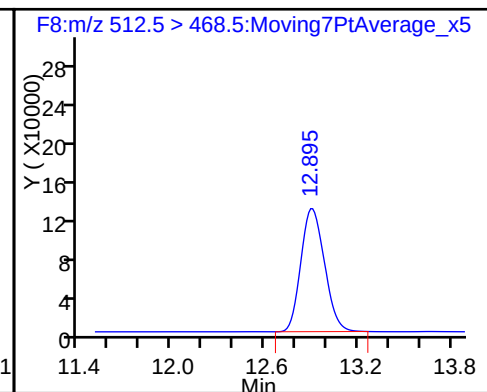
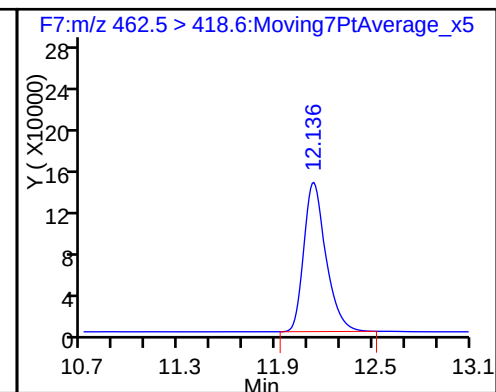
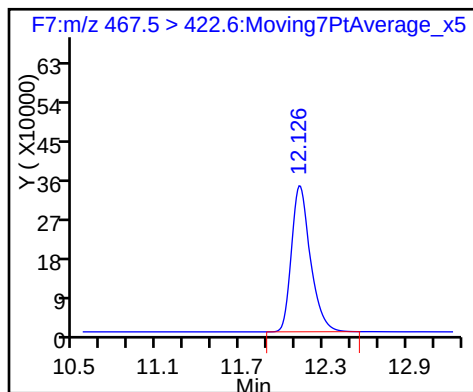
D 16 13C4 PFOS



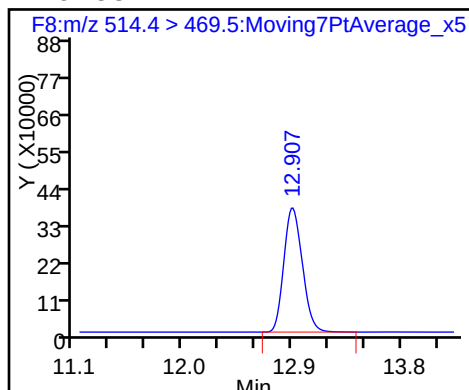
D 17 13C5 PFNA

18 Perfluorononanoic acid

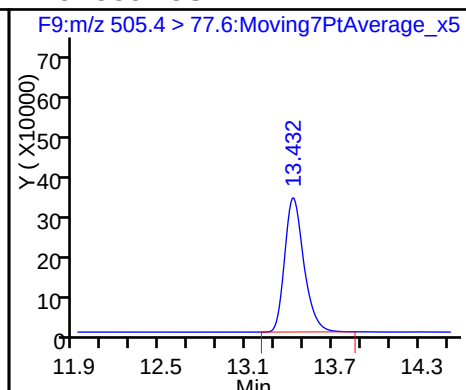
20 Perfluorodecanoic acid



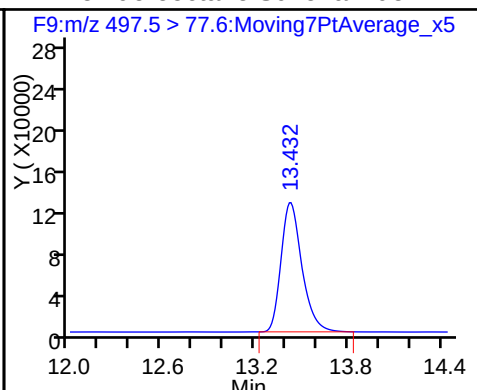
D 19 13C2 PFDA



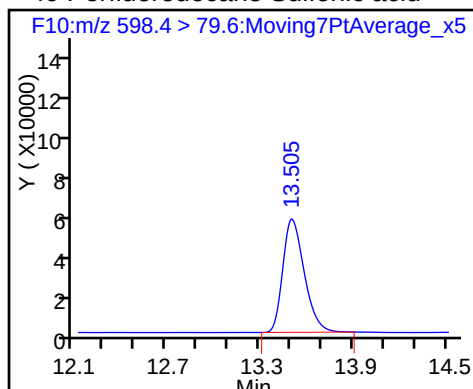
D 23 13C8 FOSA



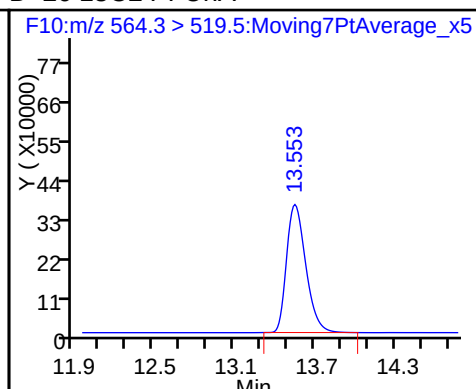
24 Perfluorooctane Sulfonamide



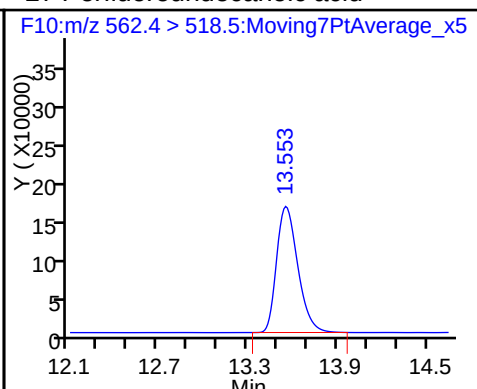
49 Perfluorodecane Sulfonic acid



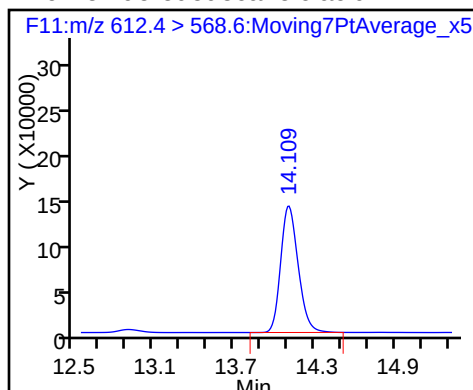
D 26 13C2 PFUnA



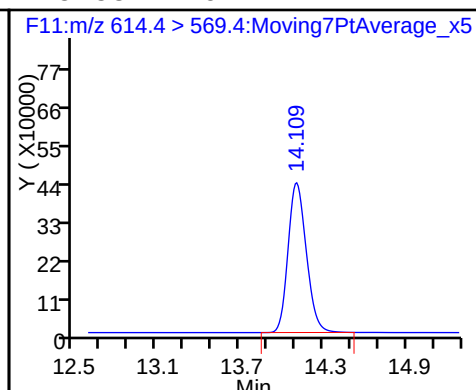
27 Perfluoroundecanoic acid



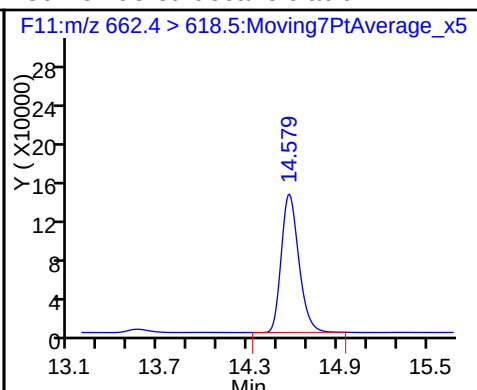
29 Perfluorododecanoic acid



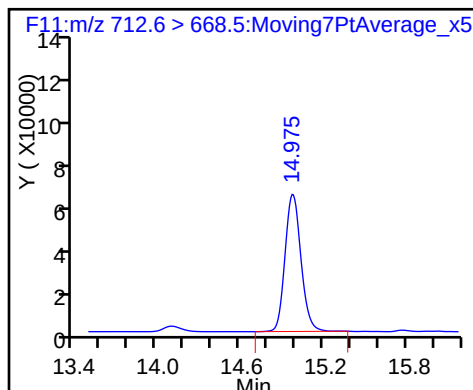
D 28 13C2 PFDaA



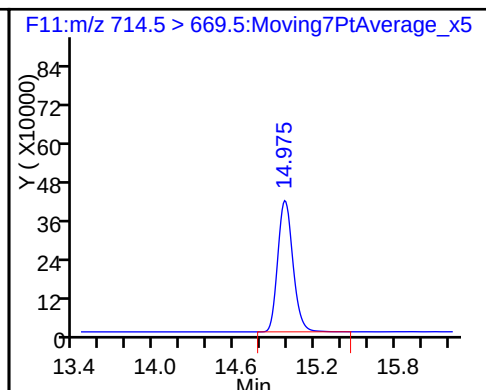
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-101659/2-A
 Matrix: Water Lab File ID: 26FEB2016A4A_039.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 500 (mL) Date Analyzed: 02/27/2016 10:52
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37.0		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	37.3		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	34.2		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	41.8		2.5	2.0	0.65
335-67-1	Perfluorooctanoic acid (PFOA)	40.1		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		25-150
STL00990	13C4 PFOA	99		25-150
STL00991	13C4 PFOS	117		25-150
STL01892	13C4-PFHpA	91		25-150
STL00995	13C5 PFNA	102		25-150
STL00994	18O2 PFHxS	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_039.d
 Lims ID: LCS 320-101659/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 27-Feb-2016 10:52:32 ALS Bottle#: 23 Worklist Smp#: 35
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: LCS 320-101659/2-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 12:05:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.405	6.043	0.362	1.000	862558	21.7		108	1502	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.405	6.043	0.362	1.000	862558	20.1		101	1502	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.405	6.043	0.362	1.000	862558	20.1		101	1502	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.405	6.043	0.362		862558	12.3		24.6	1502	
D 1 13C4 PFBA										
216.7 > 171.5	6.405	6.043	0.362		4056694	44.0		88.1	12538	
D 3 13C5-PFPeA										
267.6 > 222.7	7.804	7.272	0.532		2551658	42.3		84.6	7222	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.804	7.275	0.529	1.000	504185	19.9		99.7	239	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.948	7.404	0.544	1.000	385211	NC			672	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.948	7.404	0.544	1.000	385211	18.5		105		
22 PFPeS (Perflouro-1-pentanesulfonat										
348.7 > 79.5	9.277	8.589	0.688	0.887	591445	NC			2261	
7 Perfluorohexanoic acid										
312.9 > 268.7	9.191	8.604	0.587	1.000	639787	18.6		92.9	1337	
D 6 13C2 PFHxA										
314.6 > 269.7	9.191	8.604	0.587		3710151	46.0		92.1	11920	
D 8 13C4-PFHpA										
366.6 > 321.6	10.420	9.856	0.564		3094307	45.6		91.1	5499	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.429	9.859	0.570	1.000	619556	18.7		93.3	943	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.454	9.892	0.562	1.000	602054	17.1		90.4		
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.454	9.892	0.562	1.000	602054	NC			1281	
D 11 18O2 PFHxS										
402.5 > 83.6	10.454	9.892	0.562		1642002	45.3		95.7	3995	
D 12 13C4 PFOA										
416.5 > 371.6	11.475	10.958	0.517		3893992	49.7		99.3	9927	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.475	10.958	0.517	1.000	820148	20.0		100	744	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.475	10.960	0.515	1.000	701690	NC			2660	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.475	10.960	0.515	1.000	701690	15.3		80.1		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.334	11.874	0.460	1.000	1191547	16.8		87.7	2588	
D 16 13C4 PFOS										
502.4 > 79.7	12.334	11.876	0.458		909478	55.8		117	2592	
D 17 13C5 PFNA										
467.5 > 422.6	12.360	11.898	0.462		3305258	51.0		102	6126	
18 Perfluorononanoic acid										
462.5 > 418.6	12.360	11.899	0.461	1.000	1445039	20.9		105	2189	
20 Perfluorodecanoic acid										
512.5 > 468.5	13.110	12.693	0.417	1.000	1465888	20.2		101	2484	
D 19 13C2 PFDA										
514.4 > 469.5	13.110	12.693	0.417		4133905	51.2		102	8703	
21 PFNS (Perfluoro-1-nonanesulfonate)										
548.6 > 79.6	13.068	12.831	0.237	1.000	484121	NC			2267	
D 23 13C8 FOSA										
505.4 > 77.6	13.610	13.222	0.388		872359	7.71		15.4	1191	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.610	13.222	0.388	1.000	324764	20.3		102	789	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.683	13.324	0.359	1.000	523119	NC			1525	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.683	13.324	0.359	1.000	523119	17.3		89.9		
D 26 13C2 PFUnA										
564.3 > 519.5	13.730	13.369	0.361		3867442	50.1		100	3946	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.730	13.372	0.358	1.000	1599431	18.8		94.2	1953	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.276	13.937	0.339	1.000	1419014	20.9		105	777	
D 28 13C2 PFDaA										
614.4 > 569.4	14.276	13.939	0.337		4231259	49.6		99.3	3369	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.727	14.430	0.297	1.000	1256991	18.9		94.7	944	
31 PFDaS (Perfluoro-1-dodecanesulfona										
698.6 > 79.7	14.681	14.727	-0.046	1.000	216761	NC			692	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
32 Perfluorotetradecanoic acid										
712.6 > 668.5	15.118	14.841	0.277	1.000	559394	17.7		88.6	393	
D 33 13C2-PFTeDA										
714.5 > 669.5	15.110	14.844	0.266		3244831	47.0		94.0	2802	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_039.d

Injection Date: 27-Feb-2016 10:52:32

Instrument ID: A4

Lims ID: LCS 320-101659/2-A

Client ID:

Operator ID: JRB

ALS Bottle#: 23

Worklist Smp#: 35

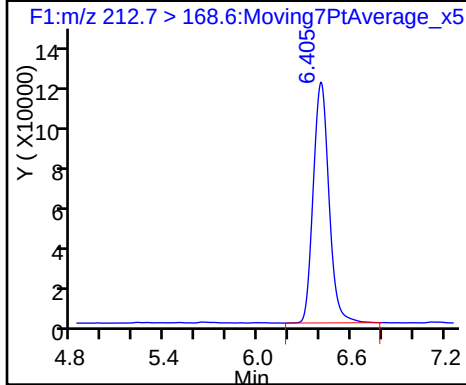
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

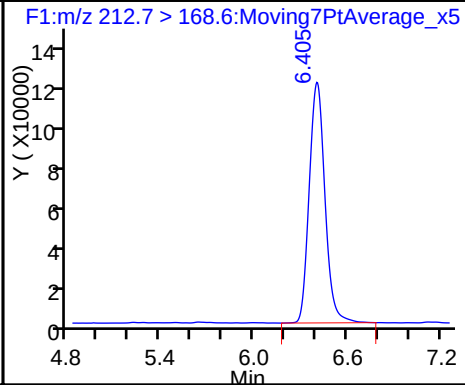
Method: PFAC_A4

Limit Group: LC PFC_DOD ICAL

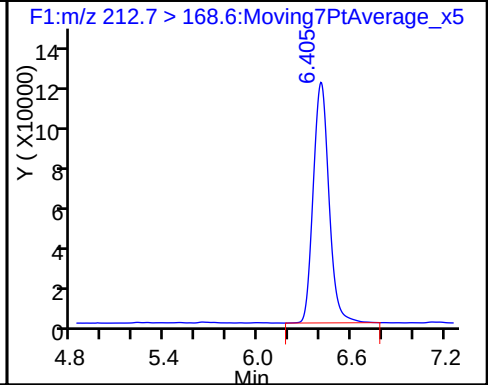
2 Perfluorobutyric acid (M)



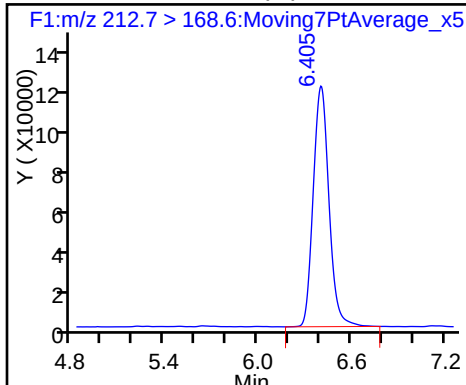
36 Perfluorooctadecanoic acid (M)



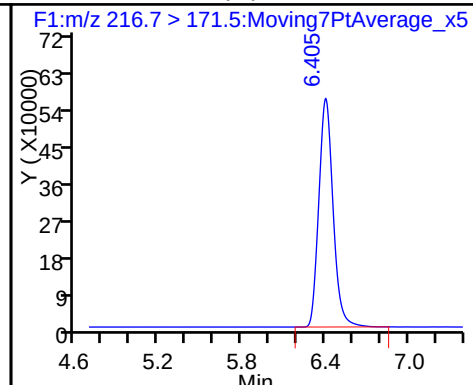
34 Perfluorohexadecanoic acid (M)



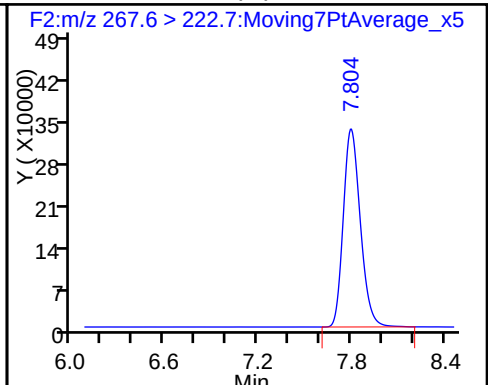
D 35 13C2-PFHxDA (M)



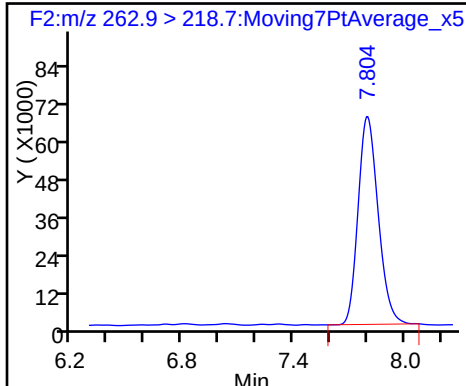
D 1 13C4 PFBA (M)



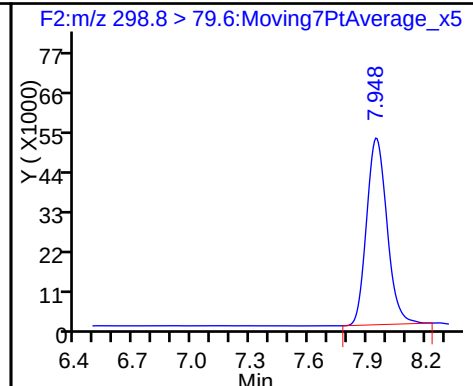
D 3 13C5-PFPeA (M)



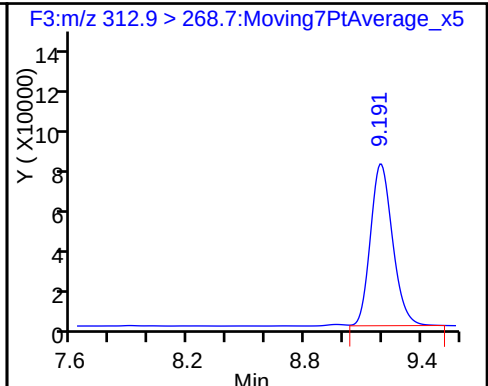
4 Perfluoropentanoic acid (M)



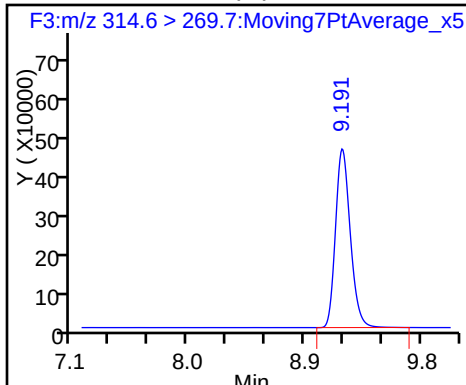
51 Perfluorobutanesulfonic acid (M)



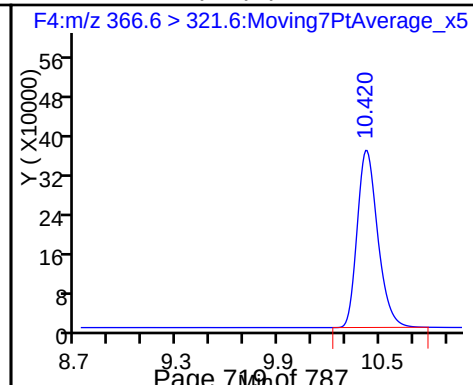
7 Perfluorohexanoic acid (M)



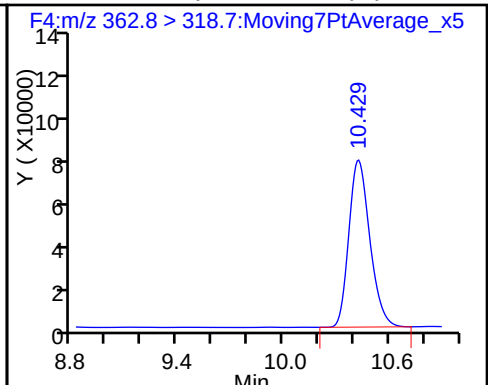
D 6 13C2 PFHxA (M)



D 8 13C4-PFHpA (M)



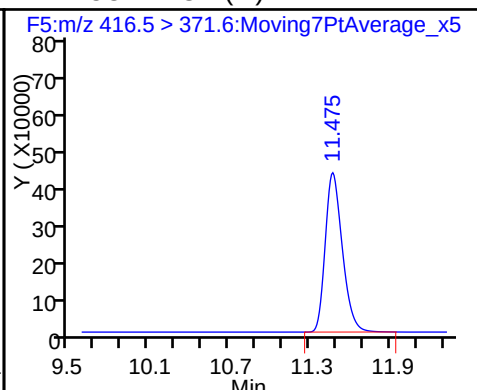
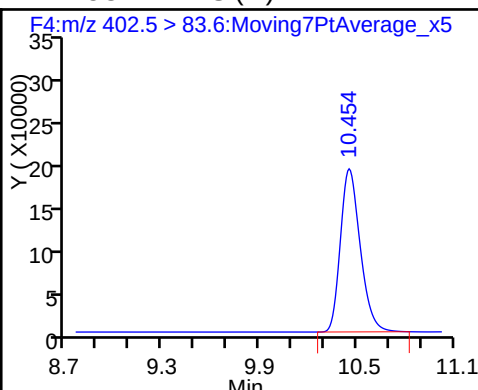
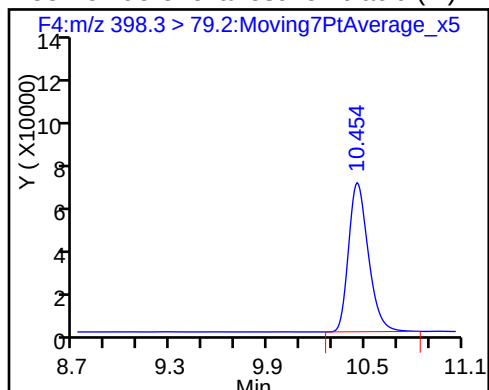
9 Perfluoroheptanoic acid (M)



58 Perfluorohexanesulfonic acid (M)

D 11 18O2 PFHxS (M)

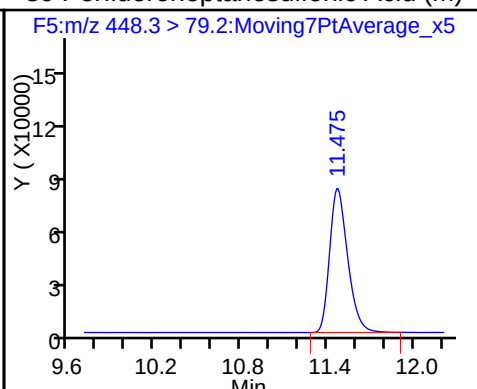
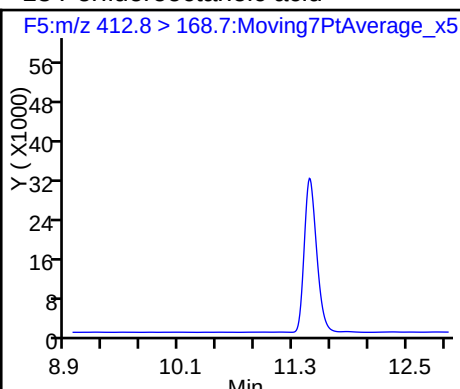
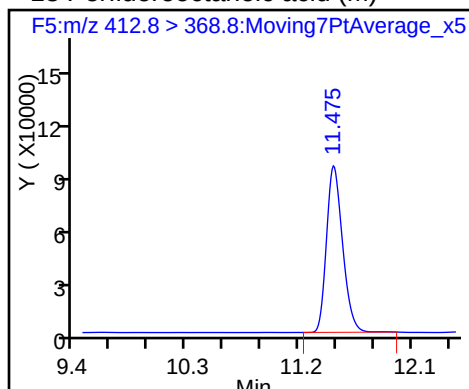
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid (M)

13 Perfluorooctanoic acid

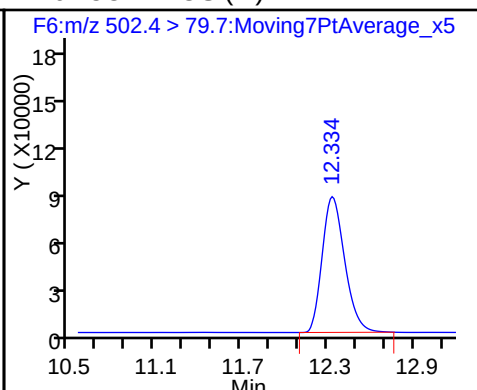
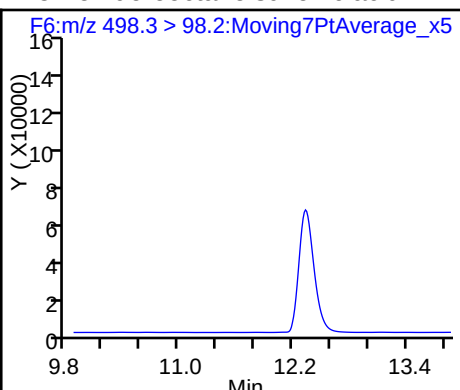
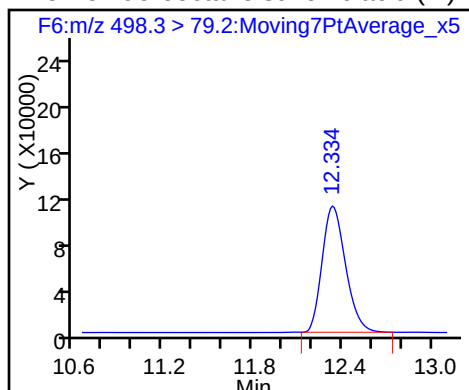
39 Perfluoroheptanesulfonic Acid (M)



15 Perfluorooctane sulfonic acid (M)

15 Perfluorooctane sulfonic acid

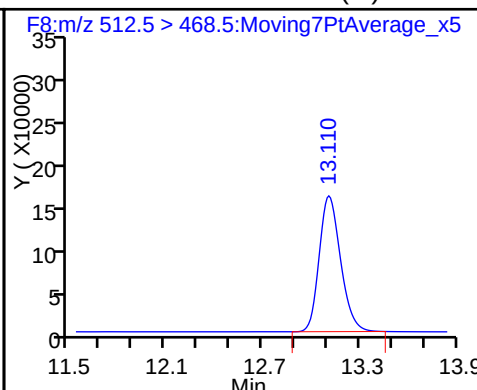
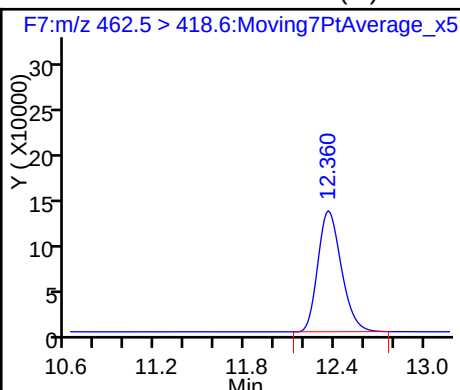
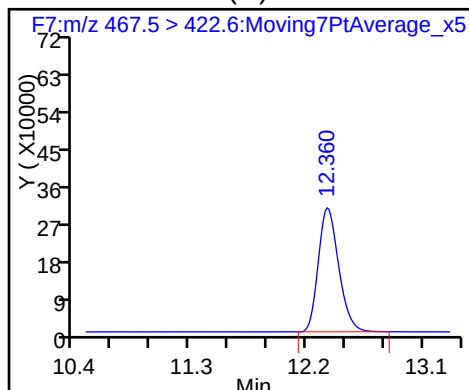
D 16 13C4 PFOS (M)



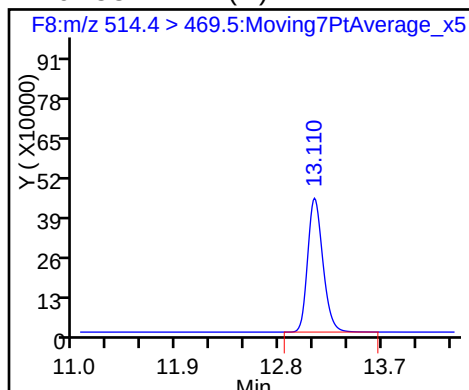
D 17 13C5 PFNA (M)

18 Perfluorononanoic acid (M)

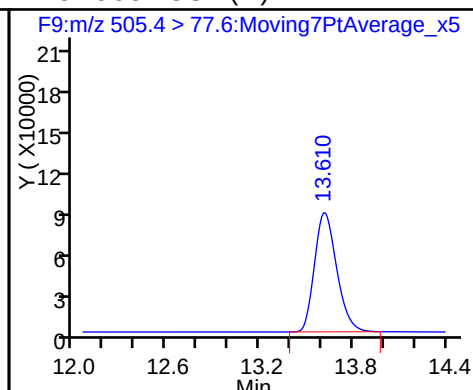
20 Perfluorodecanoic acid (M)



