



**Groundwater Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Report, SDG 320-41889-1**

*Naval Air Warfare Center Warminster
Warminster, Pennsylvania*

August 2019

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WARMINSTER_NAWC
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-41889-1, NAS WILLOW GROVE NAWC
WARMINSTER PA**
08/22/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-41889-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

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



Approved for release.
David R. Alltucker
Project Manager I
8/22/2018 3:43 PM

David R Alltucker, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4383
david.alltucker@testamericainc.com
08/22/2018

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Definitions/Glossary

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

TestAmerica Job ID: 320-41889-1

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

Glossary

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

Job Narrative
320-41889-1

Receipt

The samples were received on 8/8/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9° C.

LCMS

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

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

Organic Prep

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

Detection Summary

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-RW-4848

Lab Sample ID: 320-41889-1

No Detections.

Client Sample ID: WGNA-080718-FRB-4848

Lab Sample ID: 320-41889-2

No Detections.

Client Sample ID: WGNA-080718-RW-0344

Lab Sample ID: 320-41889-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	28	J	37	6.3	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	27		19	2.6	ng/L	1		537	Total/NA
Perfluorononanoic acid (PFNA)	35		22	7.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20	J	28	5.1	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.2	J	9.3	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080718-FRB-0344

Lab Sample ID: 320-41889-4

No Detections.

Client Sample ID: WGNA-080718-RW-0104

Lab Sample ID: 320-41889-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	39		38	6.5	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	19		19	2.7	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	32		29	5.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.4	J	9.5	1.8	ng/L	1		537	Total/NA

Client Sample ID: WGNA-080718-FRB-0104

Lab Sample ID: 320-41889-6

No Detections.

Client Sample ID: NAWC-080718-RW-106

Lab Sample ID: 320-41889-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J	35	5.9	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	21		17	2.4	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11	J	26	4.8	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080718-FRB-106

Lab Sample ID: 320-41889-8

No Detections.

Client Sample ID: WGNA-080718-RW-3322

Lab Sample ID: 320-41889-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	24	J	37	6.3	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	18	J	19	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	5.1	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.5	J	9.3	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-FRB-3322

Lab Sample ID: 320-41889-10

No Detections.

Client Sample ID: NAWC-080718-RW-081

Lab Sample ID: 320-41889-11

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	20	J	37	6.3	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	15	J	18	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11	J	28	5.1	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.4	J	9.2	1.8	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080718-FRB-081

Lab Sample ID: 320-41889-12

No Detections.

Client Sample ID: NAWC-080718-RW-082

Lab Sample ID: 320-41889-13

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	19	J	37	6.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	16	J	18	2.6	ng/L	1		537	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12	J	27	5.0	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.3	J	9.1	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080718-FRB-082

Lab Sample ID: 320-41889-14

No Detections.

Client Sample ID: NAWC-080718-RW-258

Lab Sample ID: 320-41889-15

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	36	6.2	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	19		18	2.5	ng/L	1		537	Total/NA
Perfluorononanoic acid (PFNA)	9.4	J	22	7.2	ng/L	1		537	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.7	J	9.1	1.7	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080718-FRB-258

Lab Sample ID: 320-41889-16

No Detections.

Client Sample ID: NAWC-080718-RW-207

Lab Sample ID: 320-41889-17

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.4	J	19	2.6	ng/L	1		537	Total/NA

Client Sample ID: NAWC-080718-FRB-207

Lab Sample ID: 320-41889-18

No Detections.

Client Sample ID: WGNA-080718-DUP-44

Lab Sample ID: 320-41889-19

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	17	J	37	6.4	ng/L	1		537	Total/NA
Perfluorooctanoic acid (PFOA)	19		19	2.6	ng/L	1		537	Total/NA
Perfluorononanoic acid (PFNA)	9.4	J	22	7.5	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-DUP-44 (Continued)

Lab Sample ID: 320-41889-19

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	6.9	J	9.3	1.8	ng/L	1		537	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-RW-4848

Lab Sample ID: 320-41889-1

Date Collected: 08/07/18 07:25

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	16	U	41	6.9	ng/L		08/17/18 20:02	08/20/18 17:20	1
Perfluorooctanoic acid (PFOA)	8.2	U M	20	2.9	ng/L		08/17/18 20:02	08/20/18 17:20	1
Perfluorononanoic acid (PFNA)	20	U	24	8.2	ng/L		08/17/18 20:02	08/20/18 17:20	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	31	5.6	ng/L		08/17/18 20:02	08/20/18 17:20	1
Perfluoroheptanoic acid (PFHpA)	4.1	U	10	1.9	ng/L		08/17/18 20:02	08/20/18 17:20	1
Perfluorobutanesulfonic acid (PFBS)	37	U	92	16	ng/L		08/17/18 20:02	08/20/18 17:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				08/17/18 20:02	08/20/18 17:20	1
13C2 PFDA	89		70 - 130				08/17/18 20:02	08/20/18 17:20	1

Client Sample ID: WGNA-080718-FRB-4848

Lab Sample ID: 320-41889-2

Date Collected: 08/07/18 07:20

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	37	6.3	ng/L		08/17/18 20:02	08/20/18 17:25	1
Perfluorooctanoic acid (PFOA)	7.4	U	18	2.6	ng/L		08/17/18 20:02	08/20/18 17:25	1
Perfluorononanoic acid (PFNA)	18	U	22	7.4	ng/L		08/17/18 20:02	08/20/18 17:25	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.1	ng/L		08/17/18 20:02	08/20/18 17:25	1
Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	1.8	ng/L		08/17/18 20:02	08/20/18 17:25	1
Perfluorobutanesulfonic acid (PFBS)	33	U	83	15	ng/L		08/17/18 20:02	08/20/18 17:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130				08/17/18 20:02	08/20/18 17:25	1
13C2 PFDA	90		70 - 130				08/17/18 20:02	08/20/18 17:25	1

Client Sample ID: WGNA-080718-RW-0344

Lab Sample ID: 320-41889-3

Date Collected: 08/07/18 08:10

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	28	J	37	6.3	ng/L		08/17/18 20:02	08/20/18 17:29	1
Perfluorooctanoic acid (PFOA)	27		19	2.6	ng/L		08/17/18 20:02	08/20/18 17:29	1
Perfluorononanoic acid (PFNA)	35		22	7.4	ng/L		08/17/18 20:02	08/20/18 17:29	1
Perfluorohexanesulfonic acid (PFHxS)	20	J	28	5.1	ng/L		08/17/18 20:02	08/20/18 17:29	1
Perfluoroheptanoic acid (PFHpA)	6.2	J	9.3	1.8	ng/L		08/17/18 20:02	08/20/18 17:29	1
Perfluorobutanesulfonic acid (PFBS)	33	U	84	15	ng/L		08/17/18 20:02	08/20/18 17:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				08/17/18 20:02	08/20/18 17:29	1
13C2 PFDA	89		70 - 130				08/17/18 20:02	08/20/18 17:29	1

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-FRB-0344

Lab Sample ID: 320-41889-4

Date Collected: 08/07/18 08:05

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/17/18 20:02	08/20/18 17:34	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/17/18 20:02	08/20/18 17:34	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/17/18 20:02	08/20/18 17:34	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/17/18 20:02	08/20/18 17:34	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/17/18 20:02	08/20/18 17:34	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/17/18 20:02	08/20/18 17:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	08/17/18 20:02	08/20/18 17:34	1
13C2 PFDA	89		70 - 130	08/17/18 20:02	08/20/18 17:34	1

Client Sample ID: WGNA-080718-RW-0104

Lab Sample ID: 320-41889-5

Date Collected: 08/07/18 08:40

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	39		38	6.5	ng/L		08/17/18 20:02	08/20/18 17:39	1
Perfluorooctanoic acid (PFOA)	19		19	2.7	ng/L		08/17/18 20:02	08/20/18 17:39	1
Perfluorononanoic acid (PFNA)	19	U	23	7.6	ng/L		08/17/18 20:02	08/20/18 17:39	1
Perfluorohexanesulfonic acid (PFHxS)	32		29	5.2	ng/L		08/17/18 20:02	08/20/18 17:39	1
Perfluoroheptanoic acid (PFHpA)	5.4	J	9.5	1.8	ng/L		08/17/18 20:02	08/20/18 17:39	1
Perfluorobutanesulfonic acid (PFBS)	34	U	86	15	ng/L		08/17/18 20:02	08/20/18 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130	08/17/18 20:02	08/20/18 17:39	1
13C2 PFDA	93		70 - 130	08/17/18 20:02	08/20/18 17:39	1

Client Sample ID: WGNA-080718-FRB-0104

Lab Sample ID: 320-41889-6

Date Collected: 08/07/18 08:35

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		08/17/18 20:02	08/20/18 17:43	1
Perfluorooctanoic acid (PFOA)	7.0	U	17	2.4	ng/L		08/17/18 20:02	08/20/18 17:43	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/17/18 20:02	08/20/18 17:43	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/17/18 20:02	08/20/18 17:43	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.7	ng/L		08/17/18 20:02	08/20/18 17:43	1
Perfluorobutanesulfonic acid (PFBS)	31	U	79	14	ng/L		08/17/18 20:02	08/20/18 17:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	08/17/18 20:02	08/20/18 17:43	1
13C2 PFDA	90		70 - 130	08/17/18 20:02	08/20/18 17:43	1