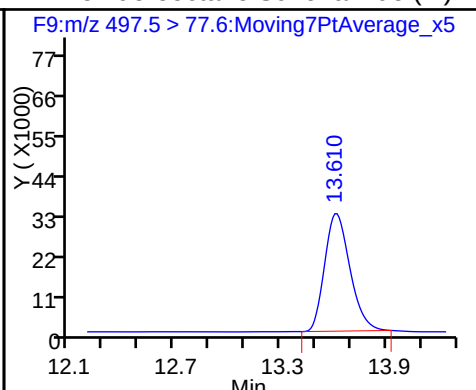
D 19 13C2 PFDA (M)



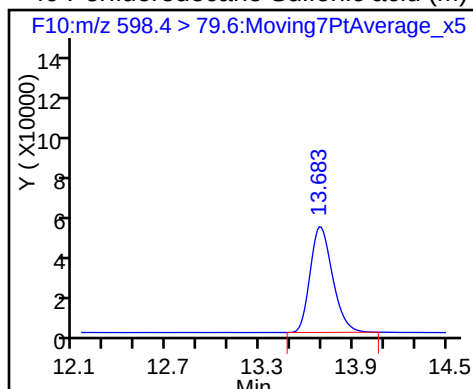
D 23 13C8 FOSA (M)



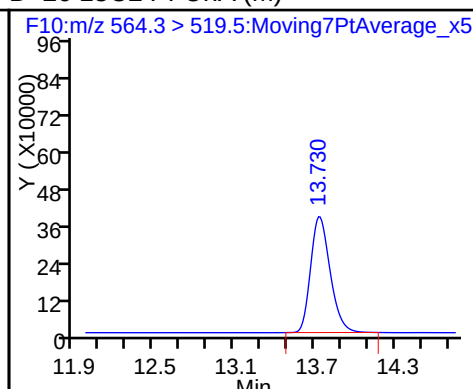
24 Perfluorooctane Sulfonamide (M)



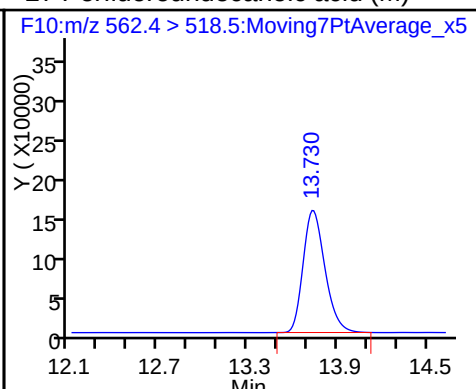
49 Perfluorodecane Sulfonic acid (M)



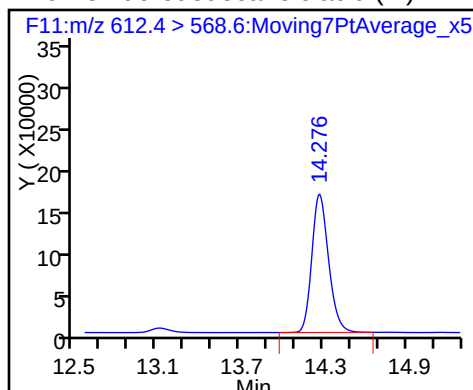
D 26 13C2 PFUnA (M)



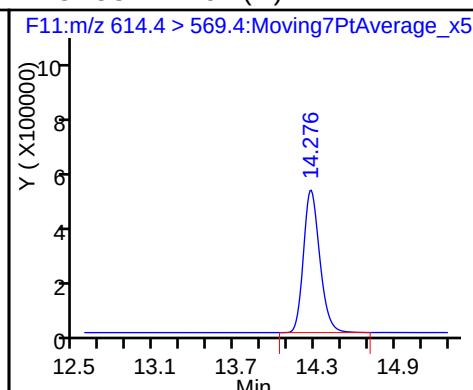
27 Perfluoroundecanoic acid (M)



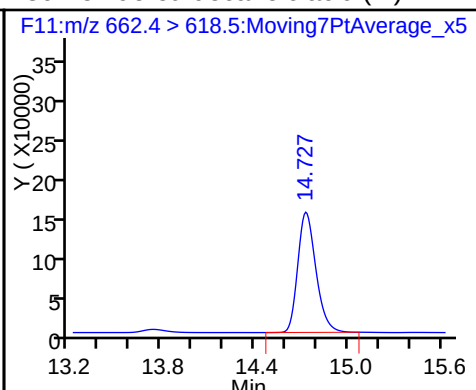
29 Perfluorododecanoic acid (M)



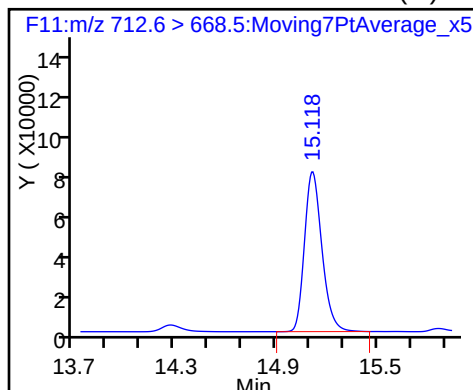
D 28 13C2 PFDoA (M)



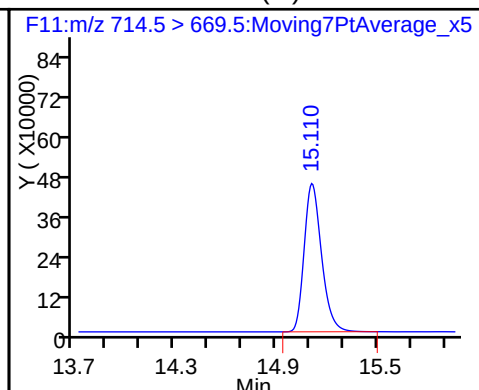
30 Perfluorotridecanoic acid (M)



32 Perfluorotetradecanoic acid (M)



D 33 13C2-PFTeDA (M)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-101659/2-A RA
 Matrix: Water Lab File ID: 29FEB2016A6B_009.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 500 (mL) Date Analyzed: 02/29/2016 19:40
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	37.6		4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		25-150
STL00990	13C4 PFOA	89		25-150
STL00991	13C4 PFOS	92		25-150
STL01892	13C4-PFHpA	94		25-150
STL00995	13C5 PFNA	85		25-150
STL00994	18O2 PFHxS	86		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_009.d
 Lims ID: LCS 320-101659/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 29-Feb-2016 19:40:05 ALS Bottle#: 4 Worklist Smp#: 9
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-101659/2-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.675	5.691	-0.016	1.000	441716	20.5		102	13353	
D 1 13C4 PFBA										
217.0 > 172.0	5.675	5.691	-0.016		774343	42.7		85.4	67251	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.762	6.790	-0.028	1.000	648699	21.2		106	183	
D 3 13C5-PFPeA										
267.9 > 223.0	6.762	6.791	-0.029		1637366	45.9		91.7	67528	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.872	6.905	-0.033	1.000	239481	NC			191	
298.9 > 99.0	6.877	6.905	-0.028	1.001	125721		1.90(0.00-0.00)		188	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.872	6.905	-0.033	1.000	239481	17.1		97.0		
D 6 13C2 PFHxA										
315.0 > 270.0	8.001	8.035	-0.034		1316917	45.7		91.4	69369	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.001	8.037	-0.036	1.000	589763	21.6		108	978	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.072	8.158	-0.086	0.872	176716	NC			2387	
D 8 13C4-PFHpA										
367.0 > 322.0	9.223	9.261	-0.038		1571288	46.9		93.8	123834	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.223	9.262	-0.039	1.000	616584	18.0		90.1	59.3	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.258	9.296	-0.038	1.000	172673	18.8		99.3		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.258	9.296	-0.038	1.000	172673	NC			8.9	
D 11 18O2 PFHxS										
403.0 > 84.0	9.252	9.297	-0.045		590821	40.7		86.0	46085	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.349	10.388	-0.039	1.000	573814	19.1		95.7	8.5	
413.0 > 169.0	10.349	10.388	-0.039	1.000	206315		2.78(0.00-0.00)		9.8	
D 12 13C4 PFOA										
417.0 > 372.0	10.349	10.389	-0.040		1591175	44.3		88.6	58001	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.356	10.394	-0.038	1.000	138600	NC			9952	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.356	10.394	-0.038	1.000	138600	13.4		70.4		
D 16 13C4 PFOS										
503.0 > 80.0	11.313	11.350	-0.037		732282	44.2		92.4	53015	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.313	11.350	-0.037	1.000	283100	18.8		98.4	672	
499.0 > 99.0	11.313	11.350	-0.037	1.000	153351		1.85(0.00-0.00)		1484	
D 17 13C5 PFNA										
468.0 > 423.0	11.328	11.368	-0.040		1314437	42.7		85.4	95275	
18 Perfluorononanoic acid										
463.0 > 419.0	11.328	11.370	-0.042	1.000	441967	20.1		101	5.7	
D 19 13C2 PFDA										
515.0 > 470.0	12.174	12.212	-0.038		1391322	49.9		99.9	62466	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.174	12.213	-0.039	1.000	529553	19.1		95.6	35962	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.143	12.249	-0.106	1.000	157008	NC			11199	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.722	12.759	-0.037	1.000	93397	21.7		109	5565	
D 23 13C8 FOSA										
506.0 > 78.0	12.722	12.759	-0.037		254103	6.32		12.6	14738	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.858	12.888	-0.030	1.000	161162	NC			9371	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.858	12.888	-0.030	1.000	161162	17.2		89.4		
D 26 13C2 PFUnA										
565.0 > 520.0	12.899	12.936	-0.037		1550364	41.8		83.5	90997	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.899	12.938	-0.039	1.000	588427	22.1		110	34621	
D 28 13C2 PFDaA										
615.0 > 570.0	13.506	13.550	-0.044		1729086	41.9		83.8	39385	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.506	13.552	-0.046	1.000	546409	20.7		104	221	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.025	14.075	-0.050	1.000	732256	22.8		114	1129	
31 PFDoS (Perfluoro-1-dodecanesulfona										
699.0 > 80.0	13.975	14.083	-0.108	1.000	165403	NC			11268	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.470	14.516	-0.046		1418044	41.9		83.7	54035	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.470	14.517	-0.047	1.000	375991	17.1		85.4	213	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.126	15.166	-0.040		1825354	47.0		94.1	21956	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.131	15.166	-0.035	1.000	781046	21.0		105	2473	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.457	15.496	-0.039	1.000	755007	21.9		109	1462	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_009.d

Injection Date: 29-Feb-2016 19:40:05

Instrument ID: A6

Lims ID: LCS 320-101659/2-A

Client ID:

Operator ID: JRB

ALS Bottle#: 4

Worklist Smp#: 9

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

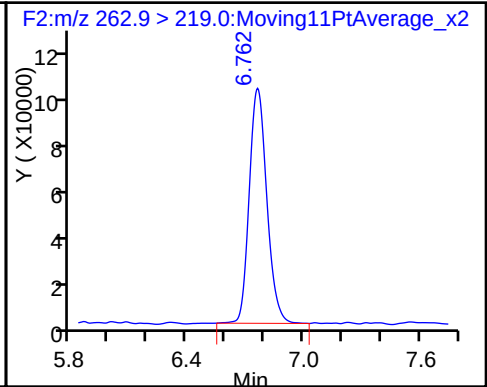
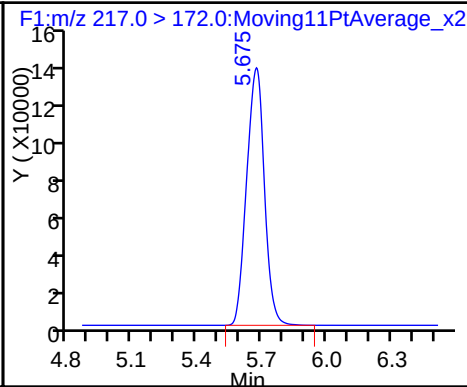
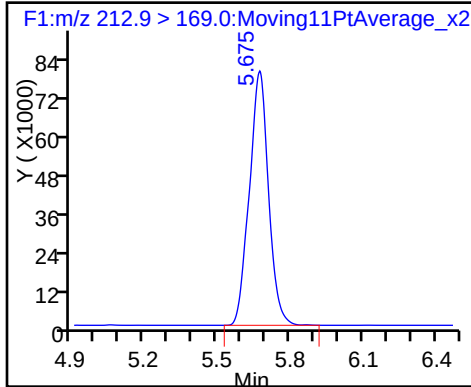
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

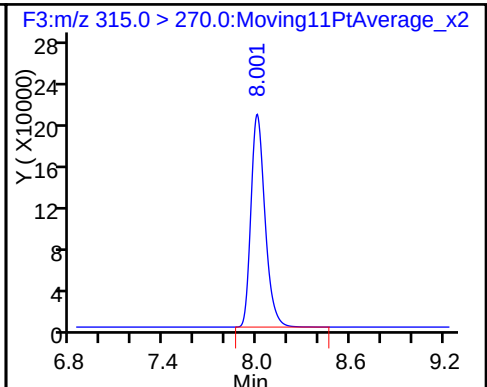
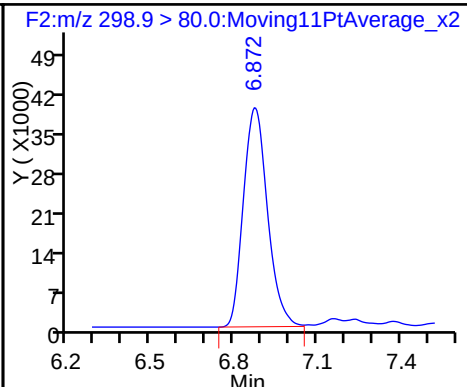
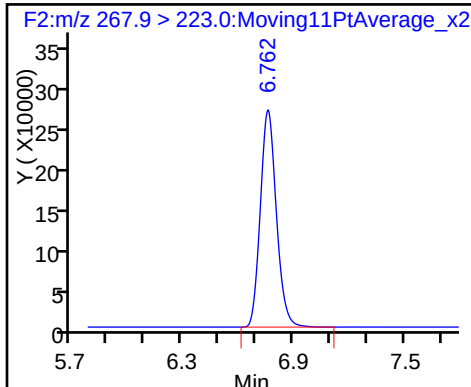
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

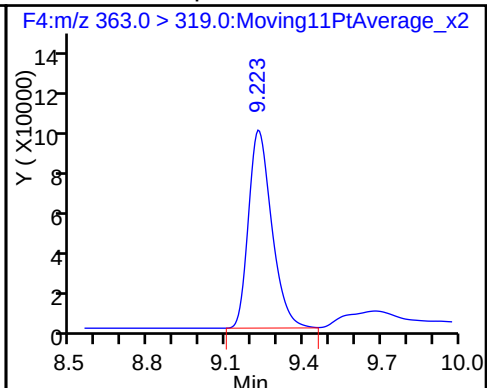
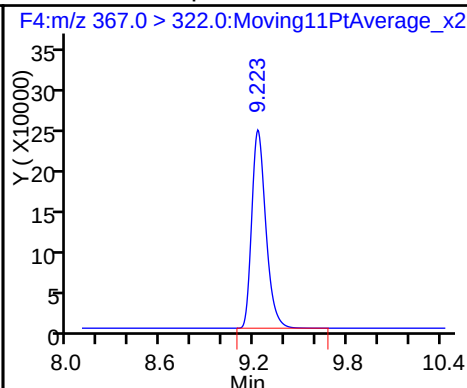
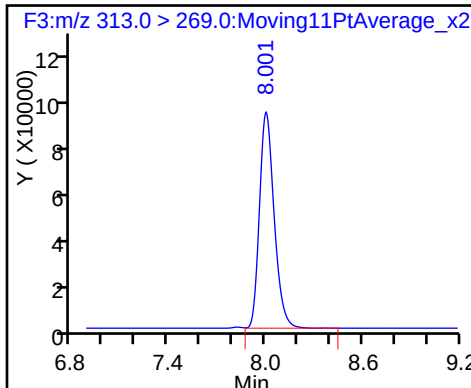
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

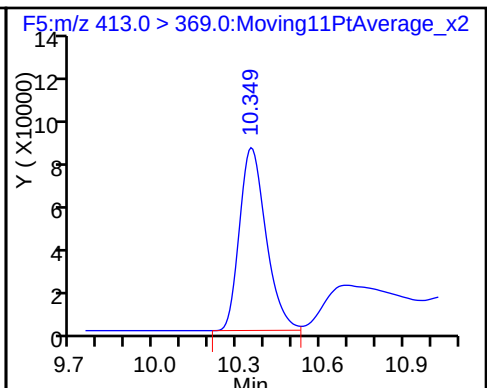
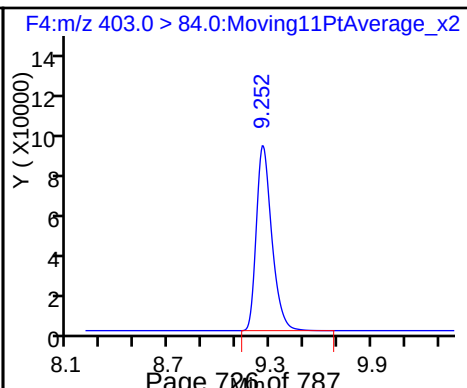
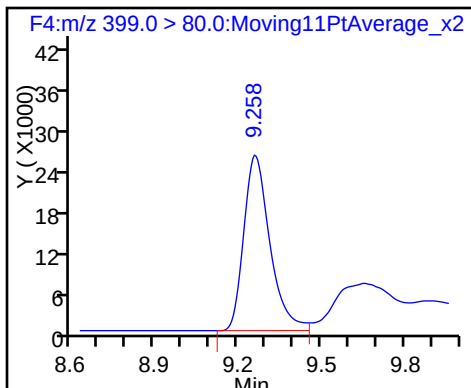
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

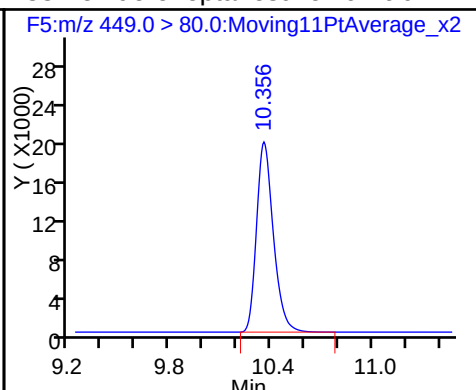
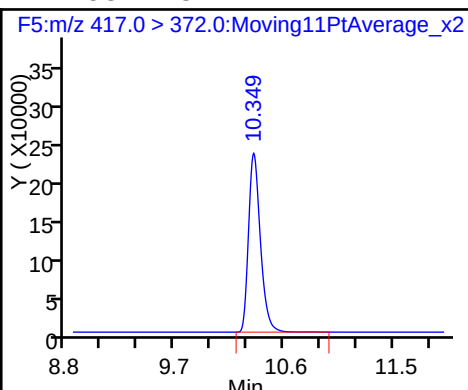
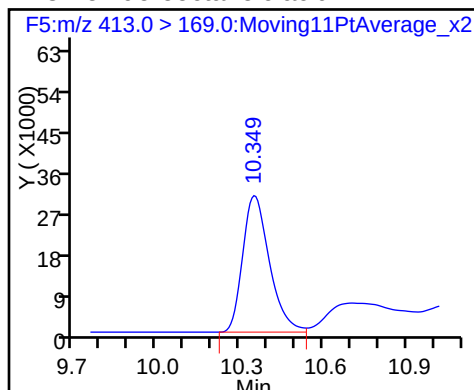
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

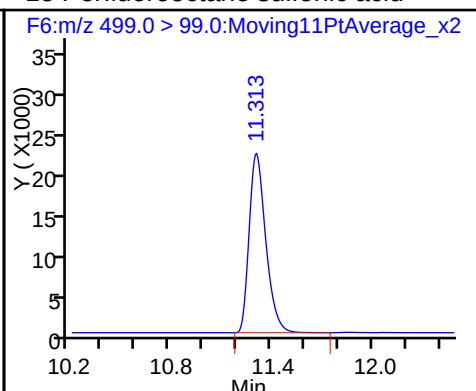
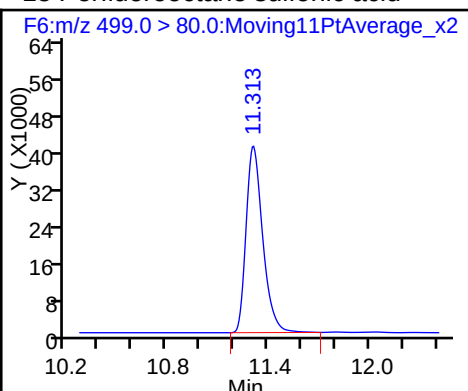
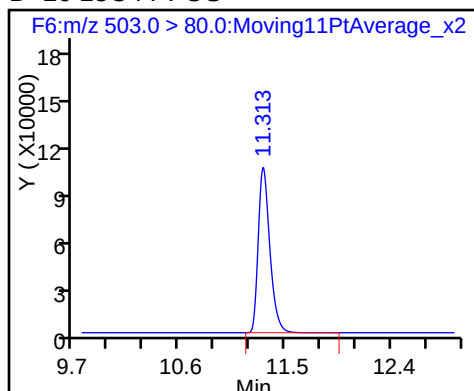
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

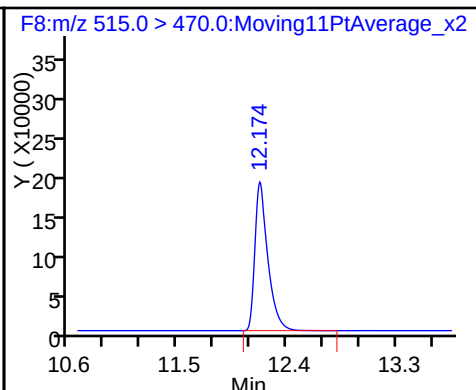
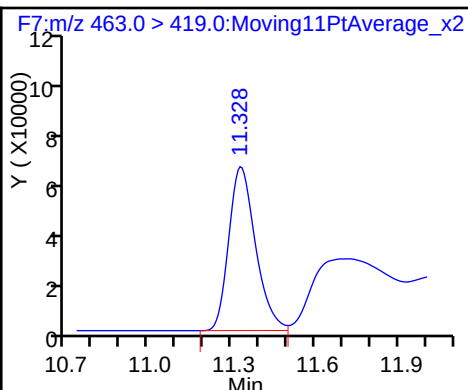
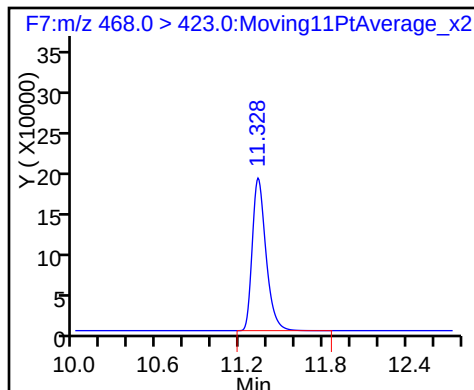
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

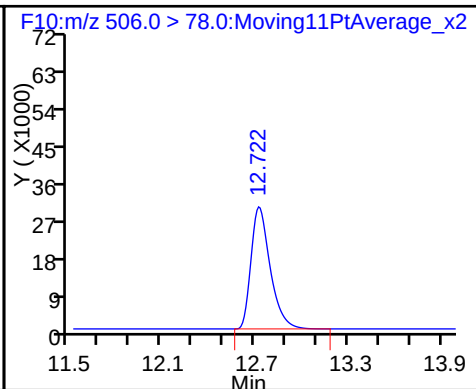
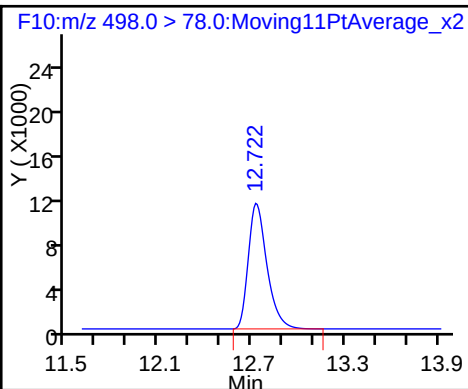
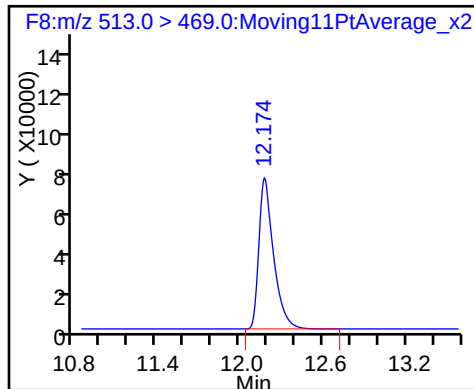
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

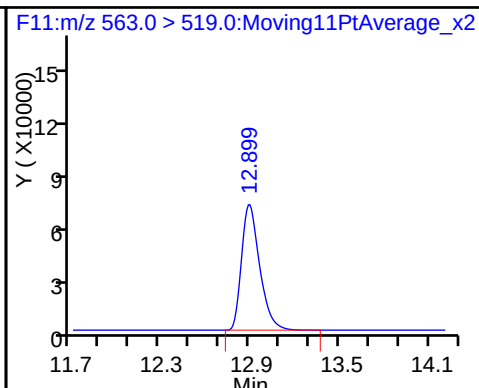
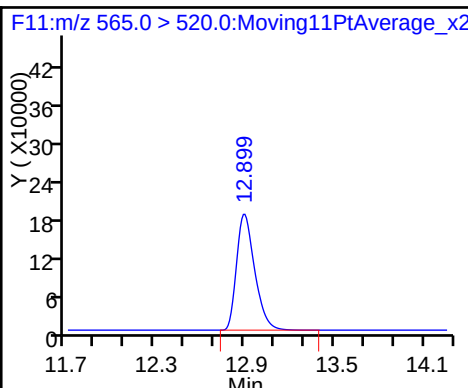
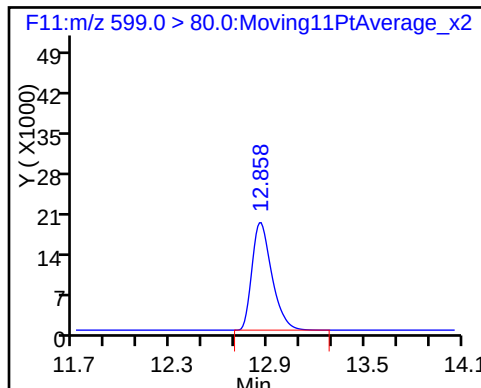
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

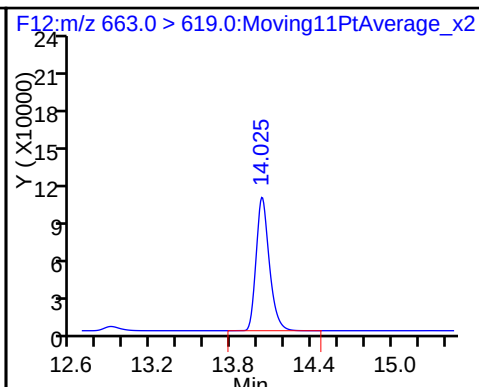
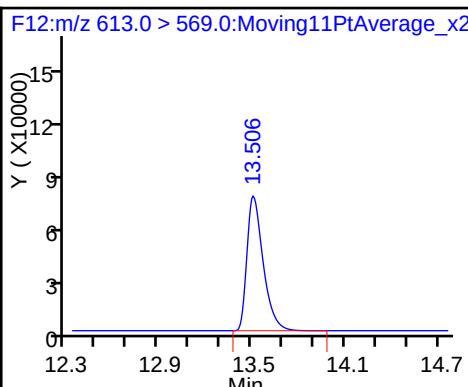
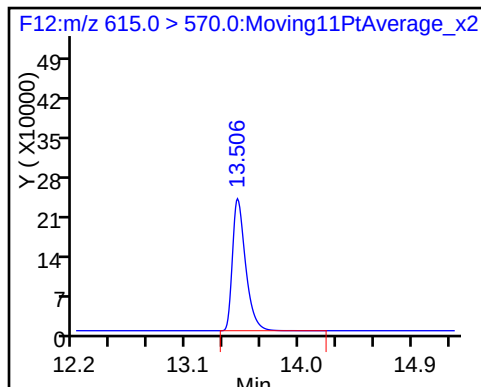
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

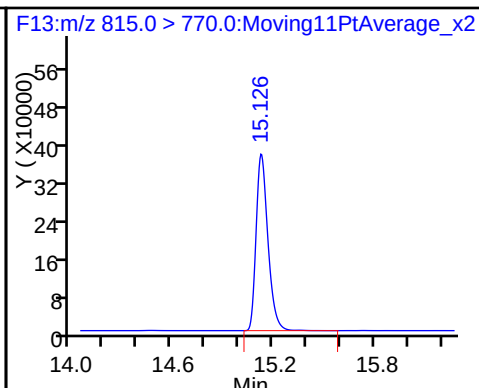
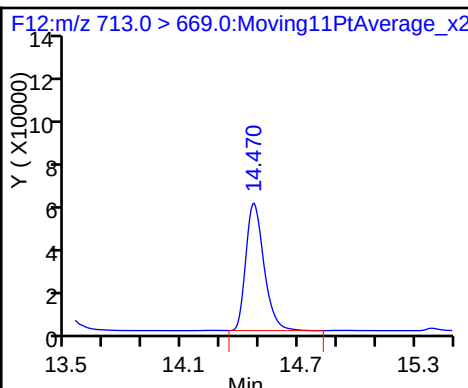
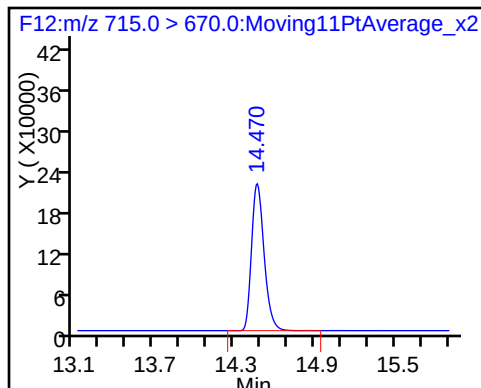
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