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: NAWC-080718-RW-106

Lab Sample ID: 320-41889-7

Date Collected: 08/07/18 09:10

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	20	J	35	5.9	ng/L		08/17/18 20:02	08/20/18 17:48	1
Perfluorooctanoic acid (PFOA)	21		17	2.4	ng/L		08/17/18 20:02	08/20/18 17:48	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/17/18 20:02	08/20/18 17:48	1
Perfluorohexanesulfonic acid (PFHxS)	11	J	26	4.8	ng/L		08/17/18 20:02	08/20/18 17:48	1
Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	1.7	ng/L		08/17/18 20:02	08/20/18 17:48	1
Perfluorobutanesulfonic acid (PFBS)	31	U	79	14	ng/L		08/17/18 20:02	08/20/18 17:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130				08/17/18 20:02	08/20/18 17:48	1
13C2 PFDA	85		70 - 130				08/17/18 20:02	08/20/18 17:48	1

Client Sample ID: NAWC-080718-FRB-106

Lab Sample ID: 320-41889-8

Date Collected: 08/07/18 09:05

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	6.0	ng/L		08/17/18 20:02	08/20/18 17:53	1
Perfluorooctanoic acid (PFOA)	7.0	U	18	2.5	ng/L		08/17/18 20:02	08/20/18 17:53	1
Perfluorononanoic acid (PFNA)	18	U	21	7.0	ng/L		08/17/18 20:02	08/20/18 17:53	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	26	4.8	ng/L		08/17/18 20:02	08/20/18 17:53	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	1.7	ng/L		08/17/18 20:02	08/20/18 17:53	1
Perfluorobutanesulfonic acid (PFBS)	32	U	79	14	ng/L		08/17/18 20:02	08/20/18 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130				08/17/18 20:02	08/20/18 17:53	1
13C2 PFDA	88		70 - 130				08/17/18 20:02	08/20/18 17:53	1

Client Sample ID: WGNA-080718-RW-3322

Lab Sample ID: 320-41889-9

Date Collected: 08/07/18 09:40

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	24	J	37	6.3	ng/L		08/17/18 20:02	08/20/18 18:07	1
Perfluorooctanoic acid (PFOA)	18	J	19	2.6	ng/L		08/17/18 20:02	08/20/18 18:07	1
Perfluorononanoic acid (PFNA)	19	U	22	7.4	ng/L		08/17/18 20:02	08/20/18 18:07	1
Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	5.1	ng/L		08/17/18 20:02	08/20/18 18:07	1
Perfluoroheptanoic acid (PFHpA)	5.5	J	9.3	1.8	ng/L		08/17/18 20:02	08/20/18 18:07	1
Perfluorobutanesulfonic acid (PFBS)	33	U	84	15	ng/L		08/17/18 20:02	08/20/18 18:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130				08/17/18 20:02	08/20/18 18:07	1
13C2 PFDA	89		70 - 130				08/17/18 20:02	08/20/18 18:07	1

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-FRB-3322

Lab Sample ID: 320-41889-10

Date Collected: 08/07/18 09:35

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/17/18 20:02	08/20/18 18:11	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/17/18 20:02	08/20/18 18:11	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/17/18 20:02	08/20/18 18:11	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/17/18 20:02	08/20/18 18:11	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/17/18 20:02	08/20/18 18:11	1
Perfluorobutanesulfonic acid (PFBS)	33	U	81	15	ng/L		08/17/18 20:02	08/20/18 18:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130	08/17/18 20:02	08/20/18 18:11	1
13C2 PFDA	92		70 - 130	08/17/18 20:02	08/20/18 18:11	1

Client Sample ID: NAWC-080718-RW-081

Lab Sample ID: 320-41889-11

Date Collected: 08/07/18 10:10

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	20	J	37	6.3	ng/L		08/17/18 20:02	08/20/18 18:16	1
Perfluorooctanoic acid (PFOA)	15	J	18	2.6	ng/L		08/17/18 20:02	08/20/18 18:16	1
Perfluorononanoic acid (PFNA)	18	U	22	7.4	ng/L		08/17/18 20:02	08/20/18 18:16	1
Perfluorohexanesulfonic acid (PFHxS)	11	J	28	5.1	ng/L		08/17/18 20:02	08/20/18 18:16	1
Perfluoroheptanoic acid (PFHpA)	4.4	J	9.2	1.8	ng/L		08/17/18 20:02	08/20/18 18:16	1
Perfluorobutanesulfonic acid (PFBS)	33	U	83	15	ng/L		08/17/18 20:02	08/20/18 18:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	91		70 - 130	08/17/18 20:02	08/20/18 18:16	1
13C2 PFDA	89		70 - 130	08/17/18 20:02	08/20/18 18:16	1

Client Sample ID: NAWC-080718-FRB-081

Lab Sample ID: 320-41889-12

Date Collected: 08/07/18 10:05

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		08/17/18 20:02	08/20/18 18:21	1
Perfluorooctanoic acid (PFOA)	7.0	U	17	2.4	ng/L		08/17/18 20:02	08/20/18 18:21	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/17/18 20:02	08/20/18 18:21	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/17/18 20:02	08/20/18 18:21	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.7	ng/L		08/17/18 20:02	08/20/18 18:21	1
Perfluorobutanesulfonic acid (PFBS)	31	U	78	14	ng/L		08/17/18 20:02	08/20/18 18:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130	08/17/18 20:02	08/20/18 18:21	1
13C2 PFDA	88		70 - 130	08/17/18 20:02	08/20/18 18:21	1

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: NAWC-080718-RW-082

Lab Sample ID: 320-41889-13

Date Collected: 08/07/18 10:20

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	19	J	37	6.2	ng/L		08/17/18 20:02	08/20/18 18:25	1
Perfluorooctanoic acid (PFOA)	16	J	18	2.6	ng/L		08/17/18 20:02	08/20/18 18:25	1
Perfluorononanoic acid (PFNA)	18	U	22	7.3	ng/L		08/17/18 20:02	08/20/18 18:25	1
Perfluorohexanesulfonic acid (PFHxS)	12	J	27	5.0	ng/L		08/17/18 20:02	08/20/18 18:25	1
Perfluoroheptanoic acid (PFHpA)	5.3	J	9.1	1.7	ng/L		08/17/18 20:02	08/20/18 18:25	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/17/18 20:02	08/20/18 18:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130				08/17/18 20:02	08/20/18 18:25	1
13C2 PFDA	93		70 - 130				08/17/18 20:02	08/20/18 18:25	1

Client Sample ID: NAWC-080718-FRB-082

Lab Sample ID: 320-41889-14

Date Collected: 08/07/18 10:15

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/17/18 20:02	08/20/18 18:30	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/17/18 20:02	08/20/18 18:30	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/17/18 20:02	08/20/18 18:30	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	4.9	ng/L		08/17/18 20:02	08/20/18 18:30	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/17/18 20:02	08/20/18 18:30	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	14	ng/L		08/17/18 20:02	08/20/18 18:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130				08/17/18 20:02	08/20/18 18:30	1
13C2 PFDA	88		70 - 130				08/17/18 20:02	08/20/18 18:30	1

Client Sample ID: NAWC-080718-RW-258

Lab Sample ID: 320-41889-15

Date Collected: 08/07/18 11:10

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	J	36	6.2	ng/L		08/17/18 20:02	08/20/18 18:35	1
Perfluorooctanoic acid (PFOA)	19		18	2.5	ng/L		08/17/18 20:02	08/20/18 18:35	1
Perfluorononanoic acid (PFNA)	9.4	J	22	7.2	ng/L		08/17/18 20:02	08/20/18 18:35	1
Perfluorohexanesulfonic acid (PFHxS)	11	U M	27	5.0	ng/L		08/17/18 20:02	08/20/18 18:35	1
Perfluoroheptanoic acid (PFHpA)	6.7	J	9.1	1.7	ng/L		08/17/18 20:02	08/20/18 18:35	1
Perfluorobutanesulfonic acid (PFBS)	33	U	82	15	ng/L		08/17/18 20:02	08/20/18 18:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	92		70 - 130				08/17/18 20:02	08/20/18 18:35	1
13C2 PFDA	87		70 - 130				08/17/18 20:02	08/20/18 18:35	1

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: NAWC-080718-FRB-258

Lab Sample ID: 320-41889-16

Date Collected: 08/07/18 11:05

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	36	6.1	ng/L		08/17/18 20:02	08/20/18 18:39	1
Perfluorooctanoic acid (PFOA)	7.2	U	18	2.5	ng/L		08/17/18 20:02	08/20/18 18:39	1
Perfluorononanoic acid (PFNA)	18	U	22	7.2	ng/L		08/17/18 20:02	08/20/18 18:39	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	27	5.0	ng/L		08/17/18 20:02	08/20/18 18:39	1
Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	1.7	ng/L		08/17/18 20:02	08/20/18 18:39	1
Perfluorobutanesulfonic acid (PFBS)	32	U	81	15	ng/L		08/17/18 20:02	08/20/18 18:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130	08/17/18 20:02	08/20/18 18:39	1
13C2 PFDA	87		70 - 130	08/17/18 20:02	08/20/18 18:39	1

Client Sample ID: NAWC-080718-RW-207

Lab Sample ID: 320-41889-17

Date Collected: 08/07/18 12:40

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	15	U	38	6.4	ng/L		08/17/18 20:02	08/20/18 18:44	1
Perfluorooctanoic acid (PFOA)	6.4	J	19	2.6	ng/L		08/17/18 20:02	08/20/18 18:44	1
Perfluorononanoic acid (PFNA)	19	U	23	7.5	ng/L		08/17/18 20:02	08/20/18 18:44	1
Perfluorohexanesulfonic acid (PFHxS)	11	U	28	5.2	ng/L		08/17/18 20:02	08/20/18 18:44	1
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.4	1.8	ng/L		08/17/18 20:02	08/20/18 18:44	1
Perfluorobutanesulfonic acid (PFBS)	34	U	85	15	ng/L		08/17/18 20:02	08/20/18 18:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130	08/17/18 20:02	08/20/18 18:44	1
13C2 PFDA	90		70 - 130	08/17/18 20:02	08/20/18 18:44	1