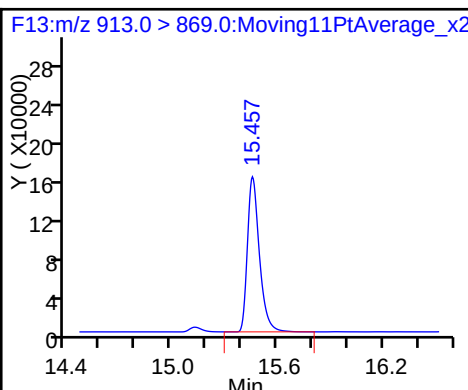
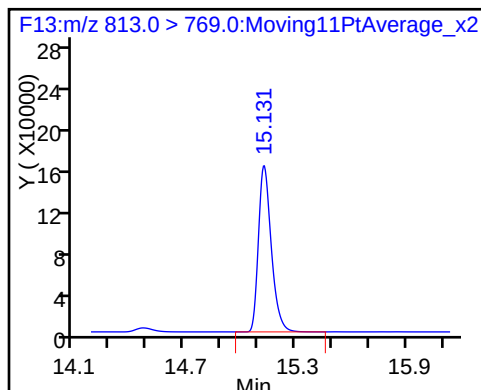
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-101543/3-A
 Matrix: Water Lab File ID: 26FEB2016A4A_017.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/25/2016 10:17
 Sample wt/vol: 500 (mL) Date Analyzed: 02/26/2016 21:20
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	40.8		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	34.5		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	30.8		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	39.2		2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	27.5		4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	39.1		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	106		25-150
STL00990	13C4 PFOA	101		25-150
STL00991	13C4 PFOS	150		25-150
STL01892	13C4-PFHpA	110		25-150
STL00995	13C5 PFNA	109		25-150
STL00994	18O2 PFHxS	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_017.d
 Lims ID: LCSD 320-101543/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 26-Feb-2016 21:20:44 ALS Bottle#: 3 Worklist Smp#: 13
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: LCSD 320-101543/3-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 10:18:18 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 11:18:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.221	6.043	0.178	1.000	915309	20.8		104	1609	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.221	6.043	0.178	1.000	915309	21.1		106	1609	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.221	6.043	0.178	1.000	915309	21.1		106	1609	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.221	6.043	0.178		915309	13.0		26.1	1609	
D 1 13C4 PFBA										
216.7 > 171.5	6.221	6.043	0.178		4488603	48.7		97.5	11665	
D 3 13C5-PFPeA										
267.6 > 222.7	7.535	7.272	0.263		2927541	48.5		97.1	5478	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.541	7.275	0.266	1.000	551192	19.0		95.0	266	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.679	7.404	0.275	1.000	485025	NC			705	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.679	7.404	0.275	1.000	485025	20.4		115		
7 Perfluorohexanoic acid										
312.9 > 268.7	8.909	8.604	0.305	1.000	734201	18.5		92.5	1408	
D 6 13C2 PFHxA										
314.6 > 269.7	8.909	8.604	0.305		4277266	53.1		106	7871	
D 8 13C4-PFHpA										
366.6 > 321.6	10.148	9.856	0.292		3744209	55.1		110	5846	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.148	9.859	0.289	1.000	691845	17.2		86.2	1238	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.182	9.892	0.290	1.000	620336	15.4		81.5		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.182	9.892	0.290	1.000	620336	NC			1202	
D 11 18O2 PFHxS										
402.5 > 83.6	10.182	9.892	0.290		1877081	51.7		109	4537	
D 12 13C4 PFOA										
416.5 > 371.6	11.217	10.958	0.259		3951294	50.4		101	5137	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.217	10.958	0.259	1.000	812601	19.6		97.9	501	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.217	10.960	0.257	1.000	730309	NC			2844	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.217	10.960	0.257	1.000	730309	12.4		65.1		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.105	11.874	0.231	1.000	1249775	13.7		71.8	1653	
D 16 13C4 PFOS										
502.4 > 79.7	12.105	11.876	0.229		1165210	71.5		150	2903	
D 17 13C5 PFNA										
467.5 > 422.6	12.136	11.898	0.238		3540340	54.6		109	5638	
18 Perfluorononanoic acid										
462.5 > 418.6	12.136	11.899	0.237	1.000	1450853	19.6		98.0	2051	
20 Perfluorodecanoic acid										
512.5 > 468.5	12.895	12.693	0.202	1.000	1527066	21.2		106	1903	
D 19 13C2 PFDA										
514.4 > 469.5	12.895	12.693	0.202		4095824	50.7		101	5065	
21 PFNS (Perflouro-1-nonanesulfonate)										
548.6 > 79.6	12.857	12.831	0.026	1.000	527343	NC			925	
D 23 13C8 FOSA										
505.4 > 77.6	13.421	13.222	0.199		2422352	21.4		42.8	2258	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.421	13.222	0.199	1.000	917171	20.7		103	1409	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.505	13.324	0.181	1.000	556677	NC			1168	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.505	13.324	0.181	1.000	556677	14.4		74.6		
D 26 13C2 PFUnA										
564.3 > 519.5	13.553	13.369	0.184		3782099	49.0		98.1	3027	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.553	13.372	0.181	1.000	1598290	19.2		96.2	1887	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.099	13.937	0.162	1.000	1403825	20.5		102	906	
D 28 13C2 PFDaA										
614.4 > 569.4	14.099	13.939	0.160		4278117	50.2		100	3604	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.570	14.430	0.140	1.000	1328209	19.8		98.9	918	
31 PFDaS (Perflouro-1-dodecanesulfona										
698.6 > 79.7	14.515	14.727	-0.212	1.000	298536	NC			1025	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	14.966	14.841	0.125	1.000	628897	19.7		98.5	541	

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_017.d

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 33 13C2-PFTeDA

714.5 > 669.5 14.966 14.844 0.122 3737065 54.1 108 3308

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_017.d

Injection Date: 26-Feb-2016 21:20:44

Instrument ID: A4

Lims ID: LCSD 320-101543/3-A

Client ID:

Operator ID: JRB

ALS Bottle#: 3

Worklist Smp#: 13

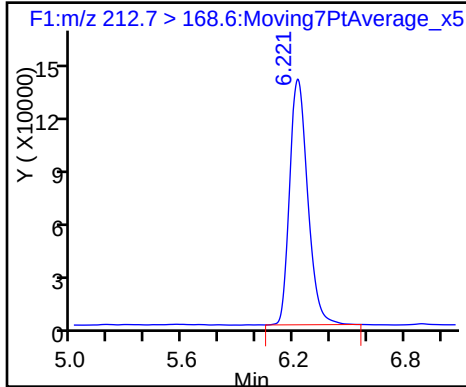
Injection Vol: 15.0 ul

Dil. Factor: 1.0000

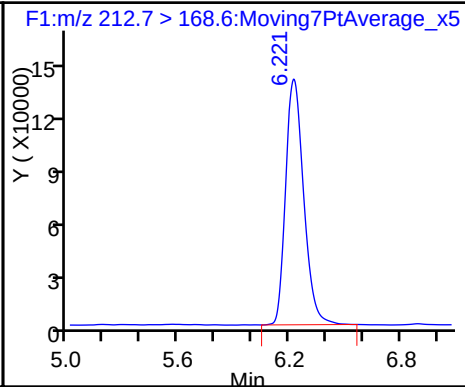
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Limit Group: LC PFC_DOD ICAL

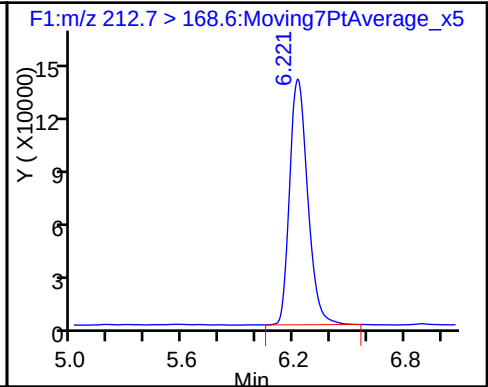
2 Perfluorobutyric acid



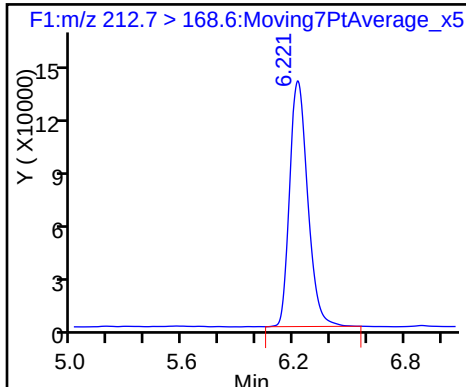
36 Perfluorooctadecanoic acid



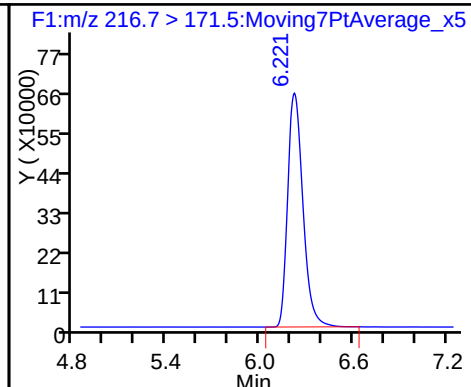
34 Perfluorohexadecanoic acid



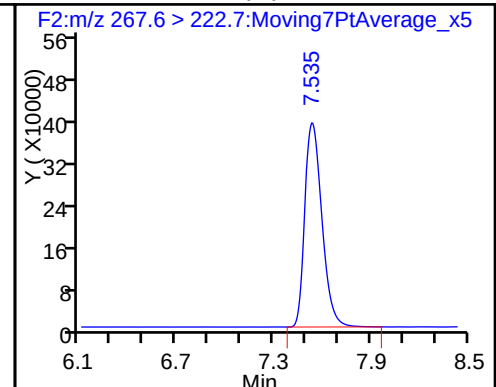
D 35 13C2-PFHxDA



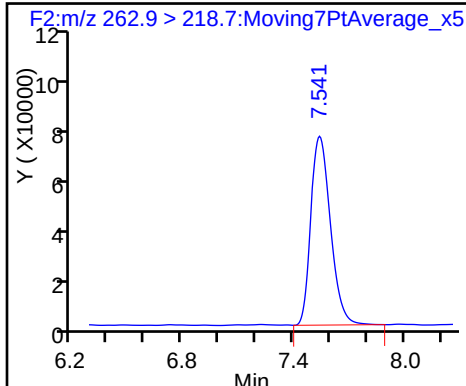
D 1 13C4 PFBA



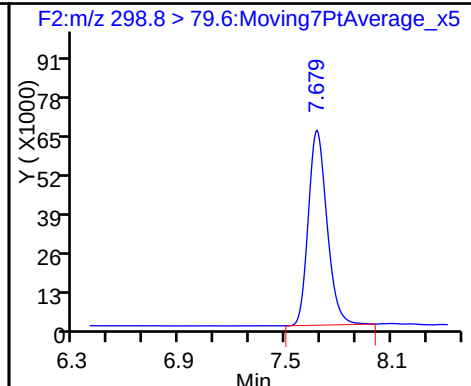
D 3 13C5-PFPeA (M)



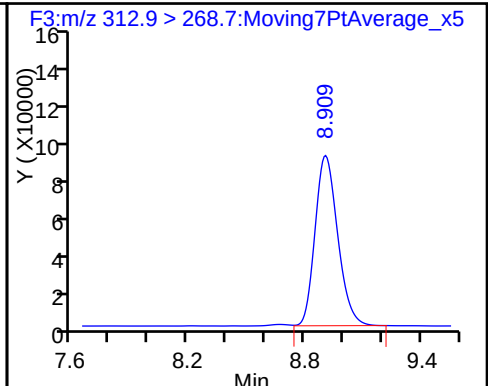
4 Perfluoropentanoic acid (M)



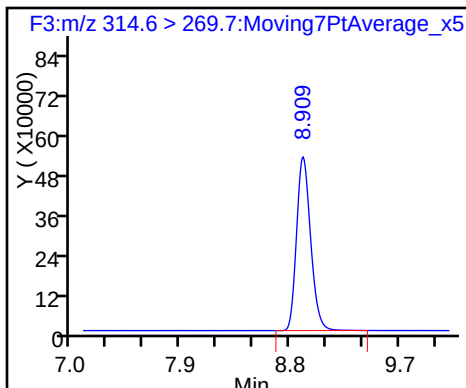
51 Perfluorobutanesulfonic acid



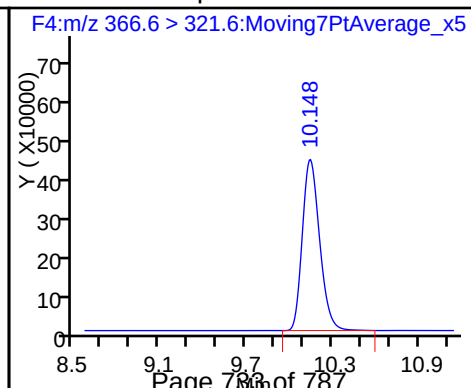
7 Perfluorohexanoic acid (M)



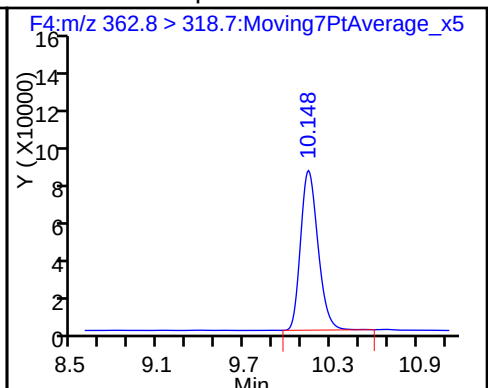
D 6 13C2 PFHxA



D 8 13C4-PFHpA



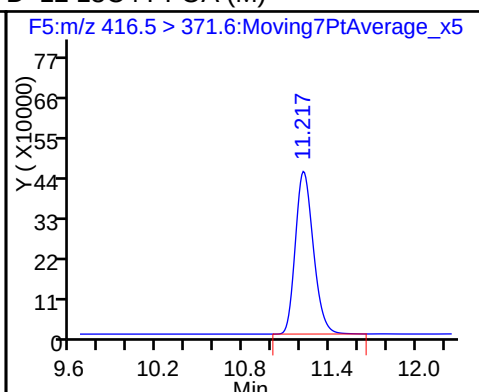
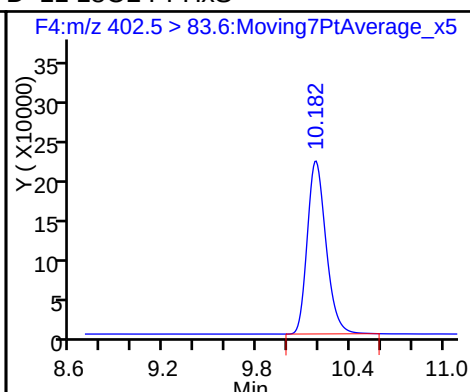
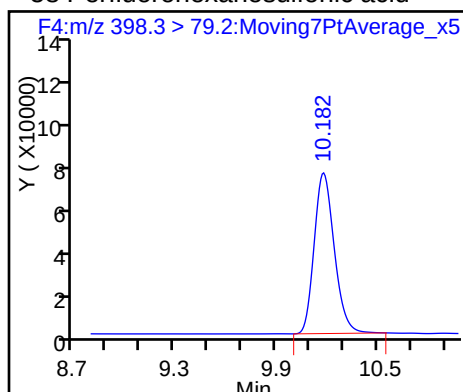
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

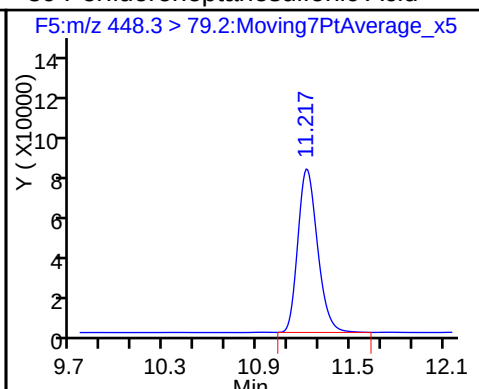
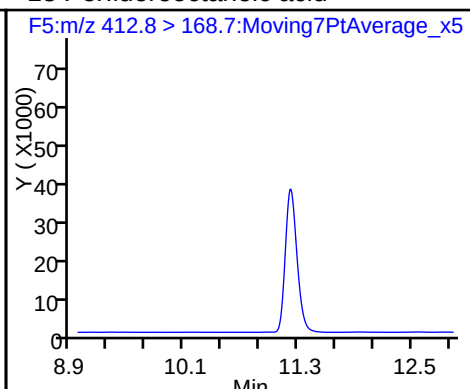
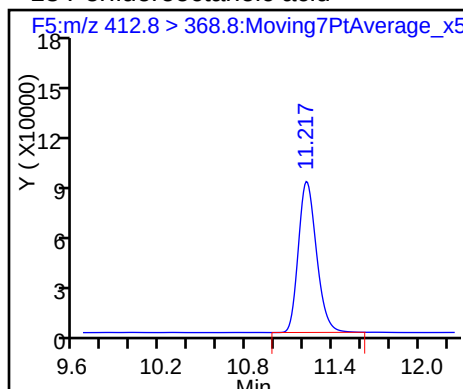
D 12 13C4 PFOA (M)



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

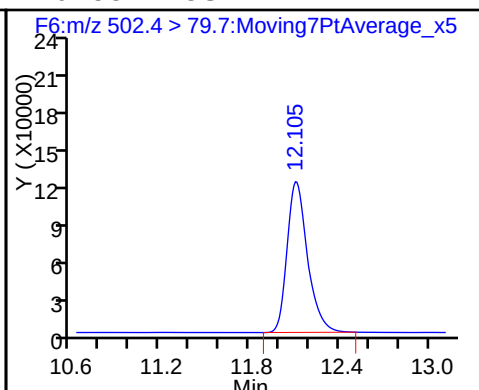
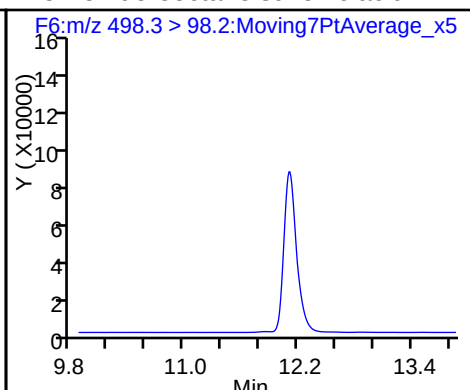
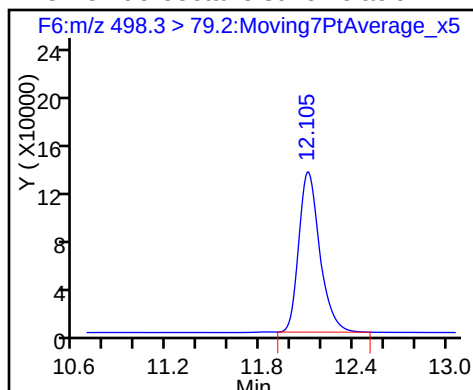
39 Perfluoroheptanesulfonic Acid



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

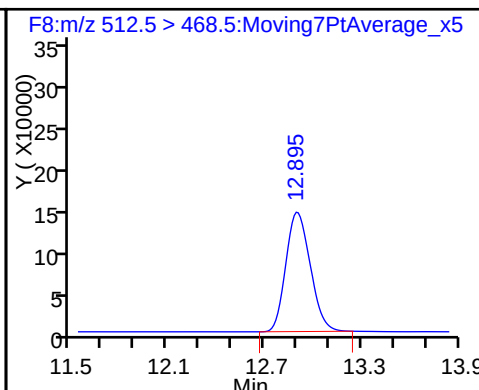
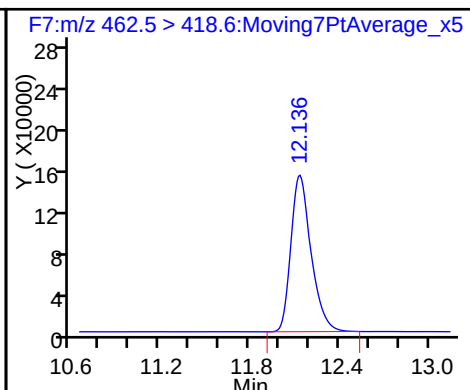
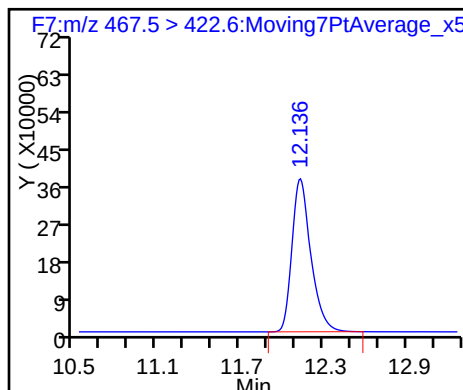
D 16 13C4 PFOS



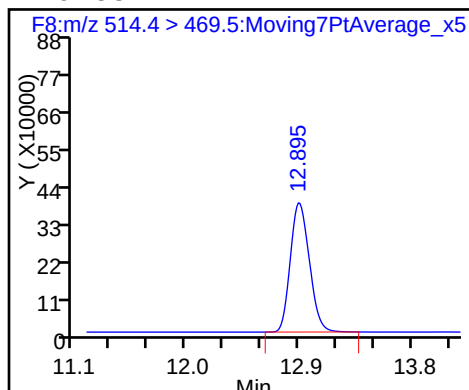
D 17 13C5 PFNA

18 Perfluorononanoic acid

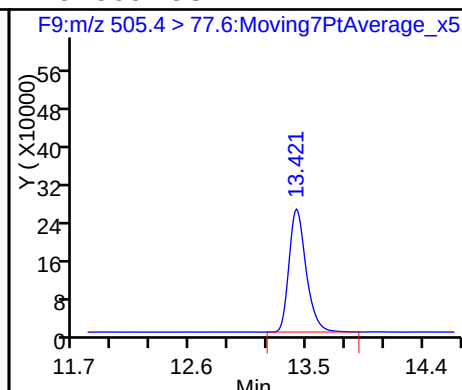
20 Perfluorodecanoic acid



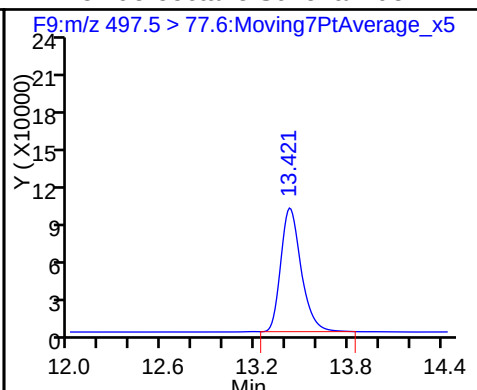
D 19 13C2 PFDA



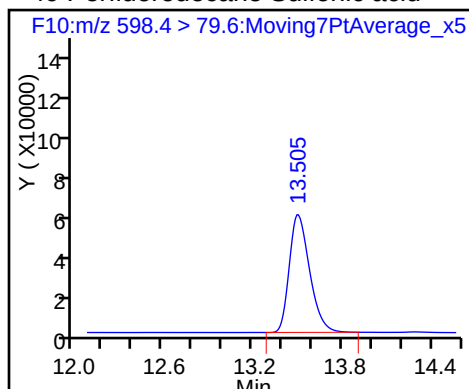
D 23 13C8 FOSA



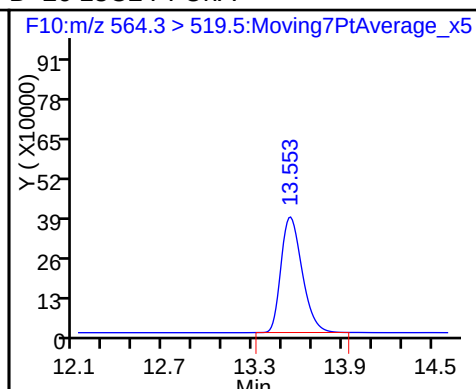
24 Perfluorooctane Sulfonamide



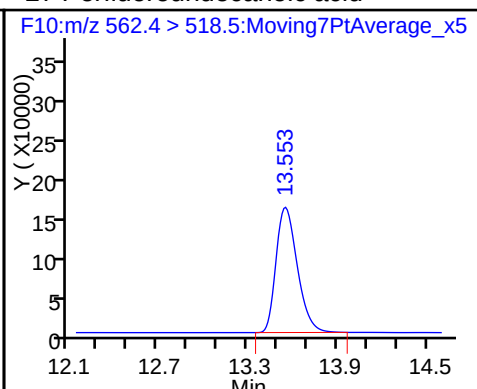
49 Perfluorodecane Sulfonic acid



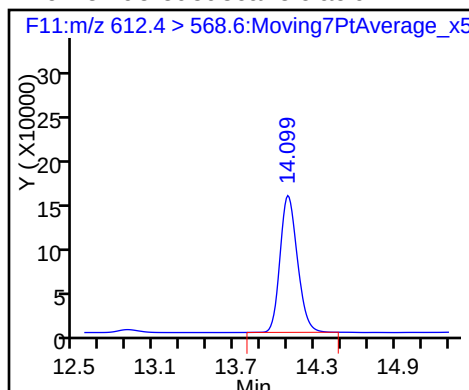
D 26 13C2 PFUnA



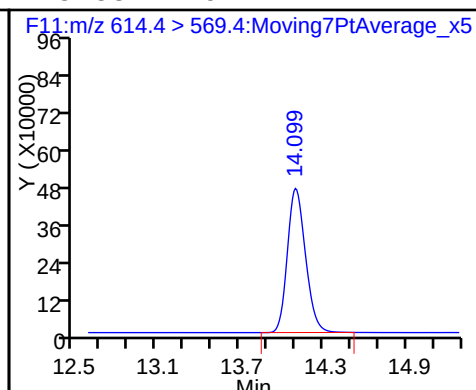
27 Perfluoroundecanoic acid



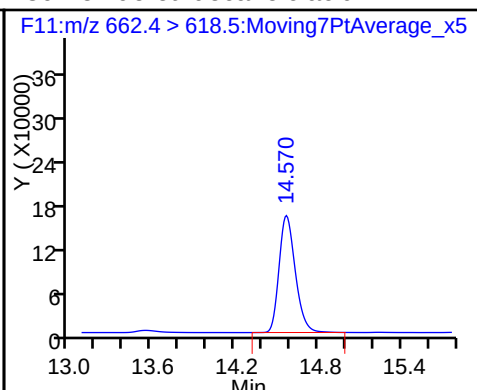
29 Perfluorododecanoic acid



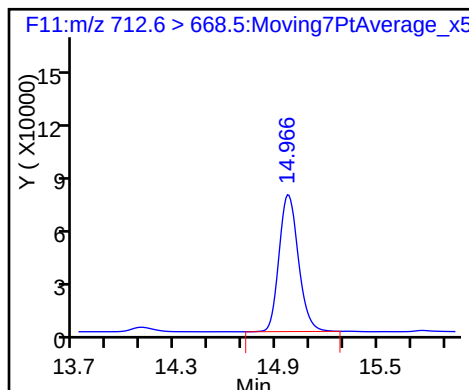
D 28 13C2 PFDaA



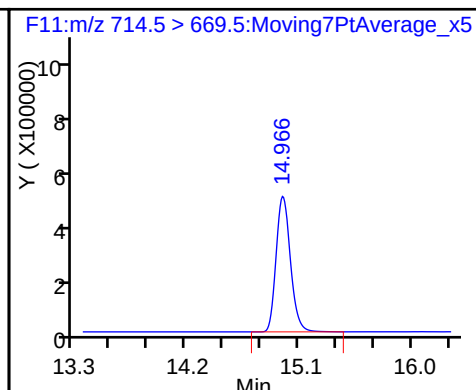
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-101659/3-A
 Matrix: Water Lab File ID: 26FEB2016A4A_040.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 500 (mL) Date Analyzed: 02/27/2016 11:13
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101820 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38.2		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	42.5		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	33.3		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	38.6		2.5	2.0	0.65
335-67-1	Perfluorooctanoic acid (PFOA)	39.5		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		25-150
STL00990	13C4 PFOA	91		25-150
STL00991	13C4 PFOS	117		25-150
STL01892	13C4-PFHpA	90		25-150
STL00995	13C5 PFNA	102		25-150
STL00994	18O2 PFHxS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_040.d
 Lims ID: LCSD 320-101659/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 27-Feb-2016 11:13:43 ALS Bottle#: 24 Worklist Smp#: 36
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: LCSD 320-101659/3-A
 Misc. Info.: Acquity BEH C18,1.7u, 3X150mm,T=35C
 Operator ID: JRB Instrument ID: A4
 Method: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\PFAC_A4.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Feb-2016 13:27:11 Calib Date: 26-Feb-2016 19:34:51
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_012.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK018

First Level Reviewer: barnettj

Date: 27-Feb-2016 12:07:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.7 > 168.6	6.359	6.043	0.316	1.000	866726	21.8		109	1643	
36 Perfluorooctadecanoic acid										
212.7 > 168.6	6.359	6.043	0.316	1.000	866726	19.3		96.7	1643	
34 Perfluorohexadecanoic acid										
212.7 > 168.6	6.359	6.043	0.316	1.000	866726	19.3		96.7	1643	
D 35 13C2-PFHxDA										
212.7 > 168.6	6.359	6.043	0.316		866726	12.3		24.7	1643	
D 1 13C4 PFBA										
216.7 > 171.5	6.355	6.043	0.312		4051075	44.0		88.0	9353	
D 3 13C5-PFPeA										
267.6 > 222.7	7.738	7.272	0.466		2691334	44.6		89.3	5901	
4 Perfluoropentanoic acid										
262.9 > 218.7	7.738	7.275	0.463	1.000	521625	19.6		97.8	249	
5 Perfluorobutane Sulfonate										
298.8 > 79.6	7.882	7.404	0.478	1.000	404847	NC			762	
51 Perfluorobutanesulfonic acid										
298.8 > 79.6	7.882	7.404	0.478	1.000	404847	19.1		108		
7 Perfluorohexanoic acid										
312.9 > 268.7	9.144	8.604	0.540	1.000	683484	20.4		102	986	
D 6 13C2 PFHxA										
314.6 > 269.7	9.144	8.604	0.540		3610671	44.8		89.6	7267	
D 8 13C4-PFHpA										
366.6 > 321.6	10.386	9.856	0.530		3072785	45.2		90.5	5289	
9 Perfluoroheptanoic acid										
362.8 > 318.7	10.386	9.859	0.527	1.000	700675	21.3		106	1702	
58 Perfluorohexanesulfonic acid										
398.3 > 79.2	10.420	9.892	0.528	1.000	597064	16.7		88.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluorohexane Sulfonate										
398.3 > 79.2	10.420	9.892	0.528	1.000	597064	NC			1068	
D 11 18O2 PFHxS										
402.5 > 83.6	10.420	9.892	0.528		1671941	46.1		97.4	3097	
D 12 13C4 PFOA										
416.5 > 371.6	11.447	10.958	0.489		3579426	45.7		91.3	5426	
13 Perfluorooctanoic acid										
412.8 > 368.8	11.447	10.958	0.489	1.000	742381	19.7		98.7	566	
14 Perfluoroheptane Sulfonate										
448.3 > 79.2	11.447	10.960	0.487	1.000	744907	NC			2658	
39 Perfluoroheptanesulfonic Acid										
448.3 > 79.2	11.447	10.960	0.487	1.000	744907	16.1		84.7		
15 Perfluorooctane sulfonic acid										
498.3 > 79.2	12.308	11.874	0.434	1.000	1098795	15.4		80.5	1910	
D 16 13C4 PFOS										
502.4 > 79.7	12.308	11.876	0.432		913675	56.0		117	1784	
D 17 13C5 PFNA										
467.5 > 422.6	12.335	11.898	0.437		3318230	51.2		102	6756	
18 Perfluorononanoic acid										
462.5 > 418.6	12.335	11.899	0.436	1.000	1339094	19.3		96.6	1746	
20 Perfluorodecanoic acid										
512.5 > 468.5	13.089	12.693	0.396	1.000	1429495	20.4		102	2836	
D 19 13C2 PFDA										
514.4 > 469.5	13.089	12.693	0.396		3982807	49.3		98.6	7070	
21 PFNS (Perflouro-1-nonanesulfonate)										
548.6 > 79.6	13.048	12.831	0.217	1.000	523780	NC			1758	
D 23 13C8 FOSA										
505.4 > 77.6	13.598	13.222	0.376		928150	8.20		16.4	2023	
24 Perfluorooctane Sulfonamide										
497.5 > 77.6	13.598	13.222	0.376	1.000	370335	21.8		109	1092	
25 Perfluorodecane Sulfonate										
598.4 > 79.6	13.671	13.324	0.347	1.000	547305	NC			1335	
49 Perfluorodecane Sulfonic acid										
598.4 > 79.6	13.671	13.324	0.347	1.000	547305	18.0		93.6		
D 26 13C2 PFUnA										
564.3 > 519.5	13.719	13.369	0.350		4046789	52.5		105	4756	
27 Perfluoroundecanoic acid										
562.4 > 518.5	13.719	13.372	0.347	1.000	1677565	18.9		94.4	2060	
29 Perfluorododecanoic acid										
612.4 > 568.6	14.257	13.937	0.320	1.000	1543269	21.8		109	806	
D 28 13C2 PFDaA										
614.4 > 569.4	14.257	13.939	0.318		4421996	51.9		104	3631	
30 Perfluorotridecanoic acid										
662.4 > 618.5	14.718	14.430	0.288	1.000	1229767	17.7		88.6	873	
31 PFDaS (Perflouro-1-dodecanesulfona										
698.6 > 79.7	14.662	14.727	-0.065	1.000	266504	NC			987	
32 Perfluorotetradecanoic acid										
712.6 > 668.5	15.095	14.841	0.254	1.000	512420	18.6		92.8	525	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 33 13C2-PFTeDA

714.5 > 669.5 15.095 14.844 0.251 3463334 50.2 100 2850

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A4\20160227-28708.b\26FEB2016A4A_040.d

Injection Date: 27-Feb-2016 11:13:43

Instrument ID: A4

Lims ID: LCSD 320-101659/3-A

Client ID:

Operator ID: JRB

ALS Bottle#: 24

Worklist Smp#: 36

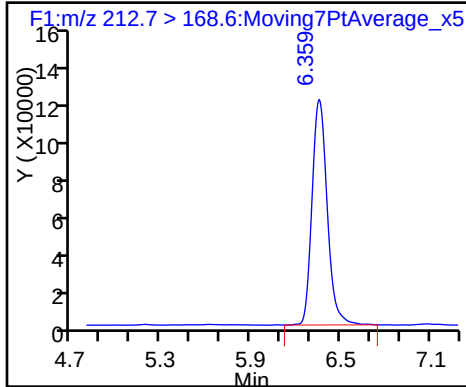
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Dil. Factor: 1.0000

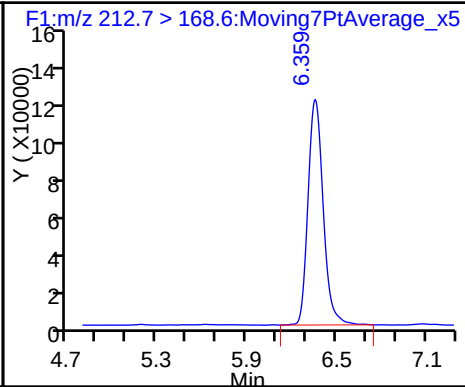
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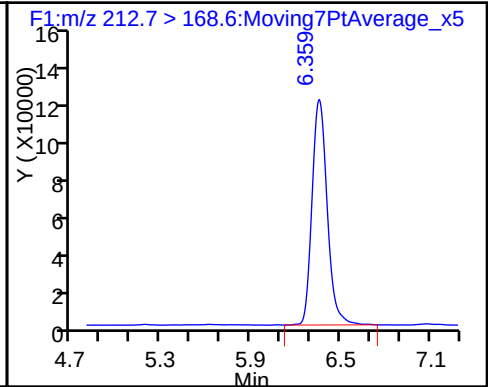
2 Perfluorobutyric acid



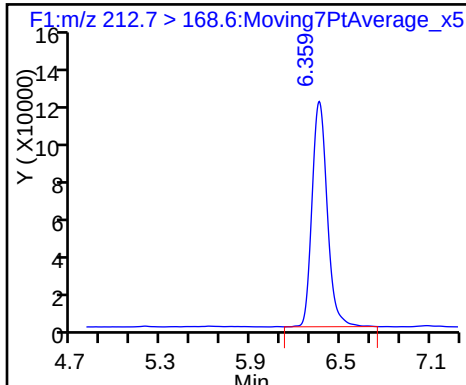
36 Perfluorooctadecanoic acid



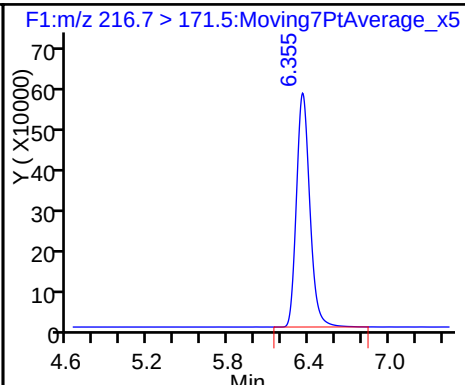
34 Perfluorohexadecanoic acid



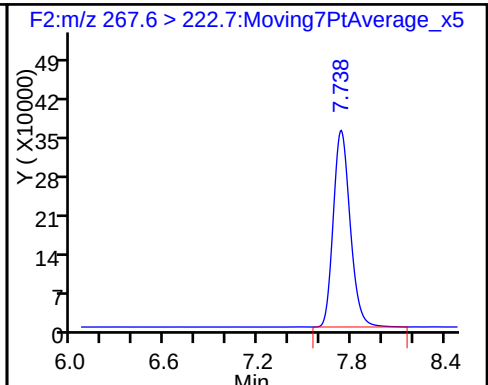
D 35 13C2-PFHxDA



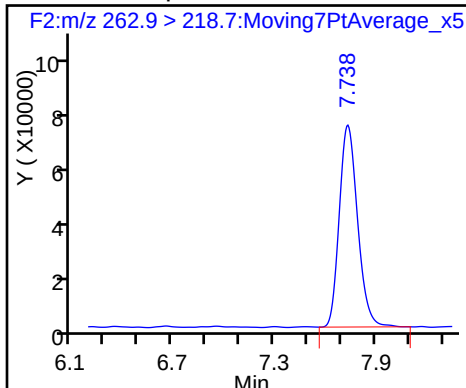
D 1 13C4 PFBA



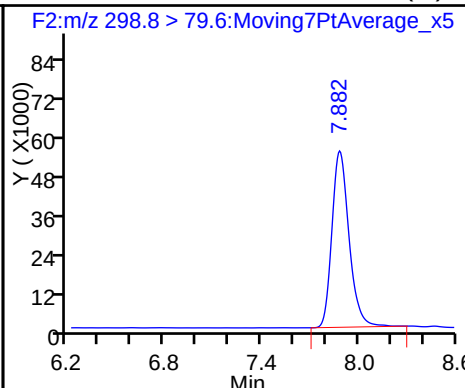
D 3 13C5-PFPeA



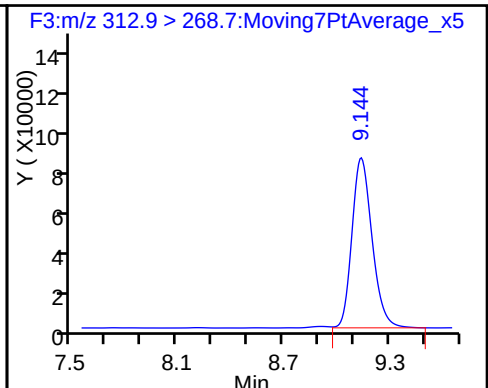
4 Perfluoropentanoic acid



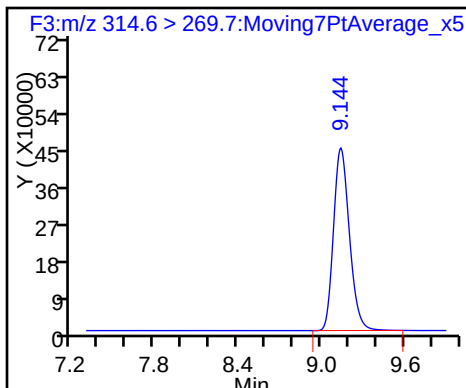
51 Perfluorobutanesulfonic acid (M)



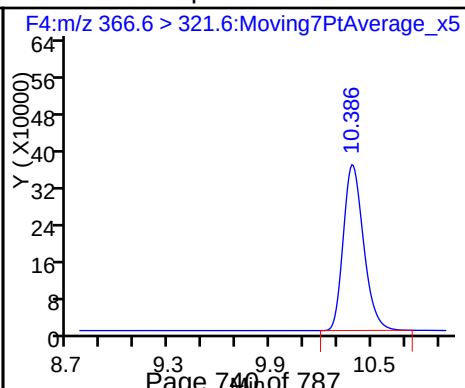
7 Perfluorohexanoic acid



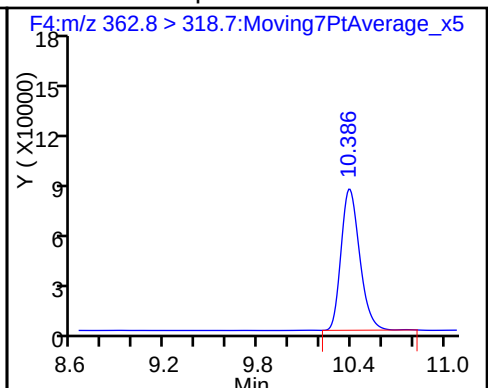
D 6 13C2 PFHxA



D 8 13C4-PFHpA



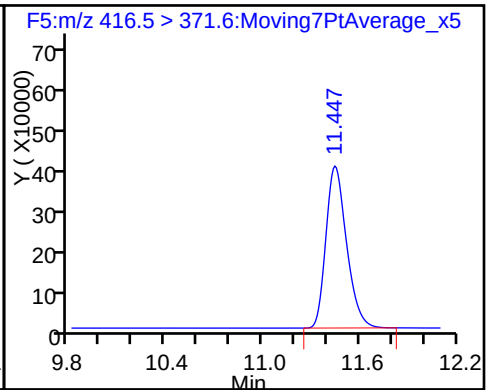
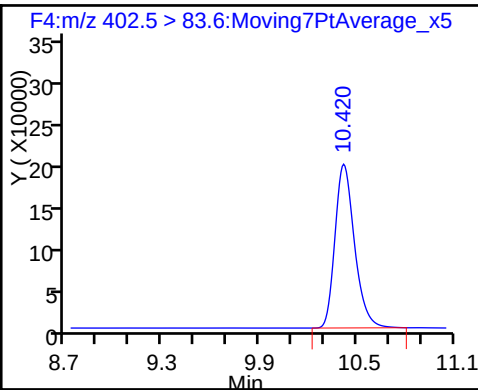
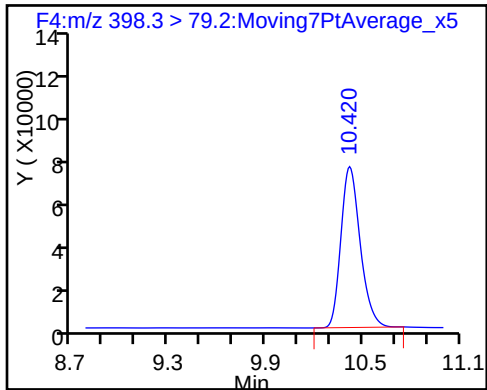
9 Perfluoroheptanoic acid



58 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

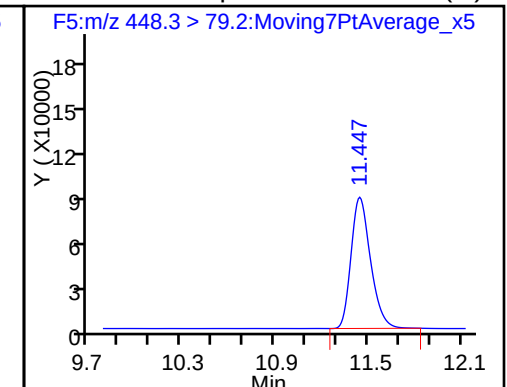
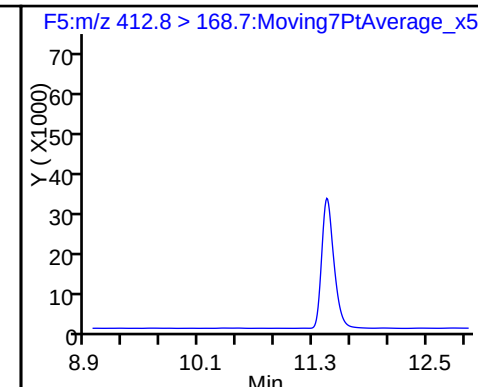
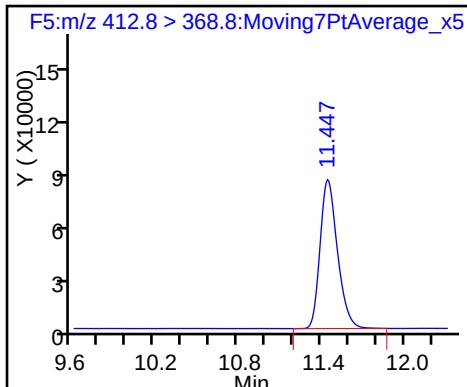
D 12 13C4 PFOA



13 Perfluorooctanoic acid

13 Perfluorooctanoic acid

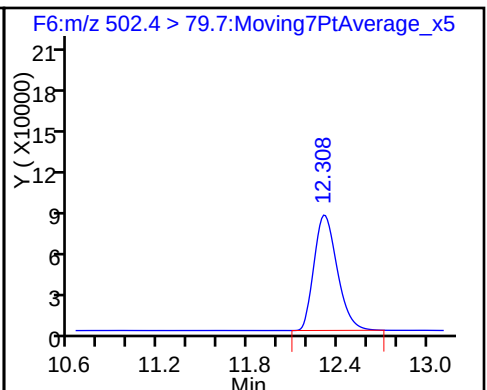
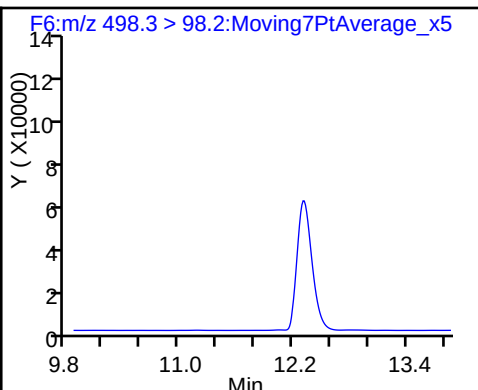
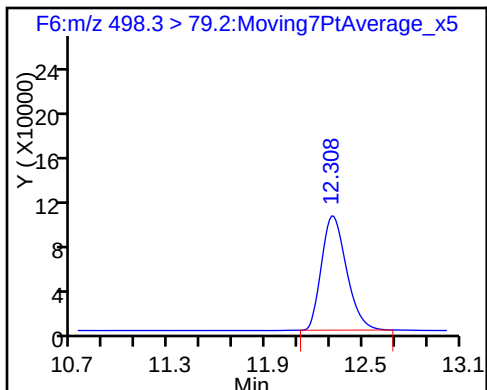
39 Perfluoroheptanesulfonic Acid (M)



15 Perfluorooctane sulfonic acid

15 Perfluorooctane sulfonic acid

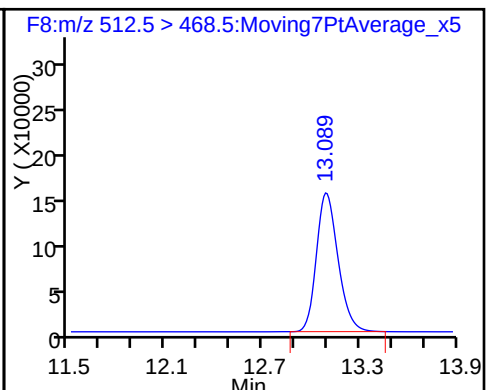
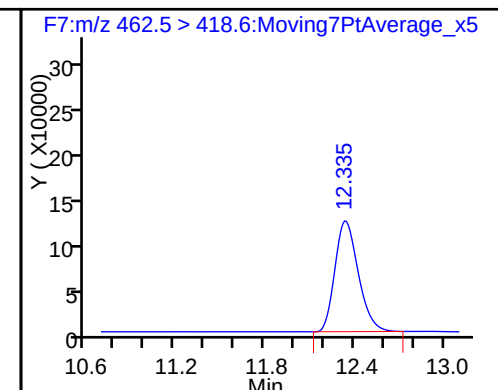
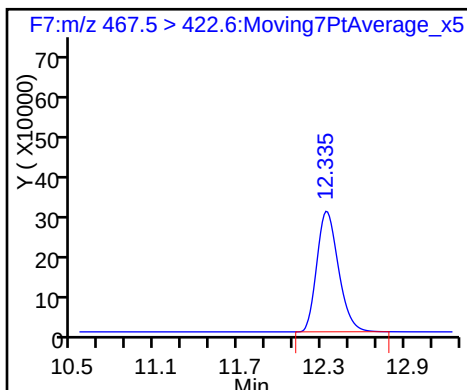
D 16 13C4 PFOS



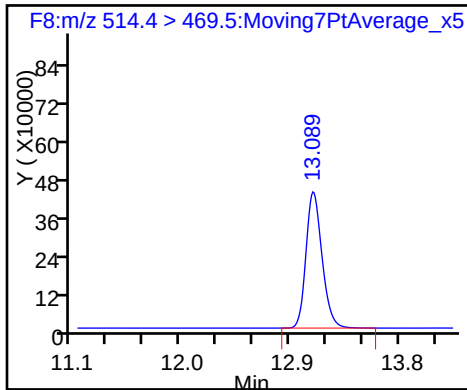
D 17 13C5 PFNA

18 Perfluorononanoic acid

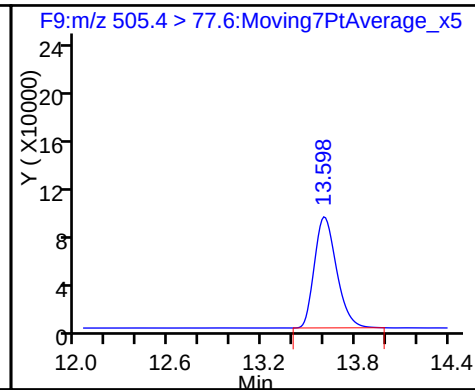
20 Perfluorodecanoic acid



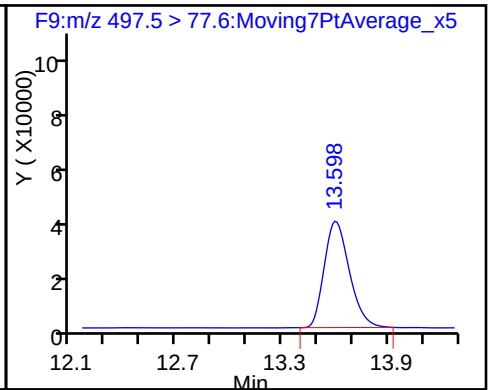
D 19 13C2 PFDA



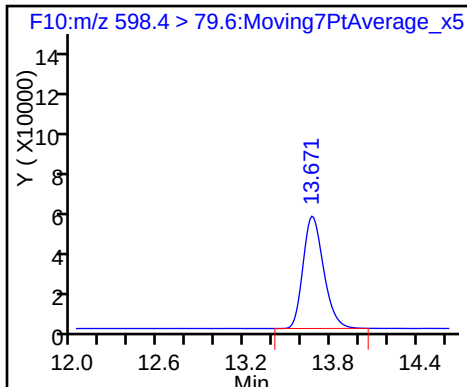
D 23 13C8 FOSA



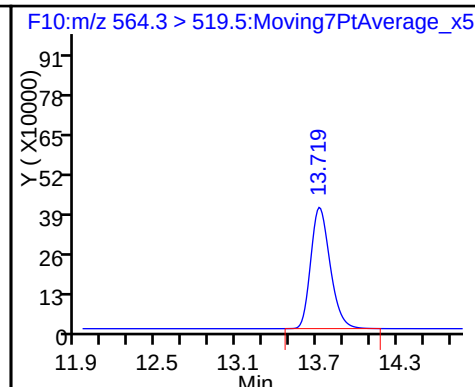
24 Perfluorooctane Sulfonamide



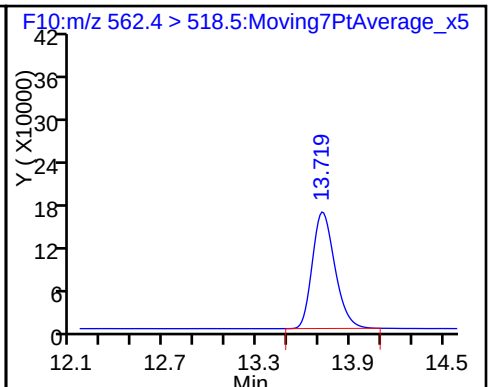
49 Perfluorodecane Sulfonic acid



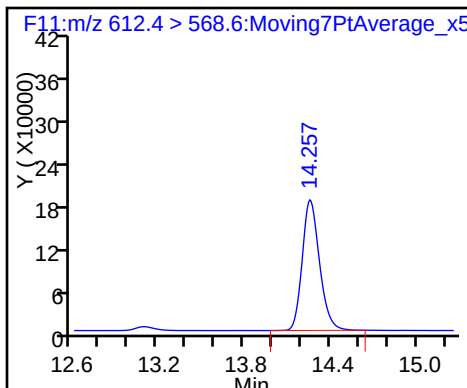
D 26 13C2 PFUnA



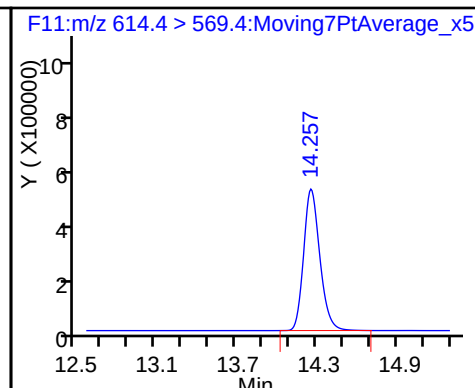
27 Perfluoroundecanoic acid



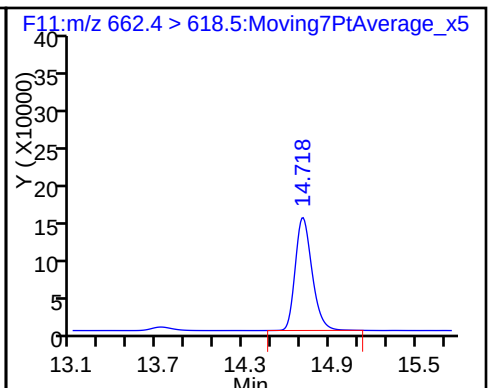
29 Perfluorododecanoic acid



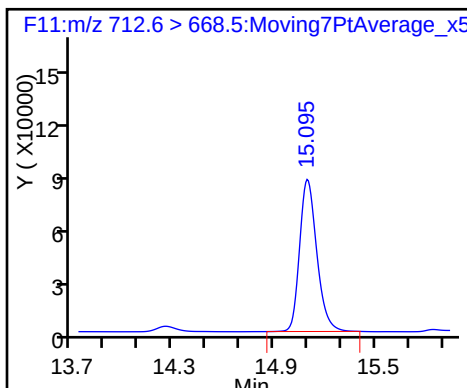
D 28 13C2 PFDaA



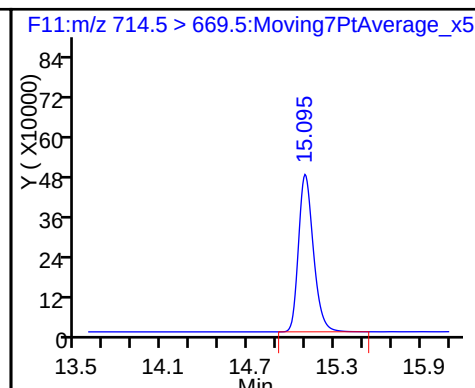
30 Perfluorotridecanoic acid



32 Perfluorotetradecanoic acid



D 33 13C2-PFTeDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-101659/3-A RA
 Matrix: Water Lab File ID: 29FEB2016A6B_010.d
 Analysis Method: WS-LC-0025 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 02/26/2016 08:58
 Sample wt/vol: 500 (mL) Date Analyzed: 02/29/2016 20:01
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 15 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 101944 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	42.2		4.0	3.0	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		25-150
STL00990	13C4 PFOA	87		25-150
STL00991	13C4 PFOS	84		25-150
STL01892	13C4-PFHpA	91		25-150
STL00995	13C5 PFNA	85		25-150
STL00994	18O2 PFHxS	90		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_010.d
 Lims ID: LCSD 320-101659/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 29-Feb-2016 20:01:20 ALS Bottle#: 5 Worklist Smp#: 10
 Injection Vol: 15.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-101659/3-a
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=50*C
 Operator ID: JRB Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\PFAC_A6.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 01-Mar-2016 10:48:54 Calib Date: 28-Feb-2016 16:42:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20160229-28721.b\28FEB2016A6A_010.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK033