Client Sample ID: NAWC-080718-FRB-207

Lab Sample ID: 320-41889-18

Date Collected: 08/07/18 12:35

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	14	U	35	5.9	ng/L		08/17/18 20:02	08/20/18 19:07	1
Perfluorooctanoic acid (PFOA)	7.0	U	17	2.4	ng/L		08/17/18 20:02	08/20/18 19:07	1
Perfluorononanoic acid (PFNA)	17	U	21	7.0	ng/L		08/17/18 20:02	08/20/18 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	10	U	26	4.8	ng/L		08/17/18 20:02	08/20/18 19:07	1
Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	1.7	ng/L		08/17/18 20:02	08/20/18 19:07	1
Perfluorobutanesulfonic acid (PFBS)	31	U	79	14	ng/L		08/17/18 20:02	08/20/18 19:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130	08/17/18 20:02	08/20/18 19:07	1
13C2 PFDA	88		70 - 130	08/17/18 20:02	08/20/18 19:07	1

Client Sample Results

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-DUP-44

Lab Sample ID: 320-41889-19

Date Collected: 08/07/18 07:00

Matrix: Water

Date Received: 08/08/18 13:27

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	17	J	37	6.4	ng/L		08/17/18 20:02	08/20/18 19:12	1
Perfluorooctanoic acid (PFOA)	19		19	2.6	ng/L		08/17/18 20:02	08/20/18 19:12	1
Perfluorononanoic acid (PFNA)	9.4	J	22	7.5	ng/L		08/17/18 20:02	08/20/18 19:12	1
Perfluorohexanesulfonic acid (PFHxS)	11	U M	28	5.1	ng/L		08/17/18 20:02	08/20/18 19:12	1
Perfluoroheptanoic acid (PFHpA)	6.9	J	9.3	1.8	ng/L		08/17/18 20:02	08/20/18 19:12	1
Perfluorobutanesulfonic acid (PFBS)	34	U	84	15	ng/L		08/17/18 20:02	08/20/18 19:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	90		70 - 130				08/17/18 20:02	08/20/18 19:12	1
13C2 PFDA	87		70 - 130				08/17/18 20:02	08/20/18 19:12	1

Default Detection Limits

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

TestAmerica Job ID: 320-41889-1

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-41889-1

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		PFHxA (70-130)	PFDA (70-130)
320-41889-1	WGNA-080718-RW-4848	86	89
320-41889-2	WGNA-080718-FRB-4848	93	90
320-41889-3	WGNA-080718-RW-0344	94	89
320-41889-4	WGNA-080718-FRB-0344	94	89
320-41889-5	WGNA-080718-RW-0104	93	93
320-41889-6	WGNA-080718-FRB-0104	94	90
320-41889-7	NAWC-080718-RW-106	88	85
320-41889-8	NAWC-080718-FRB-106	90	88
320-41889-9	WGNA-080718-RW-3322	91	89
320-41889-10	WGNA-080718-FRB-3322	90	92
320-41889-11	NAWC-080718-RW-081	91	89
320-41889-12	NAWC-080718-FRB-081	92	88
320-41889-13	NAWC-080718-RW-082	92	93
320-41889-14	NAWC-080718-FRB-082	92	88
320-41889-15	NAWC-080718-RW-258	92	87
320-41889-16	NAWC-080718-FRB-258	89	87
320-41889-17	NAWC-080718-RW-207	94	90
320-41889-17 LMS	NAWC-080718-RW-207	90	88
320-41889-17 LMSD	NAWC-080718-RW-207	90	85
320-41889-18	NAWC-080718-FRB-207	90	88
320-41889-19	WGNA-080718-DUP-44	90	87
LLCS 320-240636/2-A	Lab Control Sample	92	85
MB 320-240636/1-A	Method Blank	94	85

Surrogate Legend

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-41889-1

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

Lab Sample ID: MB 320-240636/1-A
Matrix: Water
Analysis Batch: 240970

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240636

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	16	U	40	6.8	ng/L		08/17/18 20:02	08/20/18 17:11	1
Perfluorooctanoic acid (PFOA)	8.0	U	20	2.8	ng/L		08/17/18 20:02	08/20/18 17:11	1
Perfluorononanoic acid (PFNA)	20	U	24	8.0	ng/L		08/17/18 20:02	08/20/18 17:11	1
Perfluorohexanesulfonic acid (PFHxS)	12	U	30	5.5	ng/L		08/17/18 20:02	08/20/18 17:11	1
Perfluoroheptanoic acid (PFHpA)	4.0	U	10	1.9	ng/L		08/17/18 20:02	08/20/18 17:11	1
Perfluorobutanesulfonic acid (PFBS)	36	U	90	16	ng/L		08/17/18 20:02	08/20/18 17:11	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	94		70 - 130	08/17/18 20:02	08/20/18 17:11	1
13C2 PFDA	85		70 - 130	08/17/18 20:02	08/20/18 17:11	1

Lab Sample ID: LLCS 320-240636/2-A
Matrix: Water
Analysis Batch: 240970

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240636

Analyte	Spike Added	LLCS	LLCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5		ng/L		103	50 - 150
Perfluorooctanoic acid (PFOA)	20.0	18.8	J	ng/L		94	50 - 150
Perfluorononanoic acid (PFNA)	20.0	19.1	J	ng/L		96	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.3		ng/L		110	50 - 150
Perfluoroheptanoic acid (PFHpA)	10.0	10.0		ng/L		100	50 - 150
Perfluorobutanesulfonic acid (PFBS)	90.2	105		ng/L		117	50 - 150

Surrogate	LLCS	LLCS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	92		70 - 130
13C2 PFDA	85		70 - 130

Lab Sample ID: 320-41889-17 LMS
Matrix: Water
Analysis Batch: 240971

Client Sample ID: NAWC-080718-RW-207
Prep Type: Total/NA
Prep Batch: 240636

Analyte	Sample	Sample	Spike Added	LMS	LMS	Unit	D	%Rec	Limits
	Result	Qualifier		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	15	U	37.7	44.5		ng/L		118	50 - 150
Perfluorooctanoic acid (PFOA)	6.4	J	18.7	23.9		ng/L		93	50 - 150
Perfluorononanoic acid (PFNA)	19	U	18.7	18.1	J	ng/L		96	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	11	U	28.4	30.1		ng/L		106	50 - 150
Perfluoroheptanoic acid (PFHpA)	3.8	U	9.37	9.20	J	ng/L		98	50 - 150
Perfluorobutanesulfonic acid (PFBS)	34	U	84.5	103		ng/L		122	50 - 150

Surrogate	LMS	LMS	Limits
	%Recovery	Qualifier	
13C2 PFHxA	90		70 - 130
13C2 PFDA	88		70 - 130

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-41889-1

LCMS

Prep Batch: 240636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41889-1	WGNA-080718-RW-4848	Total/NA	Water	537	
320-41889-2	WGNA-080718-FRB-4848	Total/NA	Water	537	
320-41889-3	WGNA-080718-RW-0344	Total/NA	Water	537	
320-41889-4	WGNA-080718-FRB-0344	Total/NA	Water	537	
320-41889-5	WGNA-080718-RW-0104	Total/NA	Water	537	
320-41889-6	WGNA-080718-FRB-0104	Total/NA	Water	537	
320-41889-7	NAWC-080718-RW-106	Total/NA	Water	537	
320-41889-8	NAWC-080718-FRB-106	Total/NA	Water	537	
320-41889-9	WGNA-080718-RW-3322	Total/NA	Water	537	
320-41889-10	WGNA-080718-FRB-3322	Total/NA	Water	537	
320-41889-11	NAWC-080718-RW-081	Total/NA	Water	537	
320-41889-12	NAWC-080718-FRB-081	Total/NA	Water	537	
320-41889-13	NAWC-080718-RW-082	Total/NA	Water	537	
320-41889-14	NAWC-080718-FRB-082	Total/NA	Water	537	
320-41889-15	NAWC-080718-RW-258	Total/NA	Water	537	
320-41889-16	NAWC-080718-FRB-258	Total/NA	Water	537	
320-41889-17	NAWC-080718-RW-207	Total/NA	Water	537	
320-41889-18	NAWC-080718-FRB-207	Total/NA	Water	537	
320-41889-19	WGNA-080718-DUP-44	Total/NA	Water	537	
MB 320-240636/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-240636/2-A	Lab Control Sample	Total/NA	Water	537	
320-41889-17 LMS	NAWC-080718-RW-207	Total/NA	Water	537	
320-41889-17 LMSD	NAWC-080718-RW-207	Total/NA	Water	537	

Analysis Batch: 240970

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41889-1	WGNA-080718-RW-4848	Total/NA	Water	537	240636
320-41889-2	WGNA-080718-FRB-4848	Total/NA	Water	537	240636
320-41889-3	WGNA-080718-RW-0344	Total/NA	Water	537	240636
320-41889-4	WGNA-080718-FRB-0344	Total/NA	Water	537	240636
320-41889-5	WGNA-080718-RW-0104	Total/NA	Water	537	240636
320-41889-6	WGNA-080718-FRB-0104	Total/NA	Water	537	240636
320-41889-7	NAWC-080718-RW-106	Total/NA	Water	537	240636
320-41889-8	NAWC-080718-FRB-106	Total/NA	Water	537	240636
MB 320-240636/1-A	Method Blank	Total/NA	Water	537	240636
LLCS 320-240636/2-A	Lab Control Sample	Total/NA	Water	537	240636