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.9 > 169.0	5.687	5.691	-0.004	1.000	444664	20.6		103	4135	
D 1 13C4 PFBA										
217.0 > 172.0	5.678	5.691	-0.013		773551	42.7		85.3	45491	
4 Perfluoropentanoic acid										
262.9 > 219.0	6.780	6.790	-0.010	1.000	665721	22.0		110	153	
D 3 13C5-PFPeA										
267.9 > 223.0	6.780	6.791	-0.011		1613542	45.2		90.4	44556	
5 Perfluorobutane Sulfonate										
298.9 > 80.0	6.896	6.905	-0.009	1.000	241455	NC			73.0	
298.9 > 99.0	6.896	6.905	-0.009	1.000	123413		1.96(0.00-0.00)		129	
40 Perfluorobutanesulfonic acid										
298.9 > 80.0	6.896	6.905	-0.009	1.000	241455	16.6		93.7		
D 6 13C2 PFHxA										
315.0 > 270.0	8.024	8.035	-0.011		1371492	47.6		95.2	74204	
7 Perfluorohexanoic acid										
313.0 > 269.0	8.024	8.037	-0.013	1.000	630618	22.2		111	4766	
22 PFPeS (Perflouro-1-pentanesulfonat										
349.0 > 80.0	8.100	8.158	-0.058	0.873	160228	NC			13043	
D 8 13C4-PFHpA										
367.0 > 322.0	9.246	9.261	-0.015		1531648	45.7		91.5	122088	
9 Perfluoroheptanoic acid										
363.0 > 319.0	9.246	9.262	-0.016	1.000	592275	17.8		88.8	33.9	
41 Perfluorohexanesulfonic acid										
399.0 > 80.0	9.282	9.296	-0.014	1.000	167602	17.5		92.4		
10 Perfluorohexane Sulfonate										
399.0 > 80.0	9.282	9.296	-0.014	1.000	167602	NC			9.5	
D 11 18O2 PFHxS										
403.0 > 84.0	9.282	9.297	-0.015		617064	42.5		89.8	16813	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluorooctanoic acid										
413.0 > 369.0	10.370	10.388	-0.018	1.000	610867	20.7		103	10.0	
413.0 > 169.0	10.377	10.388	-0.011	1.001	195078		3.13(0.00-0.00)		9.3	
D 12 13C4 PFOA										
417.0 > 372.0	10.370	10.389	-0.019		1568211	43.7		87.3	77202	
14 Perfluoroheptane Sulfonate										
449.0 > 80.0	10.377	10.394	-0.017	1.000	156615	NC			11728	
38 Perfluoroheptanesulfonic Acid										
449.0 > 80.0	10.377	10.394	-0.017	1.000	156615	16.7		87.6		
D 16 13C4 PFOS										
503.0 > 80.0	11.334	11.350	-0.016		662862	40.0		83.6	48912	
15 Perfluorooctane sulfonic acid										
499.0 > 80.0	11.334	11.350	-0.016	1.000	287755	21.1		110	466	
499.0 > 99.0	11.334	11.350	-0.016	1.000	148898		1.93(0.00-0.00)		935	
D 17 13C5 PFNA										
468.0 > 423.0	11.350	11.368	-0.018		1306632	42.4		84.9	96276	
18 Perfluorononanoic acid										
463.0 > 419.0	11.350	11.370	-0.020	1.000	424801	19.4		97.2	5.6	
D 19 13C2 PFDA										
515.0 > 470.0	12.196	12.212	-0.016		1275677	45.8		91.6	56187	
20 Perfluorodecanoic acid										
513.0 > 469.0	12.196	12.213	-0.017	1.000	546550	21.5		108	36048	
21 PFNS (Perfluoro-1-nonanesulfonate)										
549.0 > 80.0	12.166	12.249	-0.083	1.000	169334	NC			12167	
24 Perfluorooctane Sulfonamide										
498.0 > 78.0	12.743	12.759	-0.016	1.000	101748	22.7		113	6026	
D 23 13C8 FOSA										
506.0 > 78.0	12.753	12.759	-0.006		265025	6.59		13.2	15454	
25 Perfluorodecane Sulfonate										
599.0 > 80.0	12.868	12.888	-0.020	1.000	150693	NC			9111	
39 Perfluorodecane Sulfonic acid										
599.0 > 80.0	12.868	12.888	-0.020	1.000	150693	17.8		92.3		
D 26 13C2 PFUnA										
565.0 > 520.0	12.920	12.936	-0.016		1746141	47.0		94.0	104687	
27 Perfluoroundecanoic acid										
563.0 > 519.0	12.909	12.938	-0.029	1.000	617042	20.5		103	37684	
D 28 13C2 PFDaA										
615.0 > 570.0	13.524	13.550	-0.026		1916967	46.5		92.9	17331	
29 Perfluorododecanoic acid										
613.0 > 569.0	13.524	13.552	-0.028	1.000	582449	19.9		99.6	329	
30 Perfluorotridecanoic acid										
663.0 > 619.0	14.041	14.075	-0.034	1.000	709901	19.9		99.5	1601	
31 PFDoS (Perfluoro-1-dodecanesulfona										
699.0 > 80.0	13.993	14.083	-0.090	1.000	159986	NC			11095	
D 33 13C2-PFTeDA										
715.0 > 670.0	14.486	14.516	-0.030		1455492	43.0		85.9	25418	
32 Perfluorotetradecanoic acid										
713.0 > 669.0	14.486	14.517	-0.031	1.000	419872	17.2		86.0	158	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 35 13C2-PFHxDA										
815.0 > 770.0	15.141	15.166	-0.025		1969434	50.8		102	15677	
34 Perfluorohexadecanoic acid										
813.0 > 769.0	15.141	15.166	-0.025	1.000	851756	20.6		103	1194	
36 Perfluorooctadecanoic acid										
913.0 > 869.0	15.462	15.496	-0.034	1.000	765998	20.0		100	1560	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A6\20160229-28745.b\29FEB2016A6B_010.d

Injection Date: 29-Feb-2016 20:01:20

Instrument ID: A6

Lims ID: LCSD 320-101659/3-A

Client ID:

Operator ID: JRB

ALS Bottle#: 5

Worklist Smp#: 10

Injection Vol: 15.0 ul

Dil. Factor: 1.0000

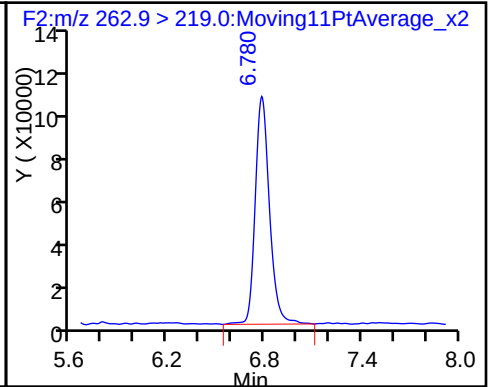
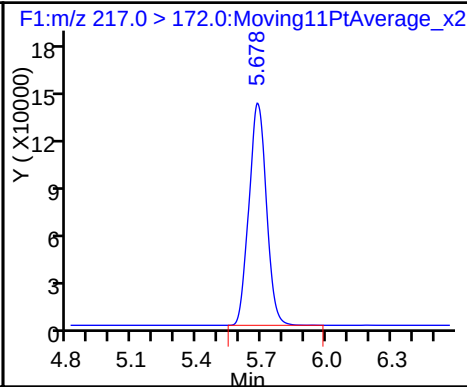
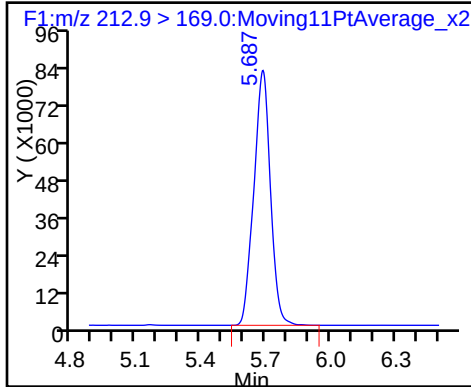
Method: PFAC_A6

Limit Group: LC PFC_DOD ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

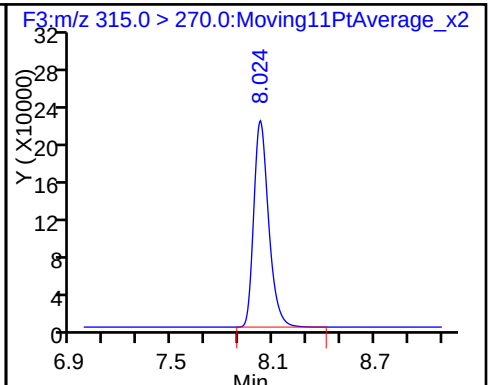
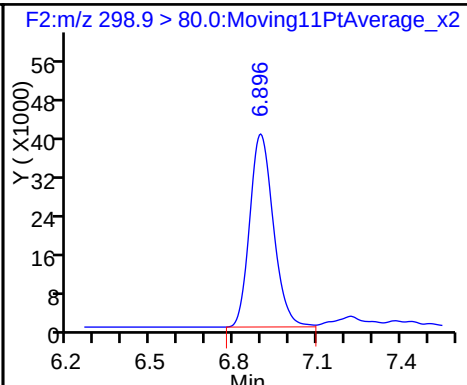
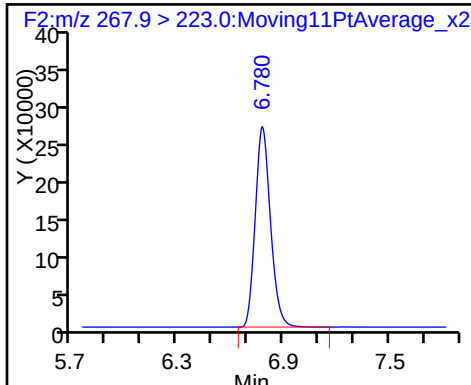
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

40 Perfluorobutanesulfonic acid

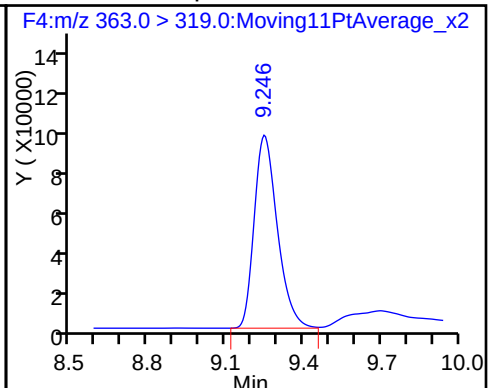
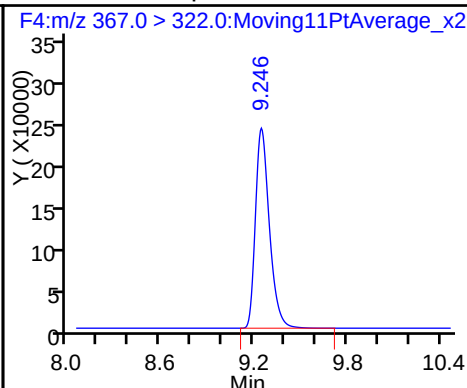
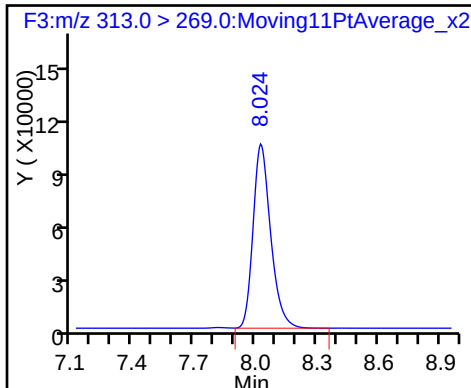
D 6 13C2 PFHxA



7 Perfluorohexanoic acid

D 8 13C4-PFHpA

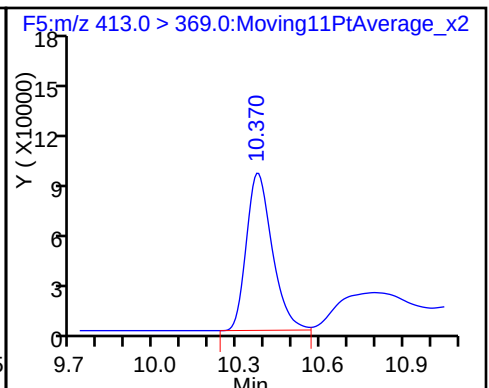
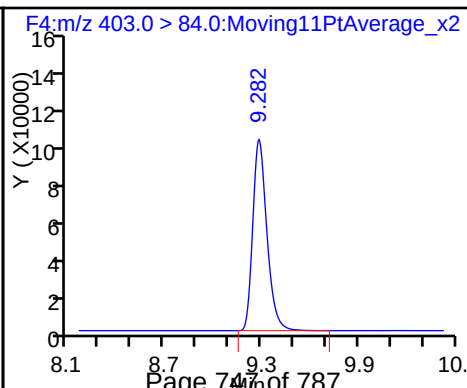
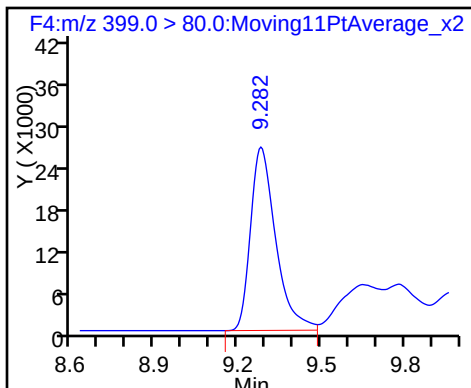
9 Perfluoroheptanoic acid



41 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

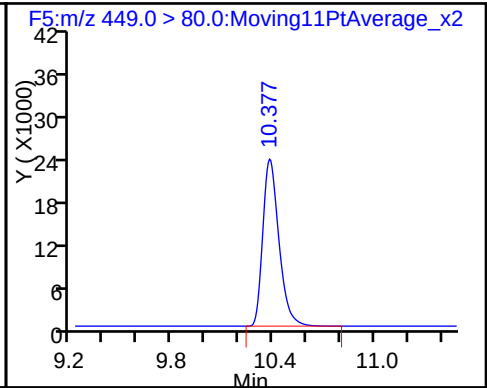
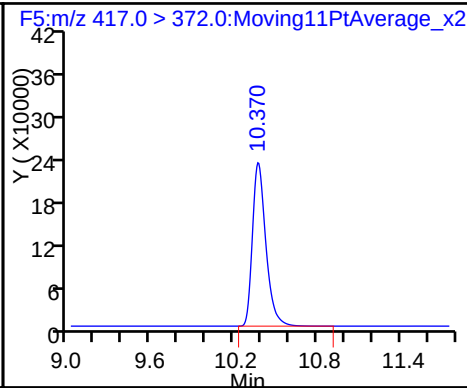
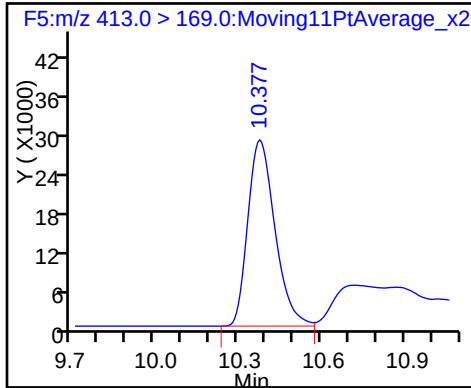
13 Perfluorooctanoic acid



13 Perfluorooctanoic acid

D 12 13C4 PFOA

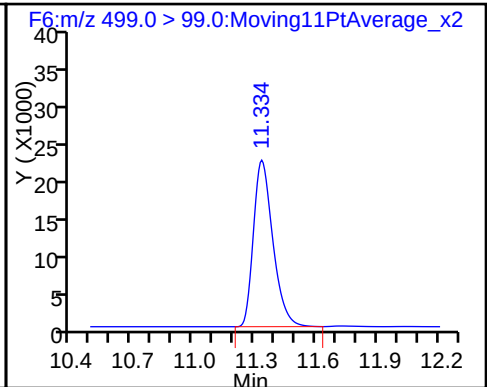
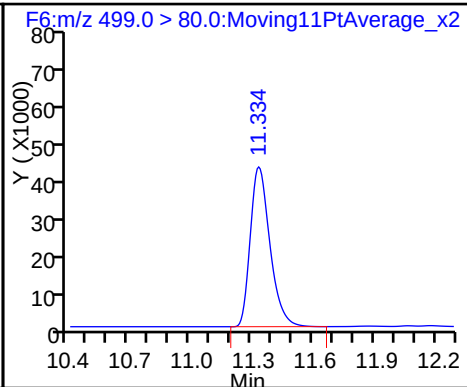
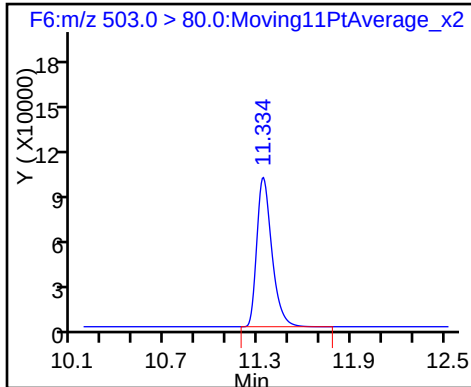
38 Perfluoroheptanesulfonic Acid



D 16 13C4 PFOS

15 Perfluorooctane sulfonic acid

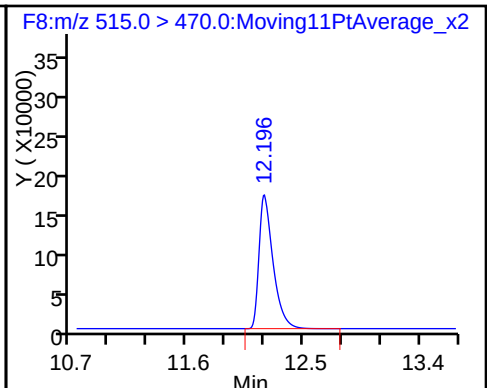
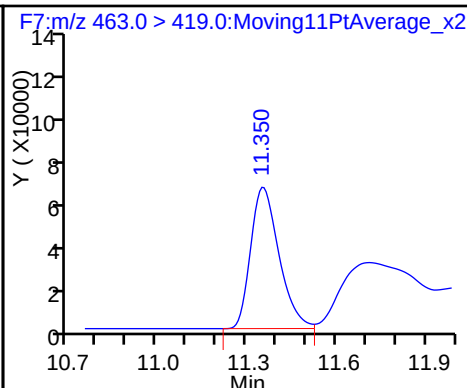
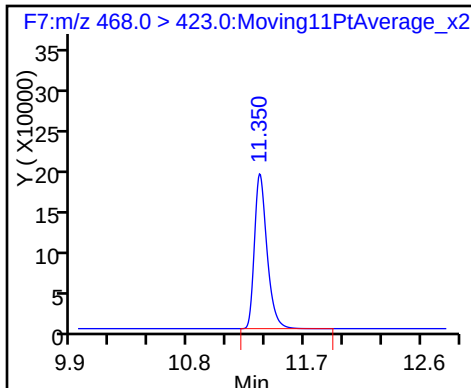
15 Perfluorooctane sulfonic acid



D 17 13C5 PFNA

18 Perfluorononanoic acid

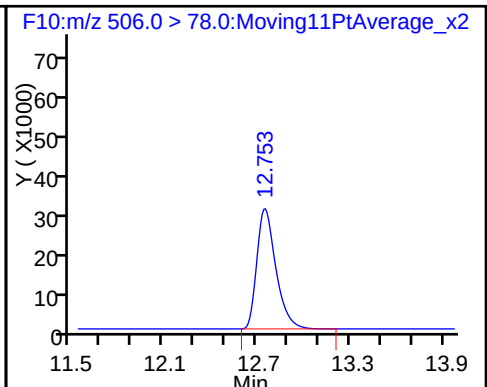
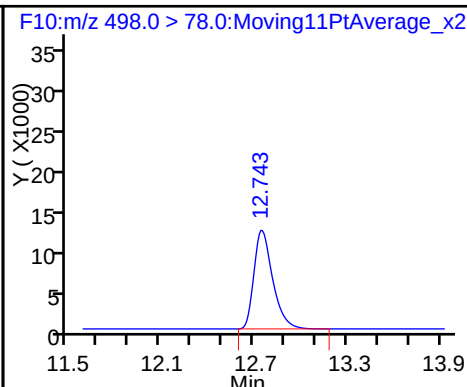
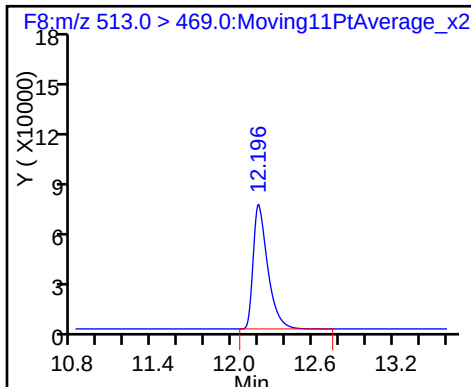
D 19 13C2 PFDA



20 Perfluorodecanoic acid

24 Perfluorooctane Sulfonamide

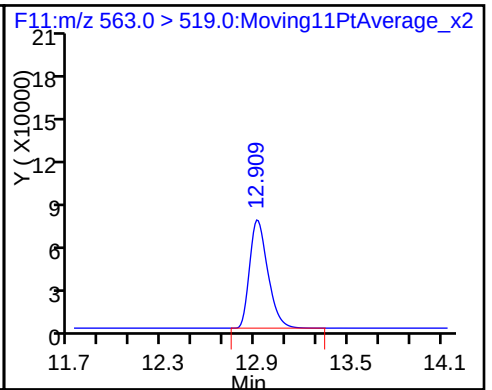
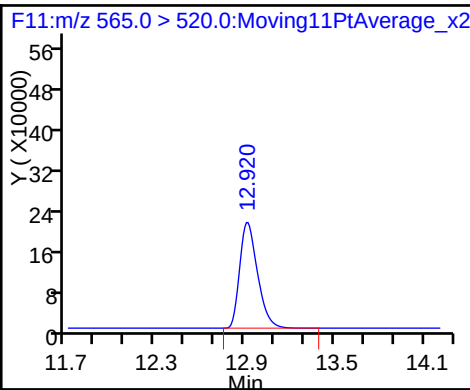
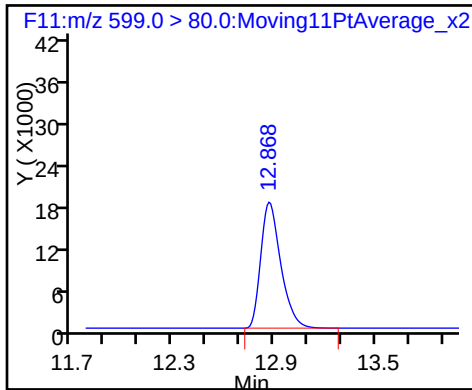
D 23 13C8 FOSA



39 Perfluorodecane Sulfonic acid

D 26 13C2 PFUnA

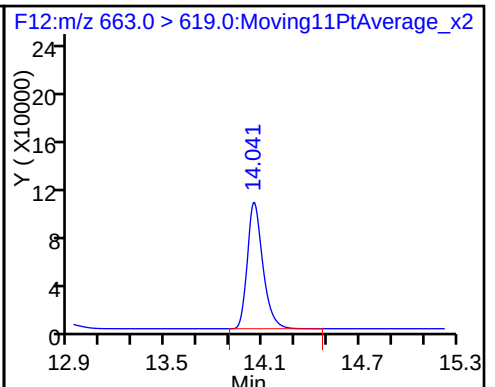
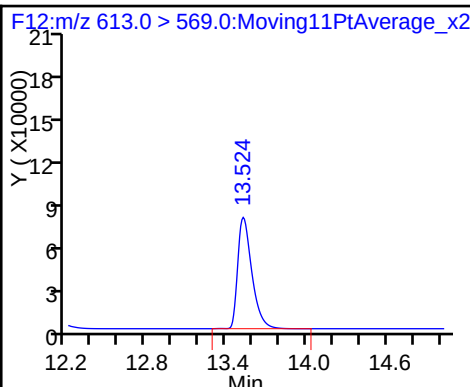
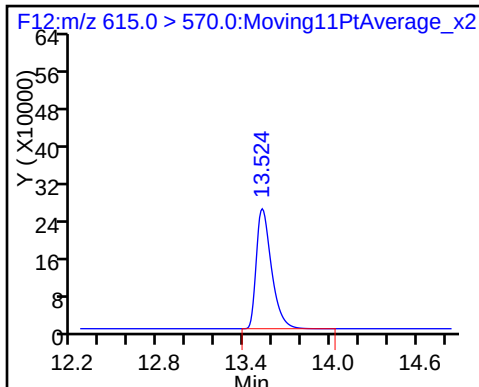
27 Perfluoroundecanoic acid



D 28 13C2 PFDaA

29 Perfluorododecanoic acid

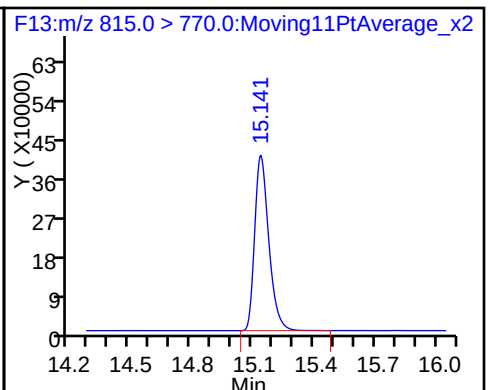
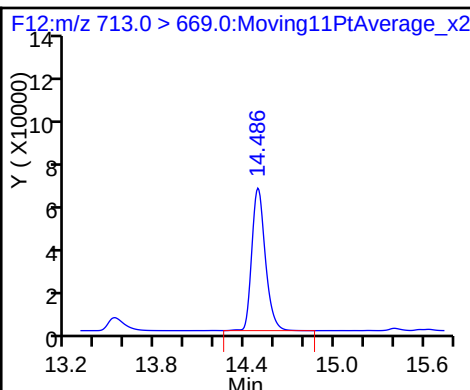
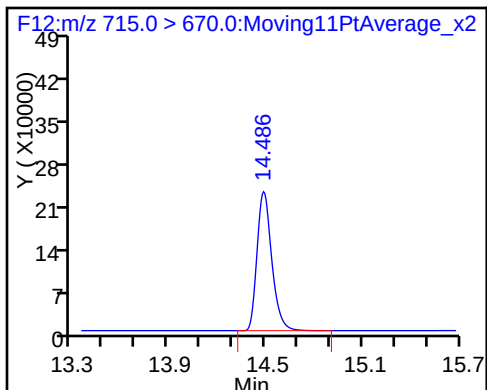
30 Perfluorotridecanoic acid



D 33 13C2-PFTeDA

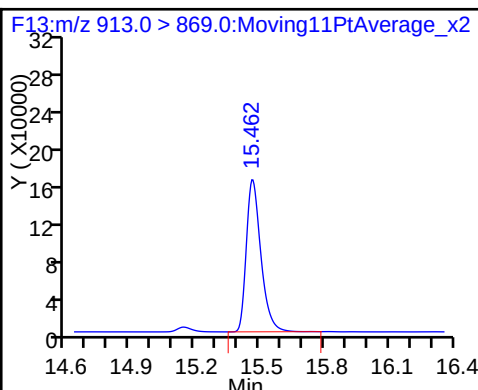
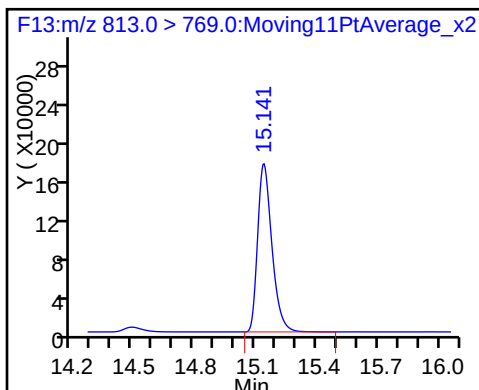
32 Perfluorotetradecanoic acid

D 35 13C2-PFHxDA



34 Perfluorohexadecanoic acid

36 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-17406-1

SDG No.: _____

Instrument ID: A4Start Date: 02/26/2016 17:27Analysis Batch Number: 101820End Date: 02/27/2016 19:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-101820/2 IC		02/26/2016 17:27	1	26FEB2016A4A_00 6.d	Acquity 2.1(mm)
STD 320-101820/3 IC		02/26/2016 17:48	1	26FEB2016A4A_00 7.d	Acquity 2.1(mm)
STD 320-101820/4 IC		02/26/2016 18:10	1	26FEB2016A4A_00 8.d	Acquity 2.1(mm)
STD 320-101820/5 IC		02/26/2016 18:31	1	26FEB2016A4A_00 9.d	Acquity 2.1(mm)
STD 320-101820/6 IC		02/26/2016 18:52	1	26FEB2016A4A_01 0.d	Acquity 2.1(mm)
STD 320-101820/7 IC		02/26/2016 19:13	1	26FEB2016A4A_01 1.d	Acquity 2.1(mm)
STD 320-101820/8 IC		02/26/2016 19:34	1	26FEB2016A4A_01 2.d	Acquity 2.1(mm)
ZZZZZ		02/26/2016 19:56	1		Acquity 2.1(mm)
ICV 320-101820/10		02/26/2016 20:17	1	26FEB2016A4A_01 4.d	Acquity 2.1(mm)
MB 320-101543/1-A		02/26/2016 20:38	1	26FEB2016A4A_01 5.d	Acquity 2.1(mm)
LCS 320-101543/2-A		02/26/2016 20:59	1	26FEB2016A4A_01 6.d	Acquity 2.1(mm)
LCSD 320-101543/3-A		02/26/2016 21:20	1	26FEB2016A4A_01 7.d	Acquity 2.1(mm)
ZZZZZ		02/26/2016 21:41	1		Acquity 2.1(mm)
ZZZZZ		02/26/2016 22:03	1		Acquity 2.1(mm)
ZZZZZ		02/26/2016 22:24	1		Acquity 2.1(mm)
ZZZZZ		02/26/2016 22:45	1		Acquity 2.1(mm)
ZZZZZ		02/26/2016 23:06	1		Acquity 2.1(mm)
ZZZZZ		02/26/2016 23:27	1		Acquity 2.1(mm)
ZZZZZ		02/26/2016 23:48	1		Acquity 2.1(mm)
CCV 320-101820/21		02/27/2016 00:10	1	26FEB2016A4A_02 5.d	Acquity 2.1(mm)
ZZZZZ		02/27/2016 00:31	1		Acquity 2.1(mm)
ZZZZZ		02/27/2016 00:52	1		Acquity 2.1(mm)
ZZZZZ		02/27/2016 01:13	1		Acquity 2.1(mm)
ZZZZZ		02/27/2016 01:34	1		Acquity 2.1(mm)
ZZZZZ		02/27/2016 01:56	1		Acquity 2.1(mm)
ZZZZZ		02/27/2016 02:17	1		Acquity 2.1(mm)
ZZZZZ		02/27/2016 02:38	1		Acquity 2.1(mm)
320-17406-1		02/27/2016 02:59	1	26FEB2016A4A_03 3.d	Acquity 2.1(mm)
320-17406-2		02/27/2016 03:20	1	26FEB2016A4A_03 4.d	Acquity 2.1(mm)
320-17406-3		02/27/2016 03:41	1	26FEB2016A4A_03 5.d	Acquity 2.1(mm)
CCV 320-101820/32		02/27/2016 04:03	1	26FEB2016A4A_03 6.d	Acquity 2.1(mm)
320-17406-4		02/27/2016 10:09	1	26FEB2016A4A_03 7.d	Acquity 2.1(mm)
MB 320-101659/1-A		02/27/2016 10:31	1	26FEB2016A4A_03 8.d	Acquity 2.1(mm)
LCS 320-101659/2-A		02/27/2016 10:52	1	26FEB2016A4A_03 9.d	Acquity 2.1(mm)
LCSD 320-101659/3-A		02/27/2016 11:13	1	26FEB2016A4A_04 0.d	Acquity 2.1(mm)
320-17406-5		02/27/2016 11:34	1	26FEB2016A4A_04 1.d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-17406-1