Analysis Batch: 240971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41889-9	WGNA-080718-RW-3322	Total/NA	Water	537	240636
320-41889-10	WGNA-080718-FRB-3322	Total/NA	Water	537	240636
320-41889-11	NAWC-080718-RW-081	Total/NA	Water	537	240636
320-41889-12	NAWC-080718-FRB-081	Total/NA	Water	537	240636
320-41889-13	NAWC-080718-RW-082	Total/NA	Water	537	240636
320-41889-14	NAWC-080718-FRB-082	Total/NA	Water	537	240636
320-41889-15	NAWC-080718-RW-258	Total/NA	Water	537	240636
320-41889-16	NAWC-080718-FRB-258	Total/NA	Water	537	240636
320-41889-17	NAWC-080718-RW-207	Total/NA	Water	537	240636
320-41889-17 LMS	NAWC-080718-RW-207	Total/NA	Water	537	240636

QC Association Summary

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

TestAmerica Job ID: 320-41889-1

LCMS (Continued)

Analysis Batch: 240972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-41889-18	NAWC-080718-FRB-207	Total/NA	Water	537	240636
320-41889-19	WGNA-080718-DUP-44	Total/NA	Water	537	240636
320-41889-17 LMSD	NAWC-080718-RW-207	Total/NA	Water	537	240636

Lab Chronicle

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-RW-4848

Date Collected: 08/07/18 07:25

Date Received: 08/08/18 13:27

Lab Sample ID: 320-41889-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:20	JRB	TAL SAC

Client Sample ID: WGNA-080718-FRB-4848

Date Collected: 08/07/18 07:20

Date Received: 08/08/18 13:27

Lab Sample ID: 320-41889-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:25	JRB	TAL SAC

Client Sample ID: WGNA-080718-RW-0344

Date Collected: 08/07/18 08:10

Date Received: 08/08/18 13:27

Lab Sample ID: 320-41889-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:29	JRB	TAL SAC

Client Sample ID: WGNA-080718-FRB-0344

Date Collected: 08/07/18 08:05

Date Received: 08/08/18 13:27

Lab Sample ID: 320-41889-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:34	JRB	TAL SAC

Client Sample ID: WGNA-080718-RW-0104

Date Collected: 08/07/18 08:40

Date Received: 08/08/18 13:27

Lab Sample ID: 320-41889-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:39	JRB	TAL SAC

Client Sample ID: WGNA-080718-FRB-0104

Date Collected: 08/07/18 08:35

Date Received: 08/08/18 13:27

Lab Sample ID: 320-41889-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:43	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: NAWC-080718-RW-106

Lab Sample ID: 320-41889-7

Date Collected: 08/07/18 09:10

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:48	JRB	TAL SAC

Client Sample ID: NAWC-080718-FRB-106

Lab Sample ID: 320-41889-8

Date Collected: 08/07/18 09:05

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240970	08/20/18 17:53	JRB	TAL SAC

Client Sample ID: WGNA-080718-RW-3322

Lab Sample ID: 320-41889-9

Date Collected: 08/07/18 09:40

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:07	JRB	TAL SAC

Client Sample ID: WGNA-080718-FRB-3322

Lab Sample ID: 320-41889-10

Date Collected: 08/07/18 09:35

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:11	JRB	TAL SAC

Client Sample ID: NAWC-080718-RW-081

Lab Sample ID: 320-41889-11

Date Collected: 08/07/18 10:10

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:16	JRB	TAL SAC

Client Sample ID: NAWC-080718-FRB-081

Lab Sample ID: 320-41889-12

Date Collected: 08/07/18 10:05

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:21	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: NAWC-080718-RW-082

Lab Sample ID: 320-41889-13

Date Collected: 08/07/18 10:20

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:25	JRB	TAL SAC

Client Sample ID: NAWC-080718-FRB-082

Lab Sample ID: 320-41889-14

Date Collected: 08/07/18 10:15

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:30	JRB	TAL SAC

Client Sample ID: NAWC-080718-RW-258

Lab Sample ID: 320-41889-15

Date Collected: 08/07/18 11:10

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:35	JRB	TAL SAC

Client Sample ID: NAWC-080718-FRB-258

Lab Sample ID: 320-41889-16

Date Collected: 08/07/18 11:05

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:39	JRB	TAL SAC

Client Sample ID: NAWC-080718-RW-207

Lab Sample ID: 320-41889-17

Date Collected: 08/07/18 12:40

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240971	08/20/18 18:44	JRB	TAL SAC

Client Sample ID: NAWC-080718-FRB-207

Lab Sample ID: 320-41889-18

Date Collected: 08/07/18 12:35

Matrix: Water

Date Received: 08/08/18 13:27

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240972	08/20/18 19:07	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-41889-1

Client Sample ID: WGNA-080718-DUP-44

Lab Sample ID: 320-41889-19

Date Collected: 08/07/18 07:00

Matrix: Water

Date Received: 08/08/18 13:27

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	537			240636	08/17/18 20:02	JER	TAL SAC
Total/NA	Analysis	537		1	240972	08/20/18 19:12	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

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

TestAmerica Job ID: 320-41889-1

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD ELAP		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-19
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19
Hawaii	State Program	9	N/A	01-29-19
Illinois	NELAP	5	200060	03-17-19
Kansas	NELAP	7	E-10375	10-31-18
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19
Oregon	NELAP	10	4040	01-29-19
Pennsylvania	NELAP	3	68-01272	03-31-19
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-19
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-18
Wyoming	State Program	8	8TMS-L	01-28-19

Method Summary

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

TestAmerica Job ID: 320-41889-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-41889-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-41889-1	WGNA-080718-RW-4848	Water	08/07/18 07:25	08/08/18 13:27
320-41889-2	WGNA-080718-FRB-4848	Water	08/07/18 07:20	08/08/18 13:27
320-41889-3	WGNA-080718-RW-0344	Water	08/07/18 08:10	08/08/18 13:27
320-41889-4	WGNA-080718-FRB-0344	Water	08/07/18 08:05	08/08/18 13:27
320-41889-5	WGNA-080718-RW-0104	Water	08/07/18 08:40	08/08/18 13:27
320-41889-6	WGNA-080718-FRB-0104	Water	08/07/18 08:35	08/08/18 13:27
320-41889-7	NAWC-080718-RW-106	Water	08/07/18 09:10	08/08/18 13:27
320-41889-8	NAWC-080718-FRB-106	Water	08/07/18 09:05	08/08/18 13:27
320-41889-9	WGNA-080718-RW-3322	Water	08/07/18 09:40	08/08/18 13:27
320-41889-10	WGNA-080718-FRB-3322	Water	08/07/18 09:35	08/08/18 13:27
320-41889-11	NAWC-080718-RW-081	Water	08/07/18 10:10	08/08/18 13:27
320-41889-12	NAWC-080718-FRB-081	Water	08/07/18 10:05	08/08/18 13:27
320-41889-13	NAWC-080718-RW-082	Water	08/07/18 10:20	08/08/18 13:27
320-41889-14	NAWC-080718-FRB-082	Water	08/07/18 10:15	08/08/18 13:27
320-41889-15	NAWC-080718-RW-258	Water	08/07/18 11:10	08/08/18 13:27
320-41889-16	NAWC-080718-FRB-258	Water	08/07/18 11:05	08/08/18 13:27
320-41889-17	NAWC-080718-RW-207	Water	08/07/18 12:40	08/08/18 13:27
320-41889-18	NAWC-080718-FRB-207	Water	08/07/18 12:35	08/08/18 13:27
320-41889-19	WGNA-080718-DUP-44	Water	08/07/18 07:00	08/08/18 13:27

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 240166

Lab Sample ID: IC 320-240166/2 Client Sample ID: _____

Date Analyzed: 08/15/18 18:21 Lab File ID: 2018.08.15_537CURVE_003.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.65	Baseline	roycea	08/15/18 18:53

Lab Sample ID: CCVL 320-240166/9 Client Sample ID: _____

Date Analyzed: 08/15/18 18:53 Lab File ID: 2018.08.15_537CURVE_010.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	1.65	Baseline	roycea	08/15/18 19:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 240970

Lab Sample ID: 320-41889-1 Client Sample ID: WGNA-080718-RW-4848

Date Analyzed: 08/20/18 17:20 Lab File ID: 2018.08.20_537A_016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	1.85	Incomplete Integration	barnettj	08/21/18 10:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 240971

Lab Sample ID: 320-41889-15 Client Sample ID: NAWC-080718-RW-258

Date Analyzed: 08/20/18 18:35 Lab File ID: 2018.08.20_537A_032.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	1.65	Missed Peak	barnettj	08/21/18 11:01

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 240972

Lab Sample ID: 320-41889-19 Client Sample ID: WGNA-080718-DUP-44

Date Analyzed: 08/20/18 19:12 Lab File ID: 2018.08.20_537A_040.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	1.66	Missed Peak	barnettj	08/21/18 11:03