SDG No.: _____

Instrument ID: A4Start Date: 02/26/2016 17:27Analysis Batch Number: 101820End Date: 02/27/2016 19:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
320-17406-6		02/27/2016 11:56	1	26FEB2016A4A_04 2.d	Acquity 2.1 (mm)
320-17406-7		02/27/2016 12:17	1	26FEB2016A4A_04 3.d	Acquity 2.1 (mm)
320-17406-8		02/27/2016 12:38	1	26FEB2016A4A_04 4.d	Acquity 2.1 (mm)
320-17406-9		02/27/2016 12:59	1	26FEB2016A4A_04 5.d	Acquity 2.1 (mm)
320-17406-10		02/27/2016 13:20	1	26FEB2016A4A_04 6.d	Acquity 2.1 (mm)
CCV 320-101820/43		02/27/2016 13:41	1	26FEB2016A4A_04 7.d	Acquity 2.1 (mm)
320-17406-11		02/27/2016 14:03	1	26FEB2016A4A_04 8.d	Acquity 2.1 (mm)
320-17406-12		02/27/2016 14:24	1	26FEB2016A4A_04 9.d	Acquity 2.1 (mm)
320-17406-13		02/27/2016 14:45	1	26FEB2016A4A_05 0.d	Acquity 2.1 (mm)
320-17406-14		02/27/2016 15:06	1	26FEB2016A4A_05 1.d	Acquity 2.1 (mm)
320-17406-15		02/27/2016 15:27	1	26FEB2016A4A_05 2.d	Acquity 2.1 (mm)
ZZZZZ		02/27/2016 15:49	1		Acquity 2.1 (mm)
320-17406-17		02/27/2016 16:10	1	26FEB2016A4A_05 4.d	Acquity 2.1 (mm)
320-17406-18		02/27/2016 16:31	1	26FEB2016A4A_05 5.d	Acquity 2.1 (mm)
320-17406-19		02/27/2016 16:52	1	26FEB2016A4A_05 6.d	Acquity 2.1 (mm)
320-17406-20		02/27/2016 17:13	1	26FEB2016A4A_05 7.d	Acquity 2.1 (mm)
CCV 320-101820/54		02/27/2016 17:34	1	26FEB2016A4A_05 8.d	Acquity 2.1 (mm)
320-17406-21		02/27/2016 17:56	1	26FEB2016A4A_05 9.d	Acquity 2.1 (mm)
320-17406-22		02/27/2016 18:17	1	26FEB2016A4A_06 0.d	Acquity 2.1 (mm)
320-17406-23		02/27/2016 18:38	1	26FEB2016A4A_06 1.d	Acquity 2.1 (mm)
320-17406-24		02/27/2016 18:59	1	26FEB2016A4A_06 2.d	Acquity 2.1 (mm)
CCV 320-101820/59		02/27/2016 19:20	1	26FEB2016A4A_06 3.d	Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Instrument ID: A6 Start Date: 02/28/2016 14:34Analysis Batch Number: 101853 End Date: 02/28/2016 17:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-101853/3 IC		02/28/2016 14:34	1	28FEB2016A6A_00 4.d	Acquity 2.1 (mm)
STD 320-101853/4 IC		02/28/2016 14:56	1	28FEB2016A6A_00 5.d	Acquity 2.1 (mm)
STD 320-101853/5 IC		02/28/2016 15:17	1	28FEB2016A6A_00 6.d	Acquity 2.1 (mm)
STD 320-101853/6 IC		02/28/2016 15:38	1	28FEB2016A6A_00 7.d	Acquity 2.1 (mm)
STD 320-101853/7 IC		02/28/2016 15:59	1	28FEB2016A6A_00 8.d	Acquity 2.1 (mm)
STD 320-101853/8 IC		02/28/2016 16:20	1	28FEB2016A6A_00 9.d	Acquity 2.1 (mm)
STD 320-101853/9 IC		02/28/2016 16:42	1	28FEB2016A6A_01 0.d	Acquity 2.1 (mm)
ZZZZZ		02/28/2016 17:03	1		Acquity 2.1 (mm)
ICV 320-101853/11		02/28/2016 17:24	1	28FEB2016A6A_01 2.d	Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-17406-1

SDG No.: _____

Instrument ID: A6Start Date: 02/29/2016 18:15Analysis Batch Number: 101944End Date: 03/01/2016 02:23

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-101944/5		02/29/2016 18:15	1	29FEB2016A6B_00 5.d	Acquity 2.1(mm)
CCV 320-101944/6 CCVL		02/29/2016 18:36	1	29FEB2016A6B_00 6.d	Acquity 2.1(mm)
320-17406-4 RA		02/29/2016 18:57	1	29FEB2016A6B_00 7.d	Acquity 2.1(mm)
MB 320-101659/1-A RA		02/29/2016 19:18	1	29FEB2016A6B_00 8.d	Acquity 2.1(mm)
LCS 320-101659/2-A RA		02/29/2016 19:40	1	29FEB2016A6B_00 9.d	Acquity 2.1(mm)
LCSD 320-101659/3-A RA		02/29/2016 20:01	1	29FEB2016A6B_01 0.d	Acquity 2.1(mm)
320-17406-5 RA		02/29/2016 20:22	1	29FEB2016A6B_01 1.d	Acquity 2.1(mm)
320-17406-6 RA		02/29/2016 20:43	1	29FEB2016A6B_01 2.d	Acquity 2.1(mm)
320-17406-7 RA		02/29/2016 21:05	1	29FEB2016A6B_01 3.d	Acquity 2.1(mm)
320-17406-8 RA		02/29/2016 21:26	1	29FEB2016A6B_01 4.d	Acquity 2.1(mm)
320-17406-9 RA		02/29/2016 21:47	1	29FEB2016A6B_01 5.d	Acquity 2.1(mm)
320-17406-10 RA		02/29/2016 22:08	1	29FEB2016A6B_01 6.d	Acquity 2.1(mm)
CCV 320-101944/17		02/29/2016 22:29	1	29FEB2016A6B_01 7.d	Acquity 2.1(mm)
320-17406-11 RA		02/29/2016 22:51	1	29FEB2016A6B_01 8.d	Acquity 2.1(mm)
320-17406-12 RA		02/29/2016 23:12	1	29FEB2016A6B_01 9.d	Acquity 2.1(mm)
320-17406-13 RA		02/29/2016 23:33	1	29FEB2016A6B_02 0.d	Acquity 2.1(mm)
320-17406-14 RA		02/29/2016 23:54	1	29FEB2016A6B_02 1.d	Acquity 2.1(mm)
320-17406-15 RA		03/01/2016 00:16	1	29FEB2016A6B_02 2.d	Acquity 2.1(mm)
320-17406-16		03/01/2016 00:37	1	29FEB2016A6B_02 3.d	Acquity 2.1(mm)
320-17406-17 RA		03/01/2016 00:58	1	29FEB2016A6B_02 4.d	Acquity 2.1(mm)
320-17406-18 RA		03/01/2016 01:19	1	29FEB2016A6B_02 5.d	Acquity 2.1(mm)
320-17406-19 RA		03/01/2016 01:41	1	29FEB2016A6B_02 6.d	Acquity 2.1(mm)
320-17406-20 RA		03/01/2016 02:02	1	29FEB2016A6B_02 7.d	Acquity 2.1(mm)
CCV 320-101944/28		03/01/2016 02:23	1	29FEB2016A6B_02 8.d	Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Batch Number: 101543 Batch Start Date: 02/25/16 10:16 Batch Analyst: Arauz, Horacio JBatch Method: 3535 Batch End Date: 02/26/16 15:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00027	LCPFCSP 00041
MB 320-101543/1		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	
LCS 320-101543/2		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
LCSD 320-101543/3		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
320-17406-A-1	BC_2_22_16	3535, WS-LC-0025	T	528.33 g	38.72 g	489.6 mL	1.00 mL	50 uL	
320-17406-A-2	DW-1	3535, WS-LC-0025	T	590.08 g	44.02 g	546.1 mL	1.00 mL	50 uL	
320-17406-A-3	DW-1FB	3535, WS-LC-0025	T	554.15 g	45.89 g	508.3 mL	1.00 mL	50 uL	
320-17406-A-4	DW-56	3535, WS-LC-0025	T	582.11 g	44.12 g	538 mL	1.00 mL	50 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	Hexane 0000116331; 1N Sodium Hydrox/H2O 585462; MeOH 582954
H2O ID	2/19/16
Pipette ID	EC15219
Analyst ID - Reagent Drop	HJA
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SNE
Solvent Lot #	585662
Solvent Name	0.3% Ammonium hydroxide/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk ID	002635307A

Basis	Basis Description
T	Total/NA

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Batch Number: 101659 Batch Start Date: 02/26/16 08:58 Batch Analyst: Arauz, Horacio JBatch Method: 3535 Batch End Date: 02/26/16 17:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00028	LCPFCSU 00041
MB 320-101659/1		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	
LCS 320-101659/2		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
LCSD 320-101659/3		3535, WS-LC-0025				500 mL	1.00 mL	50 uL	20 uL
320-17406-B-5	DW-56FB	3535, WS-LC-0025	T	553.43 g	46.02 g	507.4 mL	1.00 mL	50 uL	
320-17406-B-6	DW-80	3535, WS-LC-0025	T	606.6 g	44.09 g	562.5 mL	1.00 mL	50 uL	
320-17406-A-7	DW-80FB	3535, WS-LC-0025	T	539.18 g	46.19 g	493 mL	1.00 mL	50 uL	
320-17406-B-8	DW-44	3535, WS-LC-0025	T	614.8 g	44.29 g	570.5 mL	1.00 mL	50 uL	
320-17406-A-9	DW-44FB	3535, WS-LC-0025	T	545.50 g	46.26 g	499.2 mL	1.00 mL	50 uL	
320-17406-A-10	DW-15	3535, WS-LC-0025	T	616.0 g	43.93 g	572.1 mL	1.00 mL	50 uL	
320-17406-A-11	DW-15FB	3535, WS-LC-0025	T	549.99 g	44.28 g	505.7 mL	1.00 mL	50 uL	
320-17406-B-12	DW-19	3535, WS-LC-0025	T	591.70 g	43.95 g	547.8 mL	1.00 mL	50 uL	
320-17406-A-13	DW-19FB	3535, WS-LC-0025	T	606.9 g	46.04 g	560.9 mL	1.00 mL	50 uL	
320-17406-A-14	DW-68	3535, WS-LC-0025	T	599.09 g	43.70 g	555.4 mL	1.00 mL	50 uL	
320-17406-A-15	DW-68FB	3535, WS-LC-0025	T	610.5 g	44.03 g	566.5 mL	1.00 mL	50 uL	
320-17406-A-16	DW-55	3535, WS-LC-0025	T	580.28 g	44.28 g	536 mL	1.00 mL	50 uL	
320-17406-A-17	DW-55FB	3535, WS-LC-0025	T	611.1 g	44.15 g	567 mL	1.00 mL	50 uL	
320-17406-A-18	DW-95	3535, WS-LC-0025	T	557.51 g	44.31 g	513.2 mL	1.00 mL	50 uL	
320-17406-A-19	DW-95FB	3535, WS-LC-0025	T	469.76 g	44.21 g	425.6 mL	1.00 mL	50 uL	
320-17406-B-20	DW-6	3535, WS-LC-0025	T	614.2 g	43.66 g	570.5 mL	1.00 mL	50 uL	
320-17406-B-21	DW-6FB	3535, WS-LC-0025	T	483.85 g	43.93 g	439.9 mL	1.00 mL	50 uL	
320-17406-A-22	DW-37	3535, WS-LC-0025	T	543.67 g	44.12 g	499.6 mL	1.00 mL	50 uL	

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

WS-LC-0025

Page 1 of 2

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-17406-1

SDG No.: _____

Batch Number: 101659 Batch Start Date: 02/26/16 08:58 Batch Analyst: Arauz, Horacio JBatch Method: 3535 Batch End Date: 02/26/16 17:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00028	LCPFCSU 00041
320-17406-A-23	DW-37FB	3535, WS-LC-0025	T	548.01 g	44.01 g	504 mL	1.00 mL	50 uL	
320-17406-B-24	DUP-022216	3535, WS-LC-0025	T	581.60 g	43.93 g	537.7 mL	1.00 mL	50 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	Hexane 0000116331; 1N Sodium Hydrox/H2O 585462; MeOH 582954
H2O ID	2/23/16
Pipette ID	EC15219
Analyst ID - Reagent Drop	HJA
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SNE
Solvent Lot #	588176
Solvent Name	0.3% Ammonium hydroxide/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Wax 500mg
Solid Phase Extraction Disk ID	002635307A

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.

HPLC/LCMS Data Review Checklist

Job Number(s): 17376, 17406

Work List ID(s): 28708, 28745

Extraction Batch: 101543, 101659

Analysis Batch(es): 101820, 101944

Delivery Rank: 4

Due Date: 2/29/16

A. Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>101853</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met	✓	✓	
• RF _{average} criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 > 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.			✓
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?			✓
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted. <u>NCM</u>	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?			✓
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM# <u>48339, 48380</u>	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?	✓	✓	
5. Was QC Checker run for this job?	✓	✓	

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): JRB

Date: 3/1/16

2nd Level Reviewer: MW

Date: 3/2/2016

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101543

Analyst: Arauz, Horacio J

Batch Open: 2/25/2016 10:16:18AM

Method Code: 320-3535_IVWT-320

Batch End: 2/26/16 15:30

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmt FinAmt	PHs Adj1 Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-101543/1 N/A	N/A		500 mL 1.00 mL		N/A	N/A	N/A		MB-320-101543-1-A
2 LCS-320-101543/2 N/A	N/A		500 mL 1.00 mL		N/A	N/A	N/A		LCS-320-101543-2-A
3 LCSD-320-101543/3 N/A	N/A		500 mL 1.00 mL		N/A	N/A	N/A		LCSD-320-101543-3-A
4 320-17376-A-1 (PFC_IDA_DOD5)	N/A (320-17376-1)	505.6 g 45.95 g	559.7 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-A-1-A
5 320-17376-B-2 (PFC_IDA_DOD5)	N/A (320-17376-1)	599.15 g 46.14 g	553 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-B-2-A
6 320-17376-B-3 (PFC_IDA_DOD5)	N/A (320-17376-1)	594.16 g 45.91 g	548.3 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-B-3-A
7 320-17376-B-4 (PFC_IDA_DOD5)	N/A (320-17376-1)	509.9 g 44.06 g	565.8 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-B-4-A
8 320-17376-A-5 (PFC_IDA_DOD5)	N/A (320-17376-1)	593.42 g 44.45 g	549 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-A-5-A
9 320-17376-A-6 (PFC_IDA_DOD5)	N/A (320-17376-1)	598.97 g 47.31 g	551.7 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-A-6-A
10 320-17376-A-7 (PFC_IDA_DOD5)	N/A (320-17376-1)	598.23 g 44.20 g	554 mL 1.00 mL		2/29/16	7_Day_Rush	4		320-17376-A-7-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

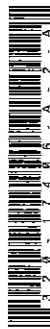
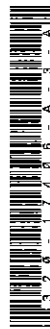
Batch Number: 320-101543

Analyst: Arauz, Horacio J

Batch Open: 2/25/2016 10:16:18AM

Method Code: 320-3535_IJWWT-320

Batch End:

11	320-17376-A-8 (PFC_IDA_DOD5)	N/A (320-17376-1)	524.3 g 46.11 g	578.2 mL 1.00 mL			2/29/16	7_Day_Rush	4	
12	320-17376-B-9 (PFC_IDA_DOD5)	N/A (320-17376-1)	584.73 g 45.89 g	538.8 mL 1.00 mL			2/29/16	7_Day_Rush	4	
13	320-17376-A-10 (PFC_IDA_DOD5)	N/A (320-17376-1)	510.8 g 43.76 g	567 mL 1.00 mL			2/29/16	7_Day_Rush	4	
14	320-17376-B-11 (PFC_IDA_DOD5)	N/A (320-17376-1)	502.4 g 43.74 g	558.7 mL 1.00 mL			2/29/16	7_Day_Rush	4	
15	320-17376-B-12 (PFC_IDA_DOD5)	N/A (320-17376-1)	585.68 g 44.15 g	541.5 mL 1.00 mL			2/29/16	7_Day_Rush	4	
16	320-17376-B-13 (PFC_IDA_DOD5)	N/A (320-17376-1)	514.4 g 44.09 g	570.3 mL 1.00 mL			2/29/16	7_Day_Rush	4	
17	320-17376-A-14 (PFC_IDA_DOD5)	N/A (320-17376-1)	579.88 g 44.31 g	535.6 mL 1.00 mL			2/29/16	7_Day_Rush	4	
18	320-17406-A-1 (PFC_IDA_DOD5)	N/A (320-17406-1)	528.33 g 38.72 g	489.6 mL 1.00 mL			3/1/16	7_Day_Rush	4	
19	320-17406-A-2 (PFC_IDA_DOD5)	N/A (320-17406-1)	590.08 g 44.02 g	546.1 mL 1.00 mL			3/1/16	7_Day_Rush	4	
20	320-17406-A-3 (PFC_IDA_DOD5)	N/A (320-17406-1)	554.15 g 45.89 g	508.3 mL 1.00 mL			3/1/16	7_Day_Rush	4	
21	320-17406-A-4 (PFC_IDA_DOD5)	N/A (320-17406-1)	582.11 g 44.12 g	538 mL 1.00 mL			3/1/16	7_Day_Rush	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101543

Analyst: Arauz, Horacio J

Batch Open: 2/25/2016 10:16:18AM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

First Start time NA

First End time NA

Balance ID QA-070

SPE Cartridge Type Wax 500mg

Solid Phase Extraction Disk Lot Number 002635307A

H2O Lot used 2/19/16

Pipette ID EC15219

Solvent Name 0.3% Ammonium hydroxide/MeOH

Solvent Lot # 585662

Analyst who added reagent HJA

SU Reagent Drop HJA

SU Reagent Drop Witness SNE

Acid Name NA

Acid Lot NA

Reagent ID NA

Reagent Lot Number NA

NaCl Lot # NA

SOP Number WS-LC-0025

Batch Comment Hexane 0000116331; 1N Sodium Hydrox/H2O 585462; MeOH 582954

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101543

Analyst: Arauz, Horacio J

Batch Open: 2/25/2016 10:16:18AM

Method Code: 320-3535_IVWT-320

Batch End:

Comments

320-17376-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-A-5	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-A-6	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-A-7	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-A-8	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-9	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-A-10	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-11	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-12	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-B-13	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17376-A-14	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17406-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17406-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17406-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-17406-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101543

Analyst: Arauz, Horacio J

Batch Open: 2/25/2016 10:16:18AM

Method Code: 320-3535_I\WWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-101543/1	LCMPFCSU_00027	50 uL	1.00 mL	HSA 2-25-16	SNE 2/25/16
LCS 320-101543/2	LCMPFCSU_00027	50 uL	1.00 mL		
LCS 320-101543/2	LCPFCSU_00041	20 uL	1.00 mL		
LCSD 320-101543/3	LCMPFCSU_00027	50 uL	1.00 mL		
LCSD 320-101543/3	LCPFCSU_00041	20 uL	1.00 mL		
320-17376-A-1	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-2	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-3	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-4	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-A-5	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-A-6	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-A-7	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-A-8	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-9	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-A-10	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-11	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-12	LCMPFCSU_00027	50 uL	1.00 mL		
320-17376-B-13	LCMPFCSU_00027	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101543

Analyst: Arauz, Horacio J

Batch Open: 2/25/2016 10:16:18AM

Method Code: 320-3535_IVWT-320

Batch End:

320-17376-A-14	LCMPFCSU_00027	50 uL	1.00 mL	HSA 2-25-16	SNE 2/25/16
320-17406-A-1	LCMPFCSU_00027	50 uL	1.00 mL		
320-17406-A-2	LCMPFCSU_00027	50 uL	1.00 mL		
320-17406-A-3	LCMPFCSU_00027	50 uL	1.00 mL		
320-17406-A-4	LCMPFCSU_00027	50 uL	1.00 mL		

Reagent	Other Reagents:	Amount/Units	Lot#:

Preparation Batch Number(s): 101543 Test: PFC

Earliest Holding Time: 2/26/16

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	NA	NA
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	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: SNE Date: 2/26/16

2nd Level Reviewer: [Signature] Date: 2/26/16

Comments: _____

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535_IVWT-320

Batch End: 2/26/16 17:50

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Adj1 Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-101659/1 N/A	N/A		500 mL 1.00 mL		N/A	N/A	N/A		MB 320-101659-1-A
2 LCS-320-101659/2 N/A	N/A		500 mL 1.00 mL		N/A	N/A	N/A		LCS 320-101659-2-A
3 LCSD-320-101659/3 N/A	N/A		500 mL 1.00 mL		N/A	N/A	N/A		LCS 320-101659-3-A
4 320-17406-B-5 (PFC_IDA_DOD5)	N/A (320-17406-1)	553.43 g 46.02 g	507.4 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-B-5-A
5 320-17406-B-6 (PFC_IDA_DOD5)	N/A (320-17406-1)	506.6 g 44.09 g	562.5 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-B-6-A
6 320-17406-A-7 (PFC_IDA_DOD5)	N/A (320-17406-1)	539.18 g 46.19 g	493 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-A-7-A
7 320-17406-B-8 (PFC_IDA_DOD5)	N/A (320-17406-1)	514.8 g 44.29 g	570.5 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-B-8-A
8 320-17406-A-9 (PFC_IDA_DOD5)	N/A (320-17406-1)	545.50 g 46.26 g	499.2 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-A-9-A
9 320-17406-A-10 (PFC_IDA_DOD5)	N/A (320-17406-1)	516.0 g 43.93 g	572.1 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-A-10-A
10 320-17406-A-11 (PFC_IDA_DOD5)	N/A (320-17406-1)	549.99 g 44.28 g	505.7 mL 1.00 mL		3/1/16	7_Day_Rush	4		320-17406-A-11-A

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535 JVWT-320

Batch End:

11	320-17406-B-12 (PFC_IDA_DOD5)	N/A (320-17406-1)	591.70 g 43.95 g	547.8 mL 1.00 mL				3/1/16	7_Day_Rush	4	
12	320-17406-A-13 (PFC_IDA_DOD5)	N/A (320-17406-1)	606.9 g 46.04 g	560.9 mL 1.00 mL				3/1/16	7_Day_Rush	4	
13	320-17406-A-14 (PFC_IDA_DOD5)	N/A (320-17406-1)	599.09 g 43.70 g	555.4 mL 1.00 mL				3/1/16	7_Day_Rush	4	
14	320-17406-A-15 (PFC_IDA_DOD5)	N/A (320-17406-1)	610.5 g 44.03 g	566.5 mL 1.00 mL				3/1/16	7_Day_Rush	4	
15	320-17406-A-16 (PFC_IDA_DOD5)	N/A (320-17406-1)	580.28 g 44.28 g	536 mL 1.00 mL				3/1/16	7_Day_Rush	4	
16	320-17406-A-17 (PFC_IDA_DOD5)	N/A (320-17406-1)	611.1 g 44.15 g	567 mL 1.00 mL				3/1/16	7_Day_Rush	4	
17	320-17406-A-18 (PFC_IDA_DOD5)	N/A (320-17406-1)	557.51 g 44.31 g	513.2 mL 1.00 mL				3/1/16	7_Day_Rush	4	
18	320-17406-A-19 (PFC_IDA_DOD5)	N/A (320-17406-1)	469.76 g 44.21 g	425.6 mL 1.00 mL				3/1/16	7_Day_Rush	4	
19	320-17406-B-20 (PFC_IDA_DOD5)	N/A (320-17406-1)	614.2 g 43.66 g	570.5 mL 1.00 mL				3/1/16	7_Day_Rush	4	
20	320-17406-B-21 (PFC_IDA_DOD5)	N/A (320-17406-1)	483.85 g 43.93 g	439.9 mL 1.00 mL				3/1/16	7_Day_Rush	4	
21	320-17406-A-22 (PFC_IDA_DOD5)	N/A (320-17406-1)	643.67 g 44.12 g	499.6 mL 1.00 mL				3/1/16	7_Day_Rush	4	
22	320-17406-A-23 (PFC_IDA_DOD5)	N/A (320-17406-1)	648.01 g 44.01 g	504 mL 1.00 mL				3/1/16	7_Day_Rush	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535_IVWT-320

Batch End:

23	320-17406-B-24 (PFC_IDA_DOD5)	N/A (320-17406-1)	581.60 g	537.7 mL	3/1/16	7_Day_Rush	4	
			43.93 g	1.00 mL				

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Batch Open: 2/26/2016 8:58:15AM

Analyst: Arauz, Horacio J

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

First Start time NA

First End time NA

Balance ID QA-070

SPE Cartridge Type Wax 500mg

Solid Phase Extraction Disk Lot Number 002635307A

H2O Lot used 2/23/16

Pipette ID EC15219

Solvent Name 0.3% Ammonium hydroxide/MeOH

Solvent Lot # 588176

Analyst who added reagent HJA

SU Reagent Drop HJA

SU Reagent Drop Witness SVE

Acid Name NA

Acid Lot NA

Reagent ID NA

Reagent Lot Number NA

NaCl Lot # NA

SOP Number WS-LC-0025

Batch Comment Hexane 0000116331; 1N Sodium Hydrox/H2O 585462; MeOH 582954

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535_IVWT-320

Batch End:

	Comments
320-17406-B-5	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-B-6	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-7	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-B-8	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-9	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-10	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-11	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-B-12	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-13	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-14	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-15	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-16	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-17	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-18	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-19	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-B-20	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-B-21	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-22	Method Comments: Q5Rev111213_StdVarApp_30day disposal
320-17406-A-23	Method Comments: Q5Rev111213_StdVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535_JVWT-320

Batch End:

Method Comments: Q5Rev111213_SidVarApp_30day disposal

320-17406-B-24

Method Comments: Q5Rev111213_SidVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535_IWWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-101659/1	LCMPFCSU_00028	50 uL	1.00 mL	HSA 2-26-16	SAVE 2/26/16
LCS 320-101659/2	LCMPFCSU_00028	50 uL	1.00 mL		
LCS 320-101659/2	LCPFCSU_00041	20 uL	1.00 mL		
LCSD 320-101659/3	LCMPFCSU_00028	50 uL	1.00 mL		
LCSD 320-101659/3	LCPFCSU_00041	20 uL	1.00 mL		
320-17406-B-5	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-B-6	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-7	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-B-8	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-9	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-10	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-11	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-B-12	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-13	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-14	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-15	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-16	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-17	LCMPFCSU_00028	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-101659

Analyst: Arauz, Horacio J

Batch Open: 2/26/2016 8:58:15AM

Method Code: 320-3535_IVWT-320

Batch End:

320-17406-A-18	LCMPFCSU_00028	50 uL	1.00 mL	HSA 2-26-16	SAE 2/26/16
320-17406-A-19	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-B-20	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-B-21	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-22	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-A-23	LCMPFCSU_00028	50 uL	1.00 mL		
320-17406-B-24	LCMPFCSU_00028	50 uL	1.00 mL		

Reagent	Other Reagents:	Amount/Units	Lot#:

Preparation Batch Number(s): 320-101659 Test: PFC-L

Earliest Holding Time: _____

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	/	✓
All necessary NCMs filed (including holding time)	/	✓
Method/sample/login/QAS checked and correct	/	✓
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	NA	NA
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	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	/	✓
Comments are transcribed correctly in TALS	/	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	/	✓
All spike amounts correct and added to necessary samples and QC	/	✓
Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	/	✓
All necessary 'batch information' complete and entered into TALS correctly	/	✓

1st Level Reviewer: SNE

Date: 2/26/16

2nd Level Reviewer: CBW

Date: 3/2/16

Comments: _____

Shipping and Receiving Documents

Client Information Client Contact: Mike Dryden Company: Earth Toxics, Inc. Address: PO BOX 3382 City: Logan State, Zip: UT, 84321 Phone: _____ Email: mdryden@earthtoxics.com Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water Site: _____		Lab PM: Johnstone, Michelle A E-Mail: michelle.johnstone@testamericainc.com Phone: _____		Carrier Tracking No(s): 280-48902-18075, 1 Page: 1 of 1 Job #: _____	
Due Date Requested: TAT Requested (days): 7 DAY PO #: _____ Purchase Order Requested: _____ WO #: _____ Project #: 28014493 SSOW#: _____		Analysis Requested			
Sample Identification Sample Date: 2-22-16 Sample Time: 10:20 Sample Type: G (grab) Matrix: W (water), S (solid), O (oil), A (air) Preservation Code: W		Field Filtered Sample (Yes or No): ☒ Yes ☐ No 637 MOD (PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento ☒ Yes ☐ No			
Total Number of Containers: 2		Special Instructions/Note: _____			
Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: _____		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify) _____			
Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify) _____		Special Instructions/Note: SHIP DIRECT TO TA - SACRAMENTO			
Empty Kit Relinquished by: _____		Method of Shipment: _____			
Relinquished by: John Petros Date: 2/22/16 Company: TA		Received by: _____ Date/Time: 2/24/16 9:45 Company: _____			
Relinquished by: _____ Date/Time: _____ Company: _____		Received by: _____ Date/Time: _____ Company: _____			
Relinquished by: _____ Date/Time: _____ Company: _____		Received by: _____ Date/Time: _____ Company: _____			
Custody Seals Intact Yes ☒ No ☐		Cooler Temperature(s) °C and Other Remarks: 2.7 / 1.5			

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Client Information			Sample ID: John Peters			Lab PM: Johnston, Michelle A			Carrier Tracking No(s):			COC No: 280-48902-18075 1		
Client Contact: Mike Dryden			Phone: _____			E-Mail: michelle.johnston@testamericainc.com			Page 1 of 1			Page 1 of 1		
Company: Earth Toxics, Inc			Address: PO BOX 3382			City: Logan			State: Zp			UT, 84321		
Phone: _____			PO #			Purchase Order Requested			WO #			Project #		
Email: mdryden@earthtoxics.com			Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water			SSOW#			Due Date Requested:			TAT Requested (days): 7 DAY		
Sample Identification			Sample Date			Sample Time			Sample Type (C=comp, G=grab)			Matrix (W=water, S=solid, O=water/soil, BT=Temperature, A=Air)		
DW-68			2-22-16			1431			G			W		
DW-68 FB			2-22-16			1416			G			W		
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			Return To Client			Disposal By Lab			Archive For			Months		
Deliverable Requested: I, II, III, IV, Other (specify)			Empty Kit Relinquished by: John Peters			Relinquished by: John Peters			Relinquished by: _____			Relinquished by: _____		
Custody Seal's Intact			Custody Seal No.			Cooler Temperature(s) °C and Other Remarks: 7.7/15			Received by: John Peters			Date/Time: 2/21/16 9:45		

Client Information						Sample J. Peters		Lab PM Johnstone, Michelle A		Carrier Tracking No(s)		COC No 280-48902-18075 1	
Earth Toxics, Inc						Phone		E-Mail michelle.johnston@testamericainc.com				Page / of 1	
Address PO BOX 3382						Due Date Requested:		Analysis Requested				Job #	
City Logan						TAT Requested (days): 7 DAY							
State Zip UT, 84321						PO #							
Purchase Order Requested						WFO #							
Email mdryden@earthtoxics.com						Project # 28014493							
Site Ensaf-NWS - Earle, NJ PFCs Potable Water						SSOW#							
Sample Identification						Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (W=water, S=solid, O=wastefail, BT=Tissue, A=Air)	
PW-55						2-22-16		1551		G		W	
DW-55FB						2-22-16		1541		G		W	
e 783 of 787													
Possible Hazard Identification						Poison B		Unknown		Radiological			
Deliverable Requested: I, II, III, IV, Other (specify)													
Empty Kit Relinquished by						Date:		Time:		Method of Shipment			
Relinquished by John Peters						Date/Time 2-22-16		Company TA		Received by [Signature]		Date/Time 2/24/16 9:45 Company	
Relinquished by						Date/Time		Company		Received by		Date/Time Company	
Relinquished by						Date/Time		Company		Received by		Date/Time Company	
Custody Seals Intact: Yes A No						Custody Seal No.		Cooler Temperature(s) °C and Other Remarks: 7.7 1.5					

Chain of Custody Record

Client Information		Sampler	Lab PM	Carrier Tracking No(s)		COC No
Earth Toxics, Inc		J. Peters	Johnston, Michelle A			280-48902-18075 1
Mike Dryden		Phone	E-Mail			Page 1 of 1
Earth Toxics, Inc		michelle.johnston@testamericainc.com				Job #
Address		Analysis Requested				
PO BOX 3382						
City						
Logan						
State, Zip						
UT, 84321						
Phone						
Email						
mcdryden@earthtoxics.com						
Project Name						
Ensafe-NWS - Earle, NJ PFCs Potable Water						
Site						
SSOW#						
Project #						
28014493						
Purchase Order Requested						
WO #						
TAT Requested (days):		7 DAY				
Due Date Requested:						
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, Q=wastefall, BT=Tissue, A=Air)	Preservation Codes:
DW-95		2-22-16	1636	G	W	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:
DW-95C-B		2-22-16	1621	G	W	M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecalhydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
e 784 of 787						
Sample Instructions/Note:						
Special Instructions/Note:						
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
Return To Client		Disposal By Lab		Archive For		
Months		Months		Months		
Empty Kit Relinquished by:		Date		Time		
Relinquished by: John Peters		2/22/16		1636		
Relinquished by:		Date/Time		Company		
Relinquished by:		Date/Time		Company		
Relinquished by:		Date/Time		Company		
Custody Seals Intact:		Custody Seal No.		Cooler Temperature(s) °C and Other Remarks		
Δ Yes Δ No		2-7/1-5		2-7/1-5		

Chain of Custody Record

[illegible]

$\frac{1}{\sqrt{\pi}}$

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Login Sample Receipt Checklist

Client: Earth Toxics, Inc

Job Number: 320-17406-1

Login Number: 17406

List Source: TestAmerica Sacramento

List Number: 1

Creator: Nelson, Kym D

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

Sample	Sample Name	Specific Method	CAS Number	Analyte	Result	Units	Qualifier	Limit	Reports To	Dilution	Result Basis	Batch	Sampled	Prepared	Analyzed	Analysis
320-17406-1	BC_2_22_16	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.94	MDL	1.0	Total	101820	2/22/2016 11:02 AM	2/25/2016 10:17 AM	2/27/2016 2:59 AM	Perfluorinated Hydrocarbons
320-17406-1	BC_2_22_16	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.82	MDL	1.0	Total	101820	2/22/2016 11:02 AM	2/25/2016 10:17 AM	2/27/2016 2:59 AM	Perfluorinated Hydrocarbons
320-17406-1	BC_2_22_16	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.89	MDL	1.0	Total	101820	2/22/2016 11:02 AM	2/25/2016 10:17 AM	2/27/2016 2:59 AM	Perfluorinated Hydrocarbons
320-17406-1	BC_2_22_16	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.67	MDL	1.0	Total	101820	2/22/2016 11:02 AM	2/25/2016 10:17 AM	2/27/2016 2:59 AM	Perfluorinated Hydrocarbons
320-17406-1	BC_2_22_16	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.1	ng/L	U	1.3	MDL	1.0	Total	101820	2/22/2016 11:02 AM	2/25/2016 10:17 AM	2/27/2016 2:59 AM	Perfluorinated Hydrocarbons
320-17406-1	BC_2_22_16	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.76	MDL	1.0	Total	101820	2/22/2016 11:02 AM	2/25/2016 10:17 AM	2/27/2016 2:59 AM	Perfluorinated Hydrocarbons
320-17406-2	DW-1	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.84	MDL	1.0	Total	101820	2/22/2016 11:31 AM	2/25/2016 10:17 AM	2/27/2016 3:20 AM	Perfluorinated Hydrocarbons
320-17406-2	DW-1	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.73	MDL	1.0	Total	101820	2/22/2016 11:31 AM	2/25/2016 10:17 AM	2/27/2016 3:20 AM	Perfluorinated Hydrocarbons
320-17406-2	DW-1	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.80	MDL	1.0	Total	101820	2/22/2016 11:31 AM	2/25/2016 10:17 AM	2/27/2016 3:20 AM	Perfluorinated Hydrocarbons
320-17406-2	DW-1	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.60	MDL	1.0	Total	101820	2/22/2016 11:31 AM	2/25/2016 10:17 AM	2/27/2016 3:20 AM	Perfluorinated Hydrocarbons
320-17406-2	DW-1	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.2	MDL	1.0	Total	101820	2/22/2016 11:31 AM	2/25/2016 10:17 AM	2/27/2016 3:20 AM	Perfluorinated Hydrocarbons
320-17406-2	DW-1	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.68	MDL	1.0	Total	101820	2/22/2016 11:31 AM	2/25/2016 10:17 AM	2/27/2016 3:20 AM	Perfluorinated Hydrocarbons
320-17406-3	DW-1FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.90	MDL	1.0	Total	101820	2/22/2016 11:21 AM	2/25/2016 10:17 AM	2/27/2016 3:41 AM	Perfluorinated Hydrocarbons
320-17406-3	DW-1FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.79	MDL	1.0	Total	101820	2/22/2016 11:21 AM	2/25/2016 10:17 AM	2/27/2016 3:41 AM	Perfluorinated Hydrocarbons
320-17406-3	DW-1FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.86	MDL	1.0	Total	101820	2/22/2016 11:21 AM	2/25/2016 10:17 AM	2/27/2016 3:41 AM	Perfluorinated Hydrocarbons
320-17406-3	DW-1FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.64	MDL	1.0	Total	101820	2/22/2016 11:21 AM	2/25/2016 10:17 AM	2/27/2016 3:41 AM	Perfluorinated Hydrocarbons
320-17406-3	DW-1FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U	1.3	MDL	1.0	Total	101820	2/22/2016 11:21 AM	2/25/2016 10:17 AM	2/27/2016 3:41 AM	Perfluorinated Hydrocarbons
320-17406-3	DW-1FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.74	MDL	1.0	Total	101820	2/22/2016 11:21 AM	2/25/2016 10:17 AM	2/27/2016 3:41 AM	Perfluorinated Hydrocarbons
320-17406-4	DW-56	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	ng/L	U	0.85	MDL	1.0	Total	101820	2/22/2016 12:06 PM	2/25/2016 10:17 AM	2/27/2016 10:09 AM	Perfluorinated Hydrocarbons
320-17406-4	DW-56	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	J	0.75	MDL	1.0	Total	101820	2/22/2016 12:06 PM	2/25/2016 10:17 AM	2/27/2016 10:09 AM	Perfluorinated Hydrocarbons
320-17406-4	DW-56	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	ng/L	U	0.81	MDL	1.0	Total	101820	2/22/2016 12:06 PM	2/25/2016 10:17 AM	2/27/2016 10:09 AM	Perfluorinated Hydrocarbons
320-17406-4	DW-56	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.9	ng/L	U	0.61	MDL	1.0	Total	101820	2/22/2016 12:06 PM	2/25/2016 10:17 AM	2/27/2016 10:09 AM	Perfluorinated Hydrocarbons
320-17406-4	DW-56	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	ng/L	U	1.2	MDL	1.0	Total	101944	2/22/2016 12:06 PM	2/25/2016 10:17 AM	2/29/2016 6:57 PM	Perfluorinated Hydrocarbons
320-17406-4	DW-56	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.9	ng/L	U	0.70	MDL	1.0	Total	101820	2/22/2016 12:06 PM	2/25/2016 10:17 AM	2/27/2016 10:09 AM	Perfluorinated Hydrocarbons
320-17406-5	DW-56FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.90	MDL	1.0	Total	101820	2/22/2016 11:56 AM	2/26/2016 8:58 AM	2/27/2016 11:34 AM	Perfluorinated Hydrocarbons
320-17406-5	DW-56FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.79	MDL	1.0	Total	101820	2/22/2016 11:56 AM	2/26/2016 8:58 AM	2/27/2016 11:34 AM	Perfluorinated Hydrocarbons
320-17406-5	DW-56FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.86	MDL	1.0	Total	101820	2/22/2016 11:56 AM	2/26/2016 8:58 AM	2/27/2016 11:34 AM	Perfluorinated Hydrocarbons
320-17406-5	DW-56FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.64	MDL	1.0	Total	101820	2/22/2016 11:56 AM	2/26/2016 8:58 AM	2/27/2016 11:34 AM	Perfluorinated Hydrocarbons
320-17406-5	DW-56FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U	1.3	MDL	1.0	Total	101944	2/22/2016 11:56 AM	2/26/2016 8:58 AM	2/29/2016 8:22 PM	Perfluorinated Hydrocarbons
320-17406-5	DW-56FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.74	MDL	1.0	Total	101820	2/22/2016 11:56 AM	2/26/2016 8:58 AM	2/27/2016 11:34 AM	Perfluorinated Hydrocarbons
320-17406-6	DW-80	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.82	MDL	1.0	Total	101820	2/22/2016 12:31 PM	2/26/2016 8:58 AM	2/27/2016 11:56 AM	Perfluorinated Hydrocarbons
320-17406-6	DW-80	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.71	MDL	1.0	Total	101820	2/22/2016 12:31 PM	2/26/2016 8:58 AM	2/27/2016 11:56 AM	Perfluorinated Hydrocarbons
320-17406-6	DW-80	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.77	MDL	1.0	Total	101820	2/22/2016 12:31 PM	2/26/2016 8:58 AM	2/27/2016 11:56 AM	Perfluorinated Hydrocarbons
320-17406-6	DW-80	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.58	MDL	1.0	Total	101820	2/22/2016 12:31 PM	2/26/2016 8:58 AM	2/27/2016 11:56 AM	Perfluorinated Hydrocarbons
320-17406-6	DW-80	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 12:31 PM	2/26/2016 8:58 AM	2/29/2016 8:43 PM	Perfluorinated Hydrocarbons
320-17406-6	DW-80	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101820	2/22/2016 12:31 PM	2/26/2016 8:58 AM	2/27/2016 11:56 AM	Perfluorinated Hydrocarbons
320-17406-7	DW-80FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.93	MDL	1.0	Total	101820	2/22/2016 12:21 PM	2/26/2016 8:58 AM	2/27/2016 12:17 PM	Perfluorinated Hydrocarbons
320-17406-7	DW-80FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.81	MDL	1.0	Total	101820	2/22/2016 12:21 PM	2/26/2016 8:58 AM	2/27/2016 12:17 PM	Perfluorinated Hydrocarbons
320-17406-7	DW-80FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.88	MDL	1.0	Total	101820	2/22/2016 12:21 PM	2/26/2016 8:58 AM	2/27/2016 12:17 PM	Perfluorinated Hydrocarbons
320-17406-7	DW-80FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.66	MDL	1.0	Total	101820	2/22/2016 12:21 PM	2/26/2016 8:58 AM	2/27/2016 12:17 PM	Perfluorinated Hydrocarbons
320-17406-7	DW-80FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U	1.3	MDL	1.0	Total	101944	2/22/2016 12:21 PM	2/26/2016 8:58 AM	2/29/2016 9:05 PM	Perfluorinated Hydrocarbons
320-17406-7	DW-80FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.76	MDL	1.0	Total	101820	2/22/2016 12:21 PM	2/26/2016 8:58 AM	2/27/2016 12:17 PM	Perfluorinated Hydrocarbons
320-17406-8	DW-44	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.80	MDL	1.0	Total	101820	2/22/2016 12:56 PM	2/26/2016 8:58 AM	2/27/2016 12:38 PM	Perfluorinated Hydrocarbons
320-17406-8	DW-44	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.70	MDL	1.0	Total	101820	2/22/2016 12:56 PM	2/26/2016 8:58 AM	2/27/2016 12:38 PM	Perfluorinated Hydrocarbons
320-17406-8	DW-44	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.76	MDL	1.0	Total	101820	2/22/2016 12:56 PM	2/26/2016 8:58 AM	2/27/2016 12:38 PM	Perfluorinated Hydrocarbons
320-17406-8	DW-44	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.57	MDL	1.0	Total	101820	2/22/2016 12:56 PM	2/26/2016 8:58 AM	2/27/2016 12:38 PM	Perfluorinated Hydrocarbons
320-17406-8	DW-44	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 12:56 PM	2/26/2016 8:58 AM	2/29/2016 9:26 PM	Perfluorinated Hydrocarbons
320-17406-8	DW-44	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.6	ng/L		0.66	MDL	1.0	Total	101820	2/22/2016 12:56 PM	2/26/2016 8:58 AM	2/27/2016 12:38 PM	Perfluorinated Hydrocarbons
320-17406-9	DW-44FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.92	MDL	1.0	Total	101820	2/22/2016 12:46 PM	2/26/2016 8:58 AM	2/27/2016 12:59 PM	Perfluorinated Hydrocarbons
320-17406-9	DW-44FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.80	MDL	1.0	Total	101820	2/22/2016 12:46 PM	2/26/2016 8:58 AM	2/27/2016 12:59 PM	Perfluorinated Hydrocarbons
320-17406-9	DW-44FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.87	MDL	1.0	Total	101820	2/22/2016 12:46 PM	2/26/2016 8:58 AM	2/27/2016 12:59 PM	Perfluorinated Hydrocarbons
320-17406-9	DW-44FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.66	MDL	1.0	Total	101820	2/22/2016 12:46 PM	2/26/2016 8:58 AM	2/27/2016 12:59 PM	Perfluorinated Hydrocarbons
320-17406-9	DW-44FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U	1.3	MDL	1.0	Total	101944	2/22/2016 12:46 PM	2/26/2016 8:58 AM	2/29/2016 9:47 PM	Perfluorinated Hydrocarbons
320-17406-9	DW-44FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.75	MDL	1.0	Total	101820	2/22/2016 12:46 PM	2/26/2016 8:58 AM	2/27/2016 12:59 PM	Perfluorinated Hydrocarbons
320-17406-10	DW-15	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.7	ng/L	U	0.80	MDL	1.0	Total	101820	2/22/2016 1:26 PM	2/26/2016 8:58 AM	2/27/2016 1:20 PM	Perfluorinated Hydrocarbons
320-17406-10	DW-15	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.7	ng/L	U	0.70	MDL	1.0	Total	101820	2/22/2016 1:26 PM	2/26/2016 8:58 AM	2/27/2016 1:20 PM	Perfluorinated Hydrocarbons
320-17406-10	DW-15	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7	ng/L	U	0.76	MDL	1.0	Total	101820	2/22/2016 1:26 PM	2/26/2016 8:58 AM	2/27/2016 1:20 PM	Perfluorinated Hydrocarbons
320-17406-10	DW-15	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.7	ng/L	U	0.57	MDL	1.0	Total	101820	2/22/2016 1:26 PM	2/26/2016 8:58 AM	2/27/2016 1:20 PM	Perfluorinated Hydrocarbons
320-17406-10	DW-15	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 1:26 PM	2/26/2016 8:58 AM	2/29/2016 10:08 PM	Perfluorinated Hydrocarbons
320-17406-10	DW-15	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.7	ng/L	U	0.65	MDL	1.0	Total	101820	2/22/			

	Sample Name	Specific Method	CAS Number	Analyte	Result	Units	Qualifier	Limit	Reports To	Dilution	Result Basis	Batch	Sampled	Prepared	Analyzed	Analysis
320-17406-12	DW-19	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.60	MDL	1.0	Total	101820	2/22/2016 2:01 PM	2/26/2016 8:58 AM	2/27/2016 2:24 PM	Perfluorinated Hydrocarbons
320-17406-12	DW-19	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.2	MDL	1.0	Total	101944	2/22/2016 2:01 PM	2/26/2016 8:58 AM	2/29/2016 11:12 PM	Perfluorinated Hydrocarbons
320-17406-12	DW-19	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.68	MDL	1.0	Total	101820	2/22/2016 2:01 PM	2/26/2016 8:58 AM	2/27/2016 2:24 PM	Perfluorinated Hydrocarbons
320-17406-13	DW-19FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.82	MDL	1.0	Total	101820	2/22/2016 1:46 PM	2/26/2016 8:58 AM	2/27/2016 2:45 PM	Perfluorinated Hydrocarbons
320-17406-13	DW-19FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.71	MDL	1.0	Total	101820	2/22/2016 1:46 PM	2/26/2016 8:58 AM	2/27/2016 2:45 PM	Perfluorinated Hydrocarbons
320-17406-13	DW-19FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.78	MDL	1.0	Total	101820	2/22/2016 1:46 PM	2/26/2016 8:58 AM	2/27/2016 2:45 PM	Perfluorinated Hydrocarbons
320-17406-13	DW-19FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.58	MDL	1.0	Total	101820	2/22/2016 1:46 PM	2/26/2016 8:58 AM	2/27/2016 2:45 PM	Perfluorinated Hydrocarbons
320-17406-13	DW-19FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 1:46 PM	2/26/2016 8:58 AM	2/29/2016 11:33 PM	Perfluorinated Hydrocarbons
320-17406-13	DW-19FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.67	MDL	1.0	Total	101820	2/22/2016 1:46 PM	2/26/2016 8:58 AM	2/27/2016 2:45 PM	Perfluorinated Hydrocarbons
320-17406-14	DW-68	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.83	MDL	1.0	Total	101820	2/22/2016 2:31 PM	2/26/2016 8:58 AM	2/27/2016 3:06 PM	Perfluorinated Hydrocarbons
320-17406-14	DW-68	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1	ng/L		0.72	MDL	1.0	Total	101820	2/22/2016 2:31 PM	2/26/2016 8:58 AM	2/27/2016 3:06 PM	Perfluorinated Hydrocarbons
320-17406-14	DW-68	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.7	ng/L	M	0.78	MDL	1.0	Total	101820	2/22/2016 2:31 PM	2/26/2016 8:58 AM	2/27/2016 3:06 PM	Perfluorinated Hydrocarbons
320-17406-14	DW-68	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.7	ng/L		0.59	MDL	1.0	Total	101820	2/22/2016 2:31 PM	2/26/2016 8:58 AM	2/27/2016 3:06 PM	Perfluorinated Hydrocarbons
320-17406-14	DW-68	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	18	ng/L	M	1.1	MDL	1.0	Total	101944	2/22/2016 2:31 PM	2/26/2016 8:58 AM	2/29/2016 11:54 PM	Perfluorinated Hydrocarbons
320-17406-14	DW-68	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	27	ng/L		0.67	MDL	1.0	Total	101820	2/22/2016 2:31 PM	2/26/2016 8:58 AM	2/27/2016 3:06 PM	Perfluorinated Hydrocarbons
320-17406-15	DW-68FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.81	MDL	1.0	Total	101820	2/22/2016 2:16 PM	2/26/2016 8:58 AM	2/27/2016 3:27 PM	Perfluorinated Hydrocarbons
320-17406-15	DW-68FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.71	MDL	1.0	Total	101820	2/22/2016 2:16 PM	2/26/2016 8:58 AM	2/27/2016 3:27 PM	Perfluorinated Hydrocarbons
320-17406-15	DW-68FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.77	MDL	1.0	Total	101820	2/22/2016 2:16 PM	2/26/2016 8:58 AM	2/27/2016 3:27 PM	Perfluorinated Hydrocarbons
320-17406-15	DW-68FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.58	MDL	1.0	Total	101820	2/22/2016 2:16 PM	2/26/2016 8:58 AM	2/27/2016 3:27 PM	Perfluorinated Hydrocarbons
320-17406-15	DW-68FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 2:16 PM	2/26/2016 8:58 AM	3/1/2016 12:16 AM	Perfluorinated Hydrocarbons
320-17406-15	DW-68FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101820	2/22/2016 2:16 PM	2/26/2016 8:58 AM	2/27/2016 3:27 PM	Perfluorinated Hydrocarbons
320-17406-16	DW-55	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	ng/L	U	0.86	MDL	1.0	Total	101944	2/22/2016 3:51 PM	2/26/2016 8:58 AM	3/1/2016 12:37 AM	Perfluorinated Hydrocarbons
320-17406-16	DW-55	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	ng/L	U	0.75	MDL	1.0	Total	101944	2/22/2016 3:51 PM	2/26/2016 8:58 AM	3/1/2016 12:37 AM	Perfluorinated Hydrocarbons
320-17406-16	DW-55	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.1	ng/L	J	0.81	MDL	1.0	Total	101944	2/22/2016 3:51 PM	2/26/2016 8:58 AM	3/1/2016 12:37 AM	Perfluorinated Hydrocarbons
320-17406-16	DW-55	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.9	ng/L	U	0.61	MDL	1.0	Total	101944	2/22/2016 3:51 PM	2/26/2016 8:58 AM	3/1/2016 12:37 AM	Perfluorinated Hydrocarbons
320-17406-16	DW-55	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	ng/L	U	1.2	MDL	1.0	Total	101944	2/22/2016 3:51 PM	2/26/2016 8:58 AM	3/1/2016 12:37 AM	Perfluorinated Hydrocarbons
320-17406-16	DW-55	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.9	ng/L	U	0.70	MDL	1.0	Total	101944	2/22/2016 3:51 PM	2/26/2016 8:58 AM	3/1/2016 12:37 AM	Perfluorinated Hydrocarbons
320-17406-17	DW-55FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.81	MDL	1.0	Total	101820	2/22/2016 3:41 PM	2/26/2016 8:58 AM	2/27/2016 4:10 PM	Perfluorinated Hydrocarbons
320-17406-17	DW-55FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.71	MDL	1.0	Total	101820	2/22/2016 3:41 PM	2/26/2016 8:58 AM	2/27/2016 4:10 PM	Perfluorinated Hydrocarbons
320-17406-17	DW-55FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.77	MDL	1.0	Total	101820	2/22/2016 3:41 PM	2/26/2016 8:58 AM	2/27/2016 4:10 PM	Perfluorinated Hydrocarbons
320-17406-17	DW-55FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.58	MDL	1.0	Total	101820	2/22/2016 3:41 PM	2/26/2016 8:58 AM	2/27/2016 4:10 PM	Perfluorinated Hydrocarbons
320-17406-17	DW-55FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 3:41 PM	2/26/2016 8:58 AM	3/1/2016 12:58 AM	Perfluorinated Hydrocarbons
320-17406-17	DW-55FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101820	2/22/2016 3:41 PM	2/26/2016 8:58 AM	2/27/2016 4:10 PM	Perfluorinated Hydrocarbons
320-17406-18	DW-95	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	ng/L	J	0.89	MDL	1.0	Total	101820	2/22/2016 4:36 PM	2/26/2016 8:58 AM	2/27/2016 4:31 PM	Perfluorinated Hydrocarbons
320-17406-18	DW-95	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	9.9	ng/L		0.78	MDL	1.0	Total	101820	2/22/2016 4:36 PM	2/26/2016 8:58 AM	2/27/2016 4:31 PM	Perfluorinated Hydrocarbons
320-17406-18	DW-95	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.2	ng/L	M	0.85	MDL	1.0	Total	101820	2/22/2016 4:36 PM	2/26/2016 8:58 AM	2/27/2016 4:31 PM	Perfluorinated Hydrocarbons
320-17406-18	DW-95	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.5	ng/L	J	0.64	MDL	1.0	Total	101820	2/22/2016 4:36 PM	2/26/2016 8:58 AM	2/27/2016 4:31 PM	Perfluorinated Hydrocarbons
320-17406-18	DW-95	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	ng/L	M	1.2	MDL	1.0	Total	101944	2/22/2016 4:36 PM	2/26/2016 8:58 AM	3/1/2016 1:19 AM	Perfluorinated Hydrocarbons
320-17406-18	DW-95	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	42	ng/L	M	0.73	MDL	1.0	Total	101820	2/22/2016 4:36 PM	2/26/2016 8:58 AM	2/27/2016 4:31 PM	Perfluorinated Hydrocarbons
320-17406-19	DW-95FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.3	ng/L	U	1.1	MDL	1.0	Total	101820	2/22/2016 4:21 PM	2/26/2016 8:58 AM	2/27/2016 4:52 PM	Perfluorinated Hydrocarbons
320-17406-19	DW-95FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	ng/L	U	0.94	MDL	1.0	Total	101820	2/22/2016 4:21 PM	2/26/2016 8:58 AM	2/27/2016 4:52 PM	Perfluorinated Hydrocarbons
320-17406-19	DW-95FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.3	ng/L	U	1.0	MDL	1.0	Total	101820	2/22/2016 4:21 PM	2/26/2016 8:58 AM	2/27/2016 4:52 PM	Perfluorinated Hydrocarbons
320-17406-19	DW-95FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.3	ng/L	U	0.77	MDL	1.0	Total	101820	2/22/2016 4:21 PM	2/26/2016 8:58 AM	2/27/2016 4:52 PM	Perfluorinated Hydrocarbons
320-17406-19	DW-95FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.5	ng/L	U	1.5	MDL	1.0	Total	101944	2/22/2016 4:21 PM	2/26/2016 8:58 AM	3/1/2016 1:41 AM	Perfluorinated Hydrocarbons
320-17406-19	DW-95FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.3	ng/L	U	0.88	MDL	1.0	Total	101820	2/22/2016 4:21 PM	2/26/2016 8:58 AM	2/27/2016 4:52 PM	Perfluorinated Hydrocarbons
320-17406-20	DW-6	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.8	ng/L	U	0.80	MDL	1.0	Total	101820	2/22/2016 5:01 PM	2/26/2016 8:58 AM	2/27/2016 5:13 PM	Perfluorinated Hydrocarbons
320-17406-20	DW-6	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.8	ng/L	U	0.70	MDL	1.0	Total	101820	2/22/2016 5:01 PM	2/26/2016 8:58 AM	2/27/2016 5:13 PM	Perfluorinated Hydrocarbons
320-17406-20	DW-6	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8	ng/L	U	0.76	MDL	1.0	Total	101820	2/22/2016 5:01 PM	2/26/2016 8:58 AM	2/27/2016 5:13 PM	Perfluorinated Hydrocarbons
320-17406-20	DW-6	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.8	ng/L	U	0.57	MDL	1.0	Total	101820	2/22/2016 5:01 PM	2/26/2016 8:58 AM	2/27/2016 5:13 PM	Perfluorinated Hydrocarbons
320-17406-20	DW-6	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	ng/L	U	1.1	MDL	1.0	Total	101944	2/22/2016 5:01 PM	2/26/2016 8:58 AM	3/1/2016 2:02 AM	Perfluorinated Hydrocarbons
320-17406-20	DW-6	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.8	ng/L	U	0.66	MDL	1.0	Total	101820	2/22/2016 5:01 PM	2/26/2016 8:58 AM	2/27/2016 5:13 PM	Perfluorinated Hydrocarbons
320-17406-21	DW-6FB	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.3	ng/L	U	1.0	MDL	1.0	Total	101820	2/22/2016 4:51 PM	2/26/2016 8:58 AM	2/27/2016 5:56 PM	Perfluorinated Hydrocarbons
320-17406-21	DW-6FB	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	ng/L	U	0.91	MDL	1.0	Total	101820	2/22/2016 4:51 PM	2/26/2016 8:58 AM	2/27/2016 5:56 PM	Perfluorinated Hydrocarbons
320-17406-21	DW-6FB	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.3	ng/L	U	0.99	MDL	1.0	Total	101820	2/22/2016 4:51 PM	2/26/2016 8:58 AM	2/27/2016 5:56 PM	Perfluorinated Hydrocarbons
320-17406-21	DW-6FB	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.3	ng/L	U	0.74	MDL	1.0	Total	101820	2/22/2016 4:51 PM	2/26/2016 8:58 AM	2/27/2016 5:56 PM	Perfluorinated Hydrocarbons
320-17406-21	DW-6FB	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.4	ng/L	U	1.5	MDL	1.0	Total	101820	2/22/2016 4:51 PM	2/26/2016 8:58 AM	2/27/2016 5:56 PM	Perfluorinated Hydrocarbons
320-17406-21	DW-6FB	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.3	ng/L	U	0.85	MDL	1.0	Total	101820	2/22/2016 4:51 PM	2/26/2016 8:58 AM	2/27/2016 5:56 PM	Perfluorinated Hydrocarbons
320-17406-22	DW-37	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.92	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:17 PM	Perfluorinated Hydrocarbons
320-17406-22	DW-37	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.80	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:17 PM	Perfluorinated Hydrocarbons
320-17406-22	DW-37	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.87	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:17 PM	Perfluorinated Hydrocarbons
320-17406-22	DW-37	PFC														

Sample	Sample Name	Specific Method	CAS Number	Analyte	Result	Units	Qualifier	Limit	Reports To	Dilution	Result Basis	Batch	Sampled	Prepared	Analyzed	Analysis
320-17406-24	DUP-022216	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	ng/L	U	0.85	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:59 PM	Perfluorinated Hydrocarbons
320-17406-24	DUP-022216	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	ng/L	U	0.75	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:59 PM	Perfluorinated Hydrocarbons
320-17406-24	DUP-022216	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	ng/L	U	0.81	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:59 PM	Perfluorinated Hydrocarbons
320-17406-24	DUP-022216	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.9	ng/L	U	0.61	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:59 PM	Perfluorinated Hydrocarbons
320-17406-24	DUP-022216	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	ng/L	U	1.2	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:59 PM	Perfluorinated Hydrocarbons
320-17406-24	DUP-022216	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.9	ng/L	U	0.70	MDL	1.0	Total	101820	2/22/2016 10:46 AM	2/26/2016 8:58 AM	2/27/2016 6:59 PM	Perfluorinated Hydrocarbons



Purpose

Complete one copy of this form to accompany the paper and electronic versions of Environmental Restoration Program (ERP) records submitted for inclusion to NIRIS.