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00032	08/15/18	06/23/18	MeOH/H2O, Lot 197626	10 mL	LC537-IS_00074	1000 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00074	12/16/18	06/16/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	28.68 ng/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			LCMPFOS_00024	180 uL	13C4 PFOS	0.1 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C2-PFOA	0.2868 ug/mL
LC537-ICV_00032	08/15/18	06/23/18	MeOH/H2O, Lot 197626	10 mL	LC537-SU_00072	1000 uL	13C2-PFOA	50 ug/mL
					LC537ICIM2_00001	400 uL	13C4 PFOS	47.8 ug/mL
							13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	100.092 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	20.1619 ng/mL
							Perfluorononanoic acid (PFNA)	20.1641 ng/mL
							Perfluorooctanoic acid (PFOA)	20.167 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1702 ng/mL
.LC537-SU_00072	12/16/18	06/16/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LC537ICIM2_00001	08/15/18	02/15/18	Methanol, Lot 090285	10 mL	LC537ICIM_00020	0.5 mL	13C2 PFHxA	50 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	2.5023 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.504047 ug/mL
							Perfluorononanoic acid (PFNA)	0.504103 ug/mL
							Perfluorooctanoic acid (PFOA)	0.504176 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.504255 ug/mL
..LC537ICIM_00020	08/15/18	02/15/18	Methanol, Lot 090285	25 mL	LC537-PFBS2_00009	0.625 mL	Perfluorobutanesulfonic acid (PFBS)	50.0459 ug/mL
					LC537-PFHxA2_00012	0.0625 mL	Perfluoroheptanoic acid (PFHpA)	5 ug/mL
					LC537-PFHxS2_00009	0.126 mL	Perfluorohexanesulfonic acid (PFHxS)	10.0809 ug/mL
					LC537-PFNA2_00010	0.126 mL	Perfluorononanoic acid (PFNA)	10.0821 ug/mL
					LC537-PFOA2_00011	0.126 mL	Perfluorooctanoic acid (PFOA)	10.0835 ug/mL
					LC537-PFOS2_00011	0.126 mL	Perfluorooctanesulfonic acid (PFOS)	10.0851 ug/mL
...LC537-PFBS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	17.1 mL	LC537_PFBS2_00002	0.0343 g	Perfluorobutanesulfonic acid (PFBS)	2001.84 ug/mL
....LC537_PFBS2_00002	09/08/22	Santa Cruz Biotechnology, Lot F0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC537-PFHpa2_00012	08/15/18	02/15/18	Methanol, Lot 09092	23.95 mL	LC537_PFHpa2_00002	0.0479 g	Perfluoroheptanoic acid (PFHpA)	2000 ug/mL
....LC537_PFHpa2_00002	06/13/22	Afla Aesar, Lot 10200390			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	1 g/g
...LC537-PFHxS2_00009	08/15/18	02/15/18	Methanol, Lot 090285	25.87 mL	LC537_PFHxS2_00002	0.0569 g	Perfluorohexanesulfonic acid (PFHxS)	2000.19 ug/mL
....LC537_PFHxS2_00002	06/08/22	Santa Cruz Biotechnology, Lot G2516			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	0.9094 g/g
...LC537-PFNA2_00010	08/15/18	02/15/18	Methanol, Lot 090285	16.58 mL	LC537 PFNA2_00002	0.0333 g	Perfluorononanoic acid (PFNA)	2000.41 ug/mL
....LC537 PFNA2_00002	06/14/22	Aldrich, Lot MKCC0699			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	0.996 g/g
...LC537-PFOA2_00011	08/15/18	02/15/18	Methanol, Lot 090285	22.96 mL	LC537 PFOA2_00002	0.0464 g	Perfluorooctanoic acid (PFOA)	2000.7 ug/mL
....LC537 PFOA2_00002	06/09/22	Afla Aesar, Lot 10199078			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.99 g/g
...LC537-PFOS2_00011	08/15/18	02/15/18	Methanol, Lot 090285	14.71 mL	LC537_PFOS2_00002	0.0378 g	Perfluorooctanesulfonic acid (PFOS)	2001.01 ug/mL
....LC537_PFOS2_00002	06/14/22	Sigma, Lot BCBQ0108V			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00080	02/02/19	08/15/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
.LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	5 mL	LC537-IS_00065	500 uL	13C2-PFOA	10 ng/mL
					LC537-MSP_00033	60 uL	13C4 PFOS	28.68 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	8.99912 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.96 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	3.003 ng/mL
							Perfluorononanoic acid (PFNA)	1.98 ng/mL
							Perfluorooctanoic acid (PFOA)	1.98 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	3.95328 ng/mL
					LC537-SU_00064	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-MSP_00033	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	509 uL	Perfluorobutanesulfonic acid (PFBS)	749.927 ng/mL
					LCPFHpA_00009	48 uL	Perfluoroheptanoic acid (PFHpA)	80 ng/mL
					LCPFHxS-br_00005	165 uL	Perfluorohexanesulfonic acid (PFHxS)	250.25 ng/mL
					LCPFNA_00009	99 uL	Perfluorononanoic acid (PFNA)	165 ng/mL
					LCPFOA_00010	99 uL	Perfluorooctanoic acid (PFOA)	165 ng/mL
					LCPFOS-br_00005	213 uL	Perfluorooctanesulfonic acid (PFOS)	329.44 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFDA	50 ug/mL
					(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L2_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	320 uL	Perfluorobutanesulfonic acid (PFBS)	20.0138 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.16 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	6.72187 ng/mL
							Perfluorononanoic acid (PFNA)	4.4 ng/mL
							Perfluorooctanoic acid (PFOA)	4.4 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	8.78507 ng/mL
					LC537-IS_00065	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00064	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
..LCM2PFOA_00010	02/12/21		Wellington Laboratories, Lot M2PFOA0216		LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL		
..LCMPFOS_00024	05/19/22		Wellington Laboratories, Lot MPFOS517		(Purchased Reagent)		13C2-PFOA	50 ug/mL		
..LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL		
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL		
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFDA	50 ug/mL		
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL		
LC537-L3_00025	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	720 uL	Perfluorobutanesulfonic acid (PFBS)	45.031 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	4.86 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	15.1242 ng/mL		
							Perfluorononanoic acid (PFNA)	9.9 ng/mL		
							Perfluorooctanoic acid (PFOA)	9.9 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	19.7664 ng/mL		
					LC537-IS_00065	2 mL	13C2-PFOA	10 ng/mL		
LC537-SU_00064	2 mL	13C4 PFOS	28.68 ng/mL							
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL		
							LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
							LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
							LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
							LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
							LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21		Wellington Laboratories, Lot LPFBS1116		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL		
..LCPFHpA_00009	12/02/21		Wellington Laboratories, Lot PFHpA1216		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL		
..LCPFHxS-br_00005	01/04/22		Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL		
..LCPFNA_00009	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL		
..LCPFOA_00010	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL		
..LCPFOS-br_00005	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL		
..LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL		
..LCM2PFOA_00010	02/12/21		Wellington Laboratories, Lot M2PFOA0216		LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL		
..LCMPFOS_00024	05/19/22		Wellington Laboratories, Lot MPFOS517		(Purchased Reagent)		13C2-PFOA	50 ug/mL		
..LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	(Purchased Reagent)		13C4 PFOS	47.8 ug/mL		
..LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL		
..LCMPFDA_00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL		
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFDA	50 ug/mL		
..LCMPFHxA_00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
LC537-L4_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00028	360 uL	Perfluorobutanesulfonic acid (PFBS)	90.0619 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	9.72 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	30.2484 ng/mL		
							Perfluorononanoic acid (PFNA)	19.8 ng/mL		
							Perfluorooctanoic acid (PFOA)	19.8 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	39.5328 ng/mL		
LC537-IS_00065					500 uL	13C2-PFOA	10 ng/mL			
						13C4 PFOS	28.68 ng/mL			
						13C2 PFDA	10 ng/mL			
LC537-SU_00064					500 uL	13C2 PFHxA	10 ng/mL			
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL		
							LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
							LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
							LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
							LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
							LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116				(Purchased Reagent)	Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL		
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216				(Purchased Reagent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL		
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117				(Purchased Reagent)	Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL		
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717				(Purchased Reagent)	Perfluorononanoic acid (PFNA)	50 ug/mL		
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917				(Purchased Reagent)	Perfluorooctanoic acid (PFOA)	50 ug/mL		
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117				(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL		
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL		
							LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216				(Purchased Reagent)	13C2-PFOA	50 ug/mL		
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517				(Purchased Reagent)	13C4 PFOS	47.8 ug/mL		
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL		
							LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916				(Purchased Reagent)	13C2 PFDA	50 ug/mL		
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116				(Purchased Reagent)	13C2 PFHxA	50 ug/mL		
LC537-L5_00026	09/30/18	04/02/18	MeOH/H2O, Lot 090285	20 mL	LC537-HSP_00028	2160 uL	Perfluorobutanesulfonic acid (PFBS)	135.093 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	14.58 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	45.3726 ng/mL		
							Perfluorononanoic acid (PFNA)	29.7 ng/mL		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	29.7 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	59.2992 ng/mL
					LC537-IS_00065	2 mL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00064	2 mL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L6_00022	09/30/18	04/02/18	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00028	720 uL	Perfluorobutanesulfonic acid (PFBS)	180.124 ng/mL
							Perfluoroheptanoic acid (PFHpA)	19.44 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	60.4968 ng/mL
							Perfluorononanoic acid (PFNA)	39.6 ng/mL
							Perfluorooctanoic acid (PFOA)	39.6 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	79.0656 ng/mL
					LC537-IS_00065	500 uL	13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
					LC537-SU_00064	500 uL	13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-HSP_00028	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	849 uL	Perfluorobutanesulfonic acid (PFBS)	1250.86 ng/mL
					LCPFHpA_00009	81 uL	Perfluoroheptanoic acid (PFHpA)	135 ng/mL
					LCPFHxS-br_00005	277 uL	Perfluorohexanesulfonic acid (PFHxS)	420.117 ng/mL
					LCPFNA_00009	165 uL	Perfluorononanoic acid (PFNA)	275 ng/mL
					LCPFOA_00010	165 uL	Perfluorooctanoic acid (PFOA)	275 ng/mL
					LCPFOS-br_00005	355 uL	Perfluorooctanesulfonic acid (PFOS)	549.067 ng/mL
..LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00005	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LC537-IS_00065	10/02/18	04/02/18	Methanol, Lot 090285	30000 uL	LCM2PFOA_00010	60 uL	13C2-PFOA	0.1 ug/mL
					LCMPFOS_00024	180 uL	13C4 PFOS	0.2868 ug/mL
..LCM2PFOA_00010	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00024	05/19/22	Wellington Laboratories, Lot MPFOS517			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00064	10/02/18	04/02/18	Methanol, Lot 104453	30000 uL	LCMPFDA_00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA_00015	60 uL	13C2 PFHxA	0.1 ug/mL
..LCMPFDA_00012	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00015	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-LSP_00032	09/30/18	03/30/18	Methanol, Lot 104453	30 mL	LCPFBSA_00002	153 uL	Perfluorobutanesulfonic acid (PFBS)	225.42 ng/mL
					LCPFHpA_00009	15 uL	Perfluoroheptanoic acid (PFHpA)	25 ng/mL
					LCPFHxS-br_00005	50 uL	Perfluorohexane Sulfonate	75.8333 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	75.8333 ng/mL
					LCPFNA_00009	30 uL	Perfluorononanoic acid (PFNA)	50 ng/mL
					LCPFOA_00010	30 uL	Perfluorooctanoic acid (PFOA)	50 ng/mL
LCPFOS-br_00005	65 uL	Perfluorooctanesulfonic acid (PFOS)	100.533 ng/mL					
.LCPFBSA_00002	12/02/21	Wellington Laboratories, Lot LPFBS1116			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFHpA_00009	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHxS-br_00005	01/04/22	Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL	
						Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL	
.LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA_00010	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

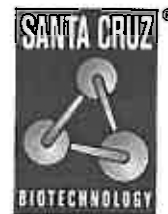
SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFOS-br_00005	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
LC537-SU_00077	01/05/19	08/15/18	Methanol, Lot 104453	30000 uL	LCMPFDA 00012	60 uL	13C2 PFDA	0.1 ug/mL
					LCMPFHxA 00015	60 uL	13C2 PFHxA	0.1 ug/mL
.LCMPFDA 00012	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA 00015	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL

Reagent

LC537_PFB2_00002

P: 6.8.17 SW



CERTIFICATE OF ANALYSIS

The Power to Question

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

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

Reagent

LC537_PFHpA2_00002

Certificate of analysis

R: 6.13.17 SW

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

PFHpA

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

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Reagent

LC537_PFHxS2_00002

n: 6-E-17SKV

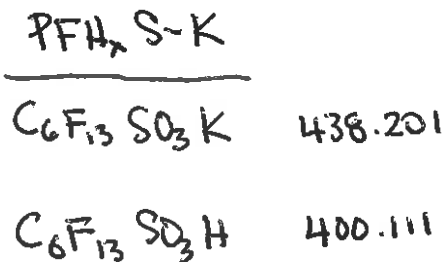


The Future is Custom

CERTIFICATE OF ANALYSIS

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

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



MW correction = $\frac{400.11}{438.201} = 0.91307$ PFH₂S
 cas# 355-46-4

Purity $\frac{1}{2}$ MW correction = 90.9%

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Reagent

LC537_PFN2_00002

P: 6.14.17 SKW

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

Certificate of Analysis

Product Name:
Perfluorononanoic acid - 97%

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



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

Michael Grady, Manager
Quality Control
Milwaukee, WI US

PFNA

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

Reagent

LC537_PFOA2_00002

Certificate of analysis

P: 6/9/17 SW

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

PFOA

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

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Reagent

LC537_PFOs2_00002

N: 6.14.17 SKV

Certificate of Analysis

Product Name: HEPTADEC AFLUORO OCTANESULFONIC ACID TETRAETHYLAMMONIUM SALT
 98 %
Product Number: 365289
Batch Number: BCBQ0108V
Brand: Aldrich
CAS Number: 56773-42-3
Formula: $CF_3(CF_2)_6CF_2SO_3N(C_2H_5)_4$
Formula Weight: 629.37
Quality Release Date: 11 JUN 2015

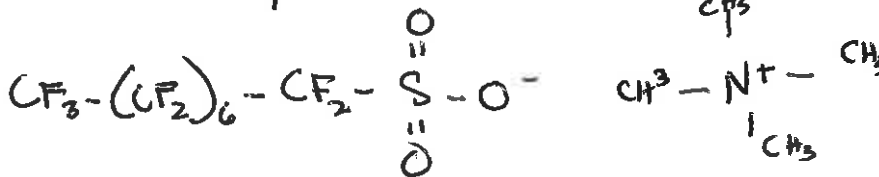
TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE TO OFF WHITE	OFF-WHITE
APPEARANCE (FORM)	POWDER OR POWDER WITH CHUNK(S)	POWDER
CARBON CONTENT	29.77 % - 31.29 %	29.97 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS

Claudia Geitner

Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

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

Purity & MW correction = 77.87%



	$C_{17}F_{17}SO_3 + H$	$C_8H_{20}N$
C = 12.011	96.088	96.088
F = 18.998	322.966	—
S = 32.066	32.066	—
O = 16.999	47.997	—
H = 1.008	1.008	20.160
N = 14.007	—	14.007
	<hr/>	<hr/>
	500.125	130.255

Reagent

LCM2PFOA_00010

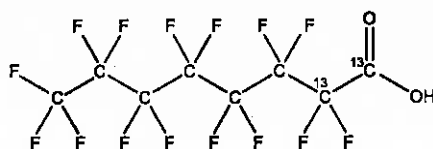


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0216
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
 (1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy) 02/12/2016

EXPIRY DATE: (mm/dd/yyyy) 02/12/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:


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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 02/24/2016
 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

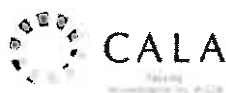
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

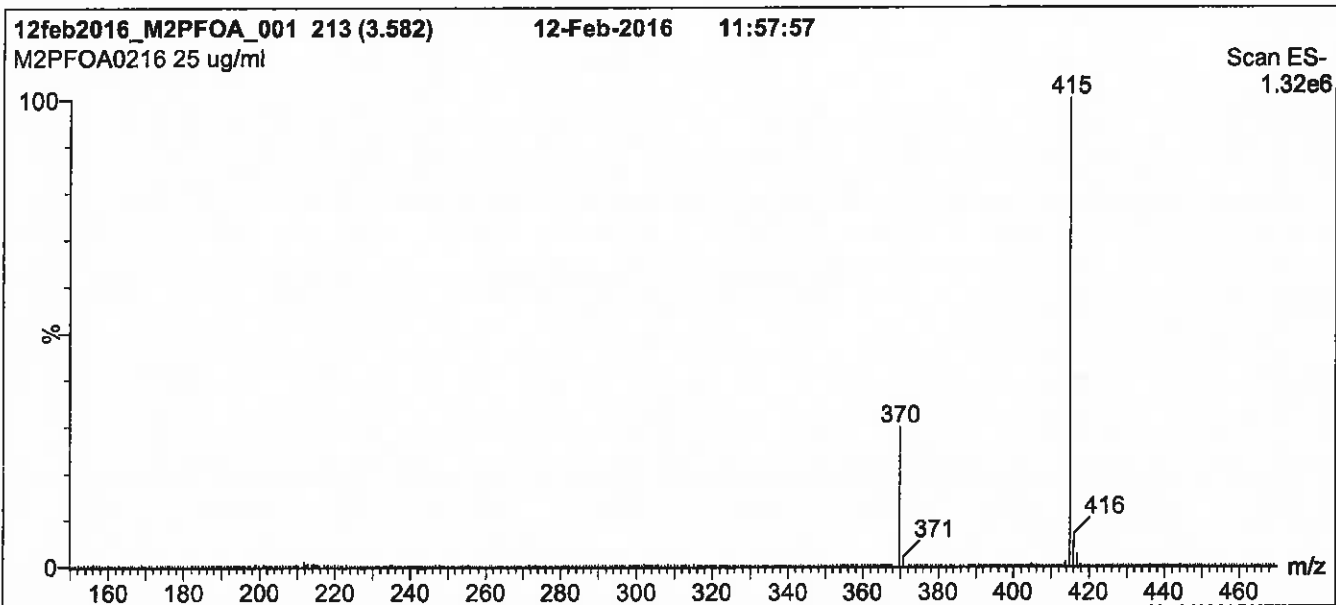
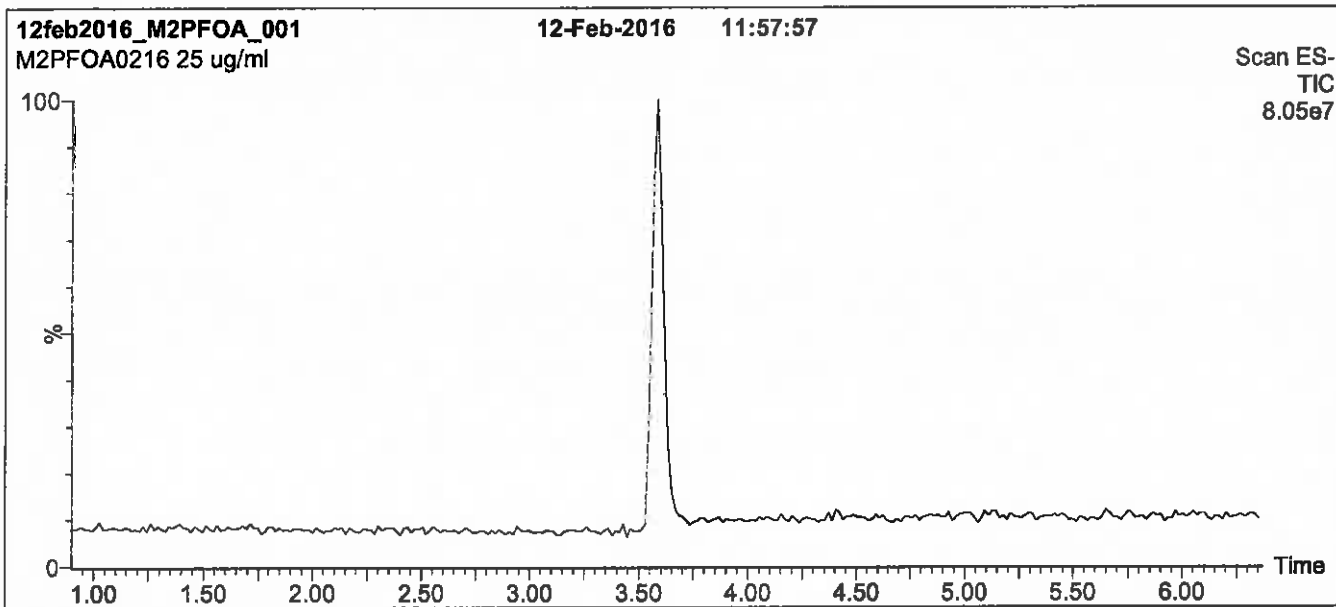
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

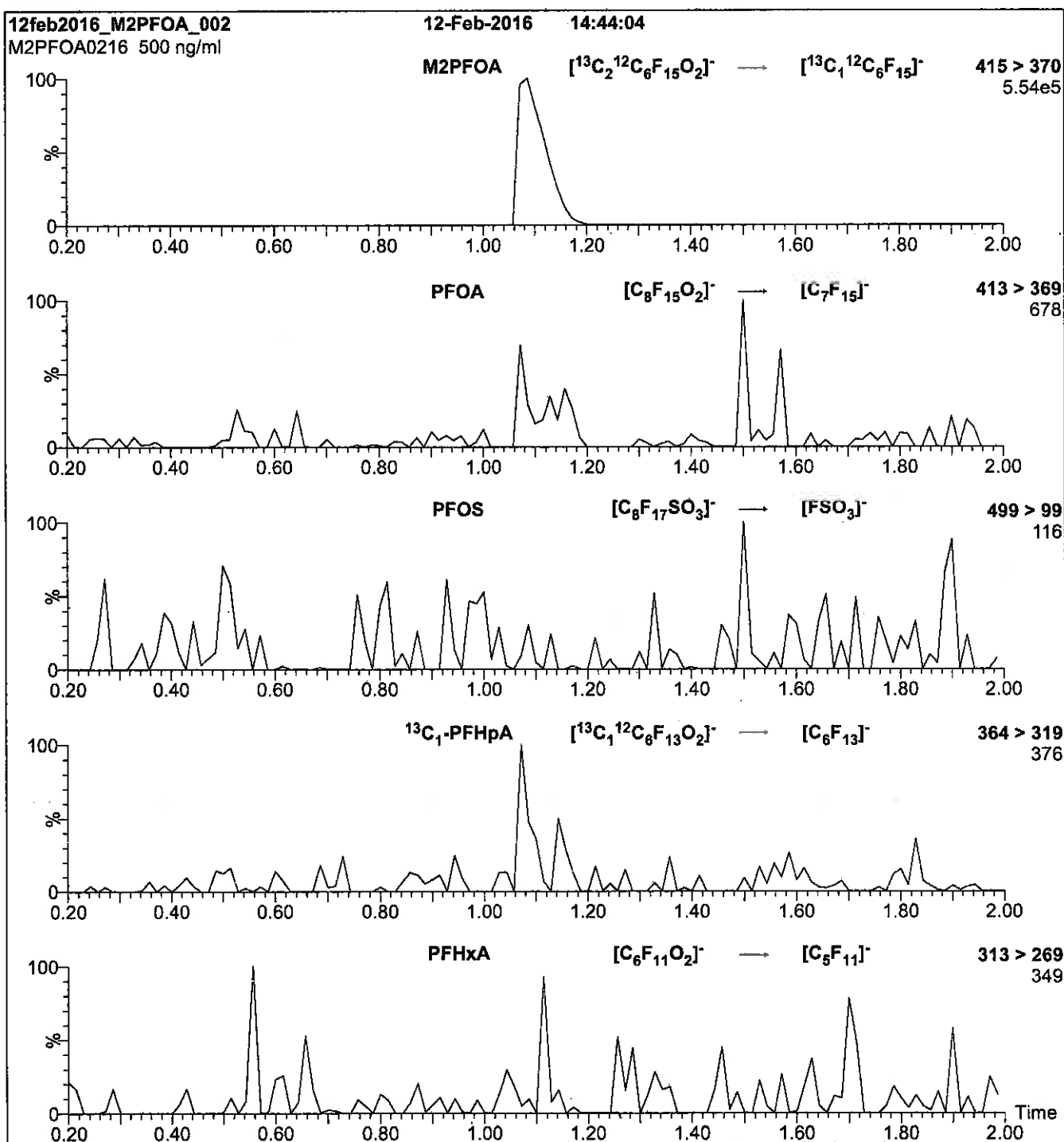
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

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

MS Parameters

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

Reagent

LCMPFDA_00012

R: SBC 12/21/16



814255
ID: LCMFDA_00012
Exp: 09/30/21 Prpd: SBC
13C2-Perfluorodecanoic a

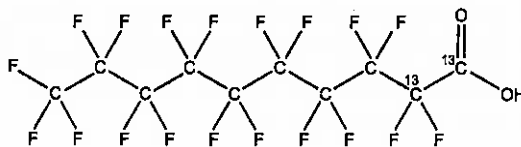


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂ **MOLECULAR WEIGHT:** 516.07
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) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

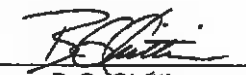
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

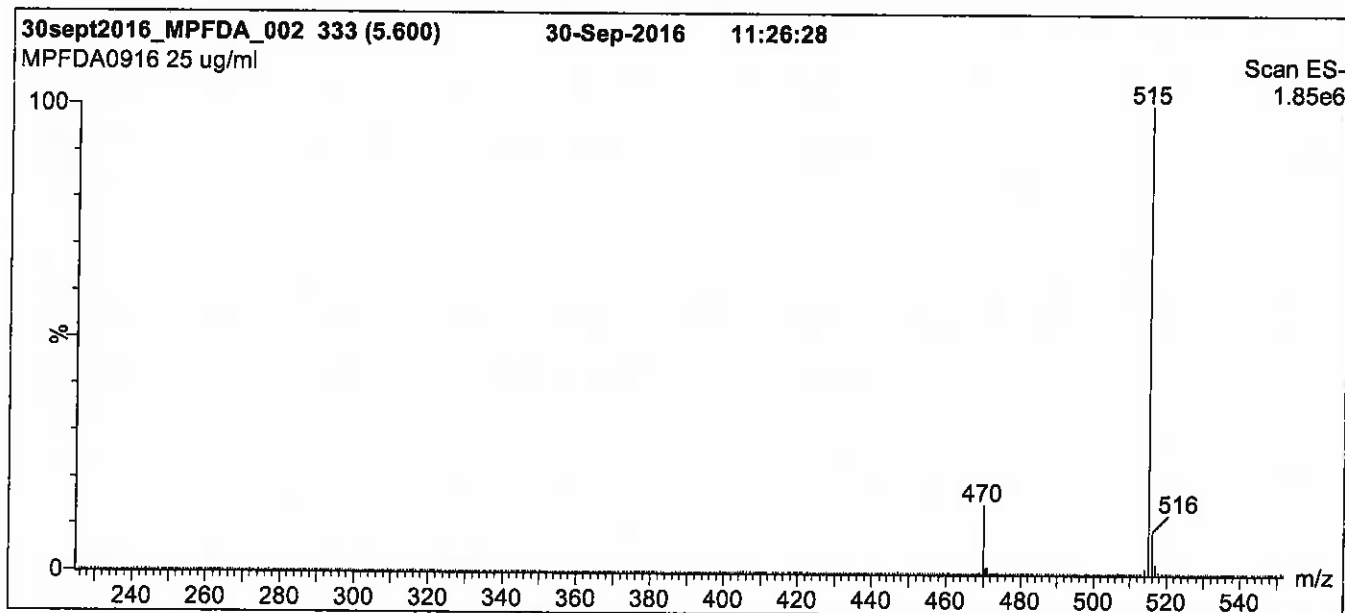
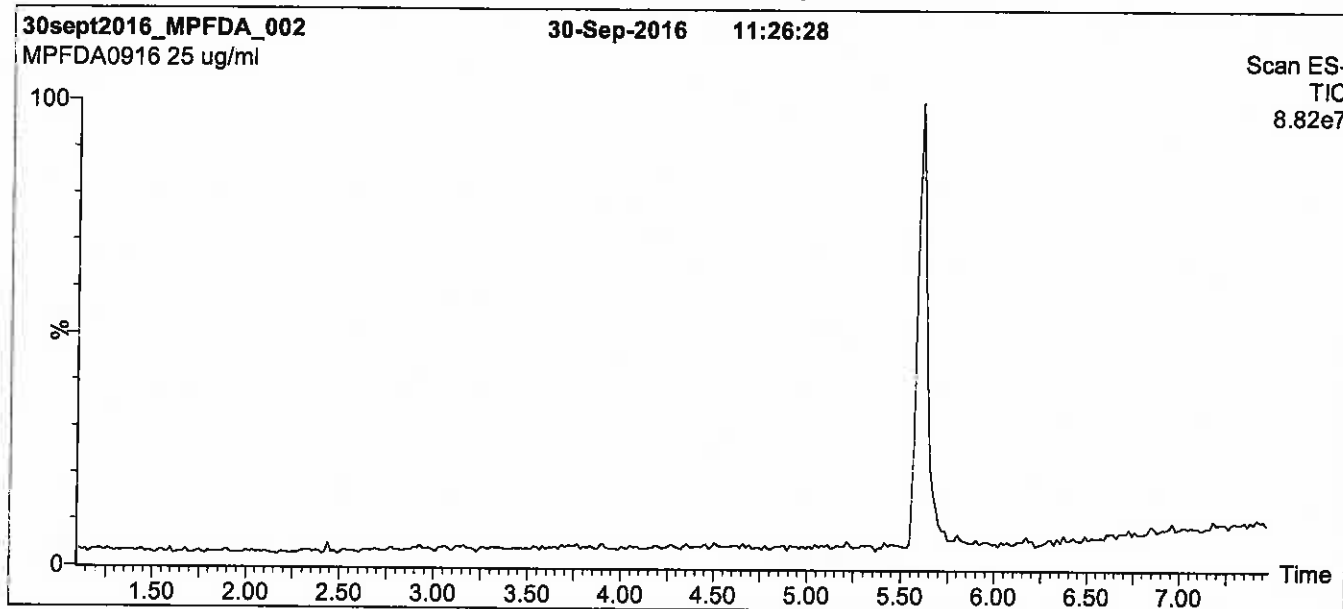
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

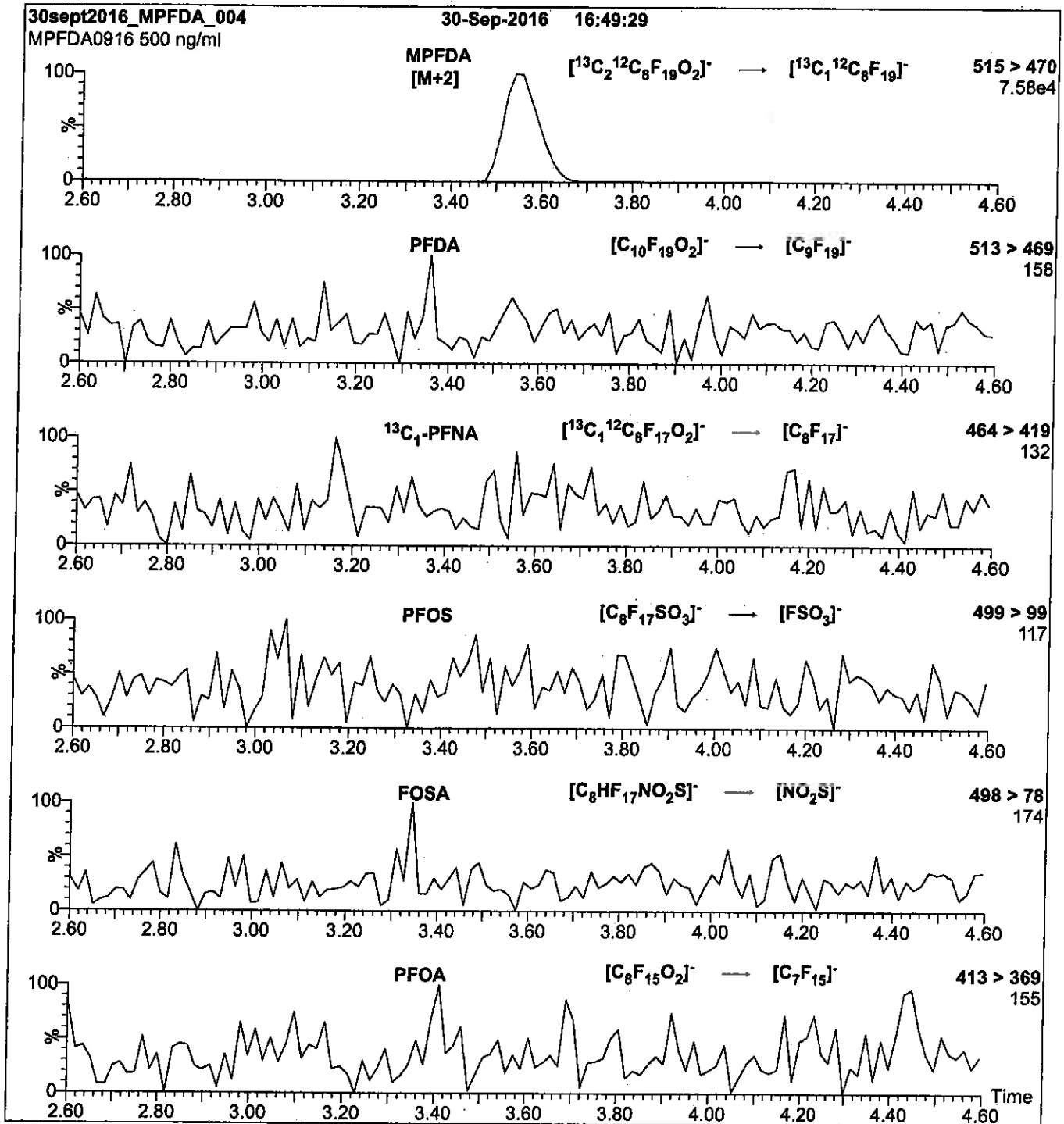
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFHxA_00015

r: 5/17/17 SKJ

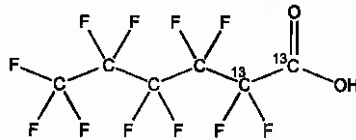


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA **LOT NUMBER:** MPFHxA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂ **MOLECULAR WEIGHT:** 316.04
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) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

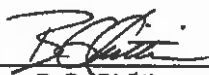
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 12/13/2016
(mm/dd/yyyy)

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

INTENDED USE:

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:

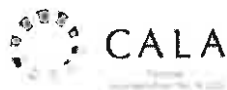
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

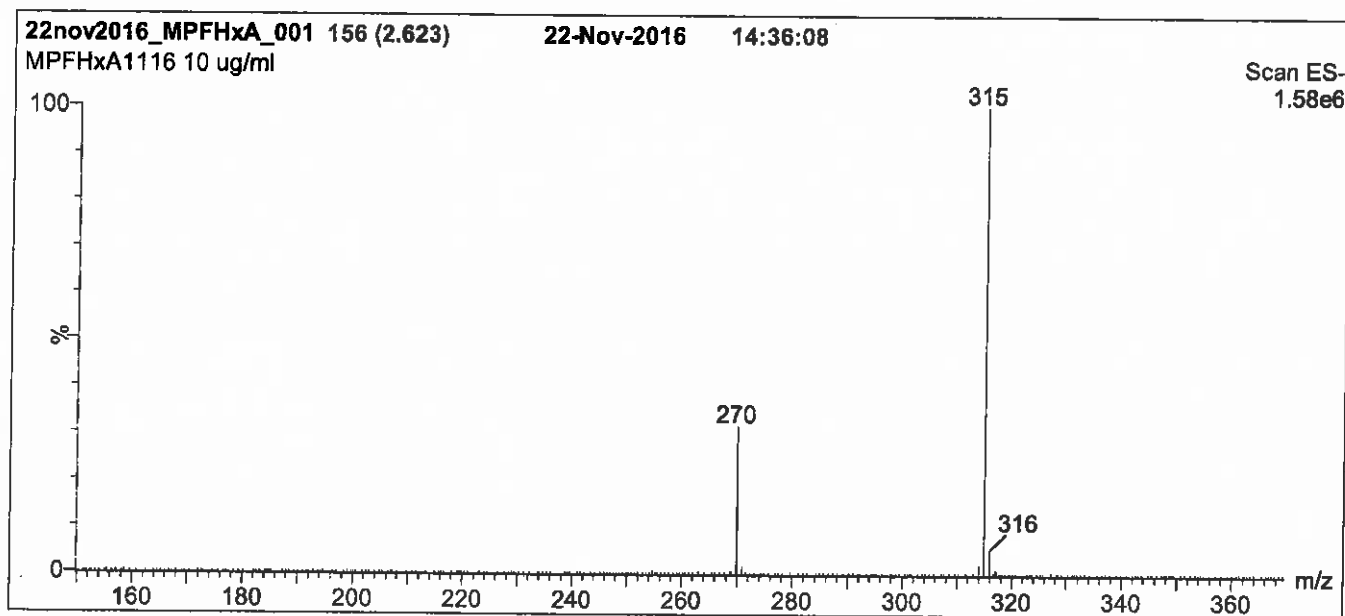