Submitted By:

Name:	Jennifer O'Keefe		
Organization:	Resolution Consultants		
Email:	jokeefe@ensafe.com	Phone:	609-610-2721

Record Information:

Installation:	NWS Earle		
Program:	☒ ERN ☐ BRAC	Supporting:	☐ MRP ☐ LUC ☐ RAD ☐ POL
Document Title:	Data Validation Report		
AOC, SITE, SWMU, UST, UXO:	Site 46 Military Sealift Command Fire School		
Sample Delivery Groups (SDGs):	320-17363-1, 320-17376-1, 32017406-1, and 320-17463-1		
Document Date:	March 2016	Number of Pages:	13
Contract Number:	N62470-11-D-8013	CTO/DO Number:	WE09
Author/Affiliation:	Jennifer O'Keefe/Resolution Consultants		
Distribution/Availability Statement:	☒ A ☐ B ☐ C ☐ D ☐ E ☐ F		
Sensitive Content	☐ Yes ☒ No	Cite Pages:	
Recommended File Type:	☐ Administrative Record ☐ Post Decision ☒ Site File		

Notes:



DATA VALIDATION REPORT

Site Name: Naval Weapons Station Earle, Colts Neck, New Jersey, Site 46 — Military Sealift Command Firefighting School
Laboratory: TestAmerica, Sacramento, California.
Sample Delivery Groups: 320-17363-1, 320-17376-1, 32017406-1, and 320-17463-1
Matrix: Potable Water
Data Quality Level: Stage 4, Electronic and Manual
Analysis: Select perfluorinated compounds (PFCs) via Method 537 Modified

This report summarizes data review findings for potable water samples collected in February 2016 using the following reference documents:

- *Internal Draft Perfluorinated Compound Groundwater Investigation Sampling and Analysis Plan, Site 46 Military Sealift Command, Naval Weapons Station Earle Newport, Colts Neck, New Jersey*, Resolution Consultants (December 2015).
- Laboratory standard operating procedure (SOP) *Perfluorinated Compounds (PFCs) in Water, Soils, Sediments, and Tissue [Method 37 Modified]*, TestAmerica, Sacramento, California, WS-LC-0025, Revision 1.5, (November 2015).
- *Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data review*, United States Environmental Protection Agency, (September 2011).
- *Department of Defense Quality Systems Manual for Environmental Laboratories*, Version 5.0. (July 2013).

Validation was performed on potable water and quality control (QC) samples, summarized in Attachment A, Table A-1. Samples discussed in this validation report were analyzed and reported as definitive data. A full deliverable data packages, QC summaries and raw data, were submitted for data review.

The data were evaluated based on the following review elements:

- | | |
|---|---|
| * Data completeness | Isotope dilution recoveries |
| Sample receipt and preservation | Laboratory method blanks |
| * Holding times | Field and trip blanks |
| * Initial calibration | * Field duplicate precision |
| * Initial calibration verification | Sample reporting issues |
| Continuing calibration verification | * Sample result transcriptions/recalculations |
| * Laboratory control sample/laboratory control sample duplicate results | |

Acceptable data parameters for which all criteria were met, as indicated above with an asterisk (*), are not discussed further.

Sample Receipt and Preservation

All samples were received by the laboratory in good condition, properly preserved, and at the proper temperature of less than 4 degrees Celsius.

The chain-of-custody form for sample delivery group (SDG) 320-1736-1 did not document the collection time for DW-3; the time was corrected by the laboratory based on sampler's instructions the same day. In addition, the requested sample analyses, sample type, and matrix were inadvertently omitted for samples DW-84 and DW-84B. The laboratory logged these samples as specified on the purchase order/scope of work.

For SDG 320-17463-1, the requested sample analysis was omitted and the laboratory logged these samples as specified on the purchase order/scope of work.

No adverse effects to data quality are anticipated do to these chain-of-custody form oversights.

Continuing Calibration Outliers

Initial calibration demonstrates that the instrument is capable of acceptable performance and the results are used to quantitate sample values. Initial and continuing calibration verification checks satisfactory performance of the instrument on a day-to-day basis. If calibration results are close to the expected values, the reported analyte concentrations are assumed to be accurate. All initial calibration and initial calibration verification criteria were met.

The perfluorooctane sulfonic acid (PFOS) continuing calibration (CCV 320-101820/43) had a percent recovery of 27.2%, which was above the <25% control limit. The laboratory reanalyzed all samples associated with this calibration. The reanalyzed sample results met all QC criteria and are reported for interpretation.

Isotope Dilution Recoveries

The isotope dilution analytes consist of carbon-13 labeled analogs, oxygen-18 labeled analogs, or deuterated analogs of the compounds of interest, and they are spiked into every standard and sample at the time of extraction. This provides a correction for recovery of each corresponding native compound because the native compound and its labeled compound exhibit similar effects upon extraction, concentration, and analysis. By determining the ratio of these amounts, both the quantity and mass of the compound can be ascertained.

The field blank DW-80FB isotope dilution percent recovery (%R) for $^{13}\text{C}_4$ -PFOS was 156%, which was above the 25-150% control limit. Since associated compound PFOS was not detected, no qualification transpired because the elevated %R indicated a high result bias.

All isotope dilution analytes were below the 25-150% control limit for sample DW-55 during an initial analysis. However, this sample was reanalyzed due to a PFOS calibration outlier and this was the only analyte reported from the reanalysis. The data reviewer contacted the laboratory and requested the reanalyzed sample results be reported for all analytes. The reanalyzed sample results met all QC criteria and are reported for interpretation.

Blanks

Blanks help determine how much, if any, contamination was introduced in the laboratory or the field. All results associated with a particular laboratory blank were evaluated to determine whether there was an inherent variability in the data, or if a problem was an isolated occurrence that did not affect the data.

Laboratory method blanks were analyzed with samples to assess contamination imparted by sample preparation and/or analysis. All results associated with a particular laboratory blank were evaluated to determine whether there was an inherent variability in the data, or if a problem was an isolated occurrence that did not affect the data.

For this project, two types of field-derived blanks were collected: trip blank and field blank. The trip blank, which was placed in every shipping cooler and never opened in the field, consisted of the same source water as the laboratory method blank and was primarily used to measure possible cross contamination of samples during shipping to and from the site. Field blanks consisted of laboratory blank water bottles that were opened in the field and transferred into another container at each sampling location; they were used to assess potential ambient conditions cross-contamination that could potentially affect the quality of the associated samples. The primary purpose of this type of blank was to provide an additional check on possible sources of contamination beyond that which was intended for trip blanks.

Laboratory Method Blank Outliers

Laboratory method blank MB 320-102166/1-A contained perfluorobutanesulfonic acid (PFBS) at a concentration of 1.37 nanograms per liter (ng/L). PFBS was detected below the limit of quantitation and was qualified as undetected "U" in the following samples due to laboratory blank contamination: BC_02_26_16, DUP_022616, DW-18, DW-18FB, DW-78, DW-78FB, DW-100, and DW-100FB.

Trip Blanks and Field Blanks

Table 1 summarizes sample results qualified due to trip blank and field blank artifacts per the validation guidelines. Sample results that were either undetected or greater than the limit of quantitation were not qualified when blank outliers were observed.

Table 1					
Trip and Field Blank Outliers					
Blank	Blank Type	Analyte	Result (ng/L)	LOQ (ng/L)	Samples Qualified Undetected "U"
BC_02_26_16	Trip	Perfluorobutanesulfonic Acid (PFBS)	1.4	2.1	DUP_022616, DW-100, DW-100FB, DW-18, DW-18FB, DW-78, DW-78FB
BC_02_26_16	Trip	Perfluorononanoic Acid (PFNA)	0.64	2.1	DW-100FB
BC_2_20_16	Trip	Perfluorononanoic Acid (PFNA)	0.67	2.2	DW-3
DW-10FB	Field	Perfluorohexanesulfonic Acid (PFHXS)	0.80	2.2	None (a)
DW-18FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.3	2.3	DW-18
DW-29FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.7	2.3	None (a)
DW-48FB	Field	Perfluoroheptanoic Acid (PFHPA)	0.71	2.2	None (a)
DW-57FB	Field	Perfluorohexanesulfonic Acid (PFHXS)	1.1	2.2	None (b)

Table 1 Trip and Field Blank Outliers					
Blank	Blank Type	Analyte	Result (ng/L)	LOQ (ng/L)	Samples Qualified Undetected "U"
DW-57FB	Field	Perfluorooctane Sulfonic Acid	1.7	3.6	None (b)
DW-78FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.2	2.2	DW-78
DW-87FB	Field	Perfluorohexanesulfonic Acid (PFHXS)	0.86	2.3	None (a)
DW-87FB	Field	Perfluorononanoic Acid (PFNA)	0.78	2.3	None (a)
DW-100FB	Field	Perfluorobutanesulfonic Acid (PFBS)	1.3	2.3	DW-100
DW-100FB	Field	Perfluorononanoic Acid (PFNA)	0.63	2.3	None (a)

Notes:

ng/L = Nanograms per liter

LOQ = Limit of quantitation

(a) = The associated sample result was undetected and no adverse effects to data is expected.

(b) = The associated sample result was greater than the limit of quantitation and was not qualified.

Sample Reporting Issues

Raw analytical data were reviewed with particular attention to manual integration. As stated in the laboratory's SOP, *commercial sources of PFOS may produce several peaks in the PFOS chromatogram. These adjacent peaks are either completely resolved or not resolved but with a profound deflection that can be resolved during peak integration. The later of the peaks matches the retention time of the single labeled PFOS peak. Earlier peaks are branched isomers of PFOS, rather than a result of peak splitting. The earlier peak is included during peak integration.*

The data reviewer noticed that three of the PFOS manual integrations were not performed consistently in accordance with the SOP and requested that the laboratory reassess the data. Based on this inquiry, PFOs for sample DW-68 and DW-95 were reintegrated and re-reported. The third sample (DW-57) was reported correctly and results were not changed.

Overall Assessment

The data from SDGs 320-17363-1, 320-17376-1, 32017406-1, and 320-17463-1 were reviewed independently from the laboratory to assess data quality. Several analytes were flagged as undetected during data review due to suspected cross-contamination from laboratory and/or field sources. The remaining results were acceptable without qualification; therefore, the data are usable for their intended purpose, according to U.S. Environmental Protection Agency and Department of Defense guidelines. Attachment B provides final results after data review.

Attachment A
Sample and Analysis Summary

Table A-1 Sample Summary				
Sample Delivery Group	Laboratory Identification	Sample Date	Sample Identification	Sample Type
320173631	320-17363-1	2/19/2016	BC2_19_16	Trip Blank
320173631	320-17363-10	2/19/2016	DW-10	Potable Water
320173631	320-17363-11	2/19/2016	DW-10FB	Field Blank
320173631	320-17363-12	2/19/2016	DW-63	Potable Water
320173631	320-17363-13	2/19/2016	DW-63FB	Field Blank
320173631	320-17363-14	2/19/2016	DW-87	Potable Water
320173631	320-17363-15	2/19/2016	DW-87FB	Field Blank
320173631	320-17363-16	2/19/2016	DW-23	Potable Water
320173631	320-17363-17	2/19/2016	DW-23FB	Field Blank
320173631	320-17363-18	2/19/2016	DUP-021916	Duplicate of DW-23
320173631	320-17363-2	2/19/2016	DW-57	Potable Water
320173631	320-17363-3	2/19/2016	DW-57FB	Field Blank
320173631	320-17363-4	2/19/2016	DW-48	Potable Water
320173631	320-17363-5	2/19/2016	DW-48FB	Field Blank
320173631	320-17363-6	2/19/2016	DW-59	Potable Water
320173631	320-17363-7	2/19/2016	DW-59FB	Field Blank
320173631	320-17363-8	2/19/2016	DW-88	Potable Water
320173631	320-17363-9	2/19/2016	DW-88FB	Field Blank
320173761	320-17376-1	2/20/2016	BC_2_20_16	Trip Blank
320173761	320-17376-10	2/20/2016	DW-84	Potable Water
320173761	320-17376-11	2/20/2016	DW-84FB	Field Blank
320173761	320-17376-12	2/20/2016	DW-91	Potable Water
320173761	320-17376-13	2/20/2016	DW-91FB	Field Blank
320173761	320-17376-14	2/20/2016	DUP022016	Duplicate of DW-91
320173761	320-17376-2	2/20/2016	DW-29	Potable Water
320173761	320-17376-3	2/20/2016	DW-29FB	Field Blank
320173761	320-17376-4	2/20/2016	DW-13	Potable Water
320173761	320-17376-5	2/20/2016	DW-13FB	Field Blank
320173761	320-17376-6	2/20/2016	DW-3	Potable Water
320173761	320-17376-7	2/20/2016	DW-3FB	Field Blank
320173761	320-17376-8	2/20/2016	DW-71	Potable Water
320173761	320-17376-9	2/20/2016	DW-71FB	Field Blank
320174061	320-17406-1	2/22/2016	BC_2_22_16	Trip Blank
320174061	320-17406-10	2/22/2016	DW-15	Potable Water
320174061	320-17406-11	2/22/2016	DW-15FB	Field Blank
320174061	320-17406-12	2/22/2016	DW-19	Potable Water
320174061	320-17406-13	2/22/2016	DW-19FB	Field Blank
320174061	320-17406-14	2/22/2016	DW-68	Potable Water
320174061	320-17406-15	2/22/2016	DW-68FB	Field Blank
320174061	320-17406-16	2/22/2016	DW-55	Potable Water
320174061	320-17406-17	2/22/2016	DW-55FB	Field Blank
320174061	320-17406-18	2/22/2016	DW-95	Potable Water
320174061	320-17406-19	2/22/2016	DW-95FB	Field Blank
320174061	320-17406-2	2/22/2016	DW-1	Potable Water
320174061	320-17406-20	2/22/2016	DW-6	Potable Water

Table A-1 Sample Summary				
Sample Delivery Group	Laboratory Identification	Sample Date	Sample Identification	Sample Type
320174061	320-17406-21	2/22/2016	DW-6FB	Field Blank
320174061	320-17406-22	2/22/2016	DW-37	Potable Water
320174061	320-17406-23	2/22/2016	DW-37FB	Field Blank
320174061	320-17406-24	2/22/2016	DUP-022216	Duplicate of DW-37
320174061	320-17406-3	2/22/2016	DW-1FB	Field Blank
320174061	320-17406-4	2/22/2016	DW-56	Potable Water
320174061	320-17406-5	2/22/2016	DW-56FB	Field Blank
320174061	320-17406-6	2/22/2016	DW-80	Potable Water
320174061	320-17406-7	2/22/2016	DW-80FB	Field Blank
320174061	320-17406-8	2/22/2016	DW-44	Potable Water
320174061	320-17406-9	2/22/2016	DW-44FB	Field Blank
320174631	320-17463-1	2/26/2016	BC_02_26_16	Trip Blank
320174631	320-17463-2	2/26/2016	DW-18	Potable Water
320174631	320-17463-3	2/26/2016	DW-18FB	Field Blank
320174631	320-17463-4	2/26/2016	DW-78	Potable Water
320174631	320-17463-5	2/26/2016	DW-78FB	Field Blank
320174631	320-17463-6	2/26/2016	DW-100	Potable Water
320174631	320-17463-7	2/26/2016	DW-100FB	Field Blank
320174631	320-17463-8	2/26/2016	DUP_022616	Duplicate of DW-100

Notes:

All samples were analyzed via laboratory standard operating procedure *Perfluorinated Compounds (PFCs) in Water, Soils, Sediments, and Tissue [Method 37 Modified]*, TestAmerica, Sacramento, California, WS-LC-0025, Revision 1.5, (November 2015) for the following select list of analytes: Perfluorobutanesulfonic Acid (PFBS), Perfluoroheptanoic Acid (PFHPA), Perfluorohexanesulfonic Acid (PFHXS), Perfluorononanoic Acid (PFNA), Perfluorooctane Sulfonic Acid (PFOS), and Perfluorooctanoic Acid (PFOA).

Attachment B
Final Validated Results after Data Review

Table B-1																	
Perfluorinated Compound Results – February 2016																	
Sample Delivery Group			320173631			320173631			320173631			320173631			320173631		
Lab ID			320-17363-1			320-17363-10			320-17363-11			320-17363-12			320-17363-13		
Sample ID			BC2_19_16			DW-10			DW-10FB			DW-63			DW-63FB		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/19/2016			2/19/2016		
Sample Type			Trip Blank			Potable Water			Field Blank			Potable Water			Field Blank		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.9	U		0.8	J		1.8	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.9	U		2.7	U		2.7	U		2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.9	U		1.8	U		1.8	U		1.8	U	

Sample Delivery Group			320173631			320173631			320173631			320173631			320173631		
Lab ID			320-17363-14			320-17363-15			320-17363-16			320-17363-17			320-17363-18		
Sample ID			DW-87			DW-87FB			DW-23			DW-23FB			DUP-021916		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/19/2016			2/19/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Duplicate (DW-23)		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	0.86	J		1.8	U		1.8	U		1.8	U		2	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		2	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		0.86	J		1.8	U		1.8	U		2	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		0.78	J		1.8	U		1.8	U		2	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.7	U		2.7	U		2.7	U		3	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		2	U	

Sample Delivery Group			320173631			320173631			320173631			320173631			320173631		
Lab ID			320-17363-2			320-17363-3			320-17363-4			320-17363-5			320-17363-6		
Sample ID			DW-57			DW-57FB			DW-48			DW-48FB			DW-59		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/19/2016			2/19/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	J		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	4.5			1.8	U		1.8	U		0.71	J		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	41			1.1	J		0.83	J		1.8	U		0.83	J	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	3.4			1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	200			1.7	J		2.6	U		2.6	U		2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	28			1.8	U		1.8	U		1.8	U		1.8	U	

Table B-1																	
Perfluorinated Compound Results – February 2016																	
Sample Delivery Group			320173631			320173631			320173631			320173761			320173761		
Lab ID			320-17363-7			320-17363-8			320-17363-9			320-17376-1			320-17376-10		
Sample ID			DW-59FB			DW-88			DW-88FB			BC 2 20 16			DW-84		
Sample Date			2/19/2016			2/19/2016			2/19/2016			2/20/2016			2/20/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Trip Blank			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		1.8	U		0.67	J		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		2.6	U		2.8	U		2.7	U		2.6	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	

Sample Delivery Group			320173761			320173761			320173761			320173761			320173761		
Lab ID			320-17376-11			320-17376-12			320-17376-13			320-17376-14			320-17376-2		
Sample ID			DW-84FB			DW-91			DW-91FB			DUP022016			DW-29		
Sample Date			2/20/2016			2/20/2016			2/20/2016			2/20/2016			2/20/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Duplicate (DW-91)			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.8	U		2.6	U		2.8	U		2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		1.9	U		1.8	U	

Sample Delivery Group			320173761			320173761			320173761			320173761			320173761		
Lab ID			320-17376-3			320-17376-4			320-17376-5			320-17376-6			320-17376-7		
Sample ID			DW-29FB			DW-13			DW-13FB			DW-3			DW-3FB		
Sample Date			2/20/2016			2/20/2016			2/20/2016			2/20/2016			2/20/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Potable Water			Field Blank		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.7	J		1.8	U		1.8	U		1.4	J		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		1.8	U		0.97	J		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		1.8	U		1.8	U	bf	1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.7	U		2.7	U		16			2.7	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		1.8	U		2	J		1.8	U	

Table B-1																	
Perfluorinated Compound Results – February 2016																	
Sample Delivery Group			320173761			320173761			320174061			320174061			320174061		
Lab ID			320-17376-8			320-17376-9			320-17406-1			320-17406-10			320-17406-11		
Sample ID			DW-71			DW-71FB			BC 2 22 16			DW-15			DW-15FB		
Sample Date			2/20/2016			2/20/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Potable Water			Field Blank			Trip Blank			Potable Water			Field Blank		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		2.8	U		3.1	U		2.6	U		3	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.7	U		1.9	U		2	U		1.7	U		2	U	

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-12			320-17406-13			320-17406-14			320-17406-15			320-17406-16		
Sample ID			DW-19			DW-19FB			DW-68			DW-68FB			DW-55		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.8	U		1.8	U		1.8	U		1.9	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		1.8	U		6.1			1.8	U		1.9	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		1.8	U		4.7			1.8	U		1.1	J	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.8	U		2.7			1.8	U		1.9	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.7	U		2.7	U		18			2.6	U		2.8	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		1.8	U		27			1.8	U		1.9	U	

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-17			320-17406-18			320-17406-19			320-17406-2			320-17406-20		
Sample ID			DW-55FB			DW-95			DW-95FB			DW-1			DW-6		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Potable Water			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.8	U		1.9	J		2.3	U		1.8	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	U		9.9			2.3	U		1.8	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.8	U		5.2			2.3	U		1.8	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.8	U		1.5	J		2.3	U		1.8	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		28			3.5	U		2.7	U		2.6	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.8	U		42			2.3	U		1.8	U		1.8	U	

Table B-1																	
Perfluorinated Compound Results – February 2016																	
Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-21			320-17406-22			320-17406-23			320-17406-24			320-17406-3		
Sample ID			DW-6FB			DW-37			DW-37FB			DUP-022216			DW-1FB		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Field Blank			Potable Water			Field Blank			Duplicate (DW-37)			Field Blank		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	3.4	U		3	U		3	U		2.8	U		3	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	2.3	U		2	U		2	U		1.9	U		2	U	

Sample Delivery Group			320174061			320174061			320174061			320174061			320174061		
Lab ID			320-17406-4			320-17406-5			320-17406-6			320-17406-7			320-17406-8		
Sample ID			DW-56			DW-56FB			DW-80			DW-80FB			DW-44		
Sample Date			2/22/2016			2/22/2016			2/22/2016			2/22/2016			2/22/2016		
Sample Type			Potable Water			Field Blank			Potable Water			Field Blank			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.9	U		2	U		1.8	U		2	U		1.8	U	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.8	J		2	U		1.8	U		2	U		1.8	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.9	U		2	U		1.8	U		2	U		1.8	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.9	U		2	U		1.8	U		2	U		1.8	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.8	U		3	U		2.7	U		3	U		2.6	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.9	U		2	U		1.8	U		2	U		2.6		

Sample Delivery Group			320174061			320174631			320174631			320174631			320174631		
Lab ID			320-17406-9			320-17463-1			320-17463-2			320-17463-3			320-17463-4		
Sample ID			DW-44FB			BC_02_26_16			DW-18			DW-18FB			DW-78		
Sample Date			2/22/2016			2/26/2016			2/26/2016			2/26/2016			2/26/2016		
Sample Type			Field Blank			Trip Blank			Potable Water			Field Blank			Potable Water		
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	2	U		1.7	U	bl	1.8	U	bl	1.8	U	bl	1.9	U	bl
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	2	U		1.7	U		1.8	U		1.8	U		1.9	U	
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	2	U		1.7	U		1.8	U		1.8	U		1.9	U	
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	2	U		0.64	J		1.8	U		1.8	U		1.9	U	
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	3	U		2.6	U		2.7	U		2.7	U		2.9	U	
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	2	U		1.7	U		1.8	U		1.8	U		1.9	U	

Table B-1 Perfluorinated Compound Results – February 2016															
Sample Delivery Group			320174631			320174631			320174631			320174631			
Lab ID			320-17463-5			320-17463-6			320-17463-7			320-17463-8			
Sample ID			DW-78FB			DW-100			DW-100FB			DUP_022616			
Sample Date			2/26/2016			2/26/2016			2/26/2016			2/26/2016			
Sample Type			Field Blank			Potable Water			Field Blank			Duplicate (DW-100)			
Analyte	CAS No	Units	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	ng/L	1.7	U	bl	2	U	bl	1.9	U	bl	1.9	U	bl	
Perfluoroheptanoic Acid (PFHPA)	375-85-9	ng/L	1.7	U		2	U		1.9	U		1.9	U		
Perfluorohexanesulfonic Acid (PFHXS)	355-46-4	ng/L	1.7	U		2	U		1.9	U		1.9	U		
Perfluorononanoic Acid (PFNA)	375-95-1	ng/L	1.7	U		2	U		1.9	U	bf	1.9	U		
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	ng/L	2.6	U		2.9	U		2.8	U		2.9	U		
Perfluorooctanoic Acid (PFOA)	335-67-1	ng/L	1.7	U		2	U		1.9	U		1.9	U		

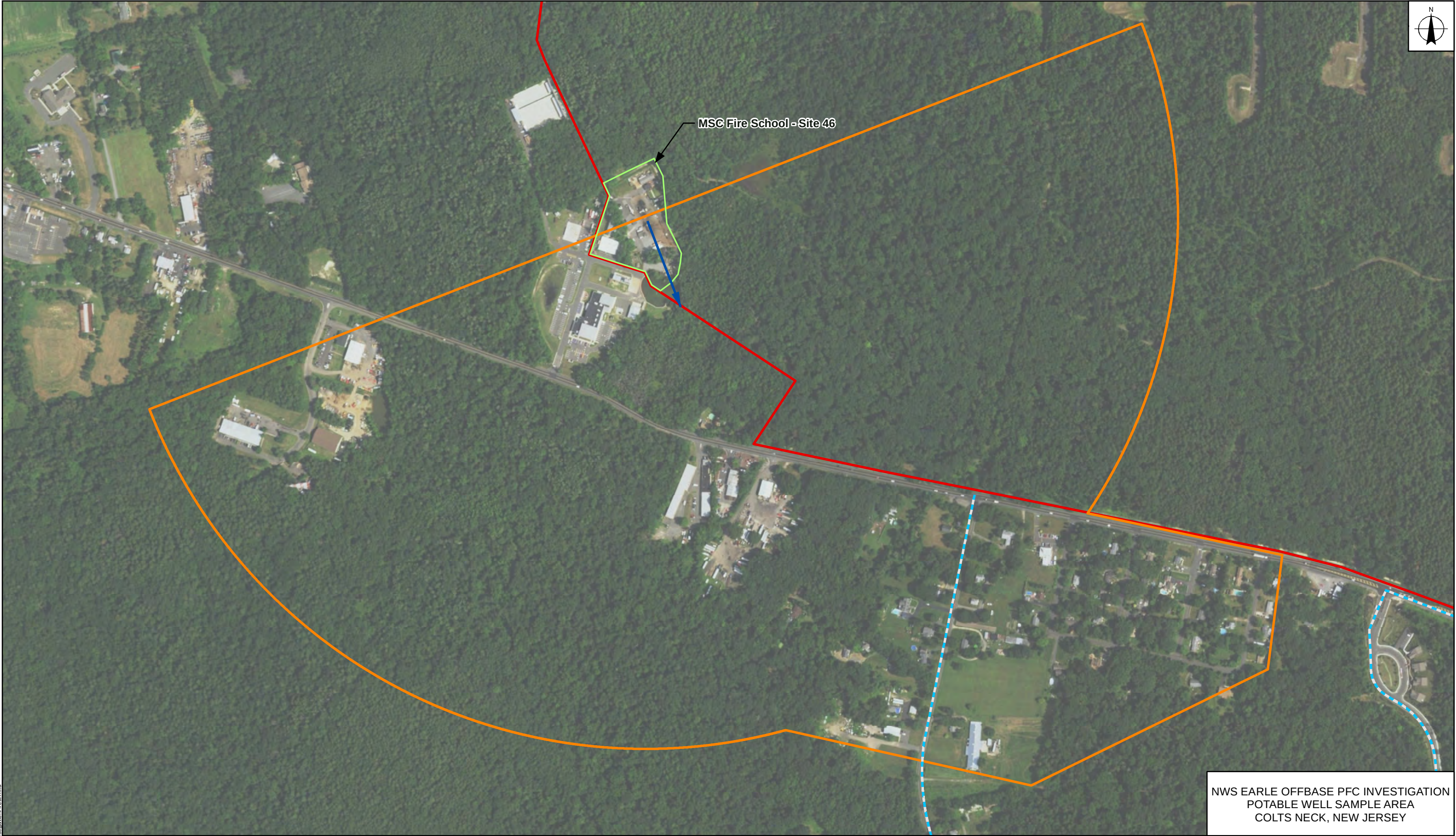
Notes:

ID = Identification
ng/L = Nanograms per liter
Qual = Final qualifier
RC = Data qualification reason code
U = **Undetected** — The parameter was analyzed but undetected or was qualified as undetected during data review due to blank artifacts.
J = **Estimated Value** — The analyte concentration was less than the limit of quantitation.

Qualification Reason Codes

bf = Result qualified as undetected due to field-derived blank results
bl = Result qualified as undetected due to laboratory blank results

Naval Weapons Station Earle



X:\Nav\Earle\PotableInvestigationArea.mxd

- Approximate Existing Public Water Distribution System
- One Half Mile Area Designated for Drinking Water Sampling (Potable Well Source)
- Approximate Groundwater Flow
- NWS Earle Property Boundary

0 450 900 Feet

NWS EARLE OFFBASE PFC INVESTIGATION
POTABLE WELL SAMPLE AREA
COLTS NECK, NEW JERSEY



REQUESTED BY: J. O'KEEFE	DATE: 2/3/2016
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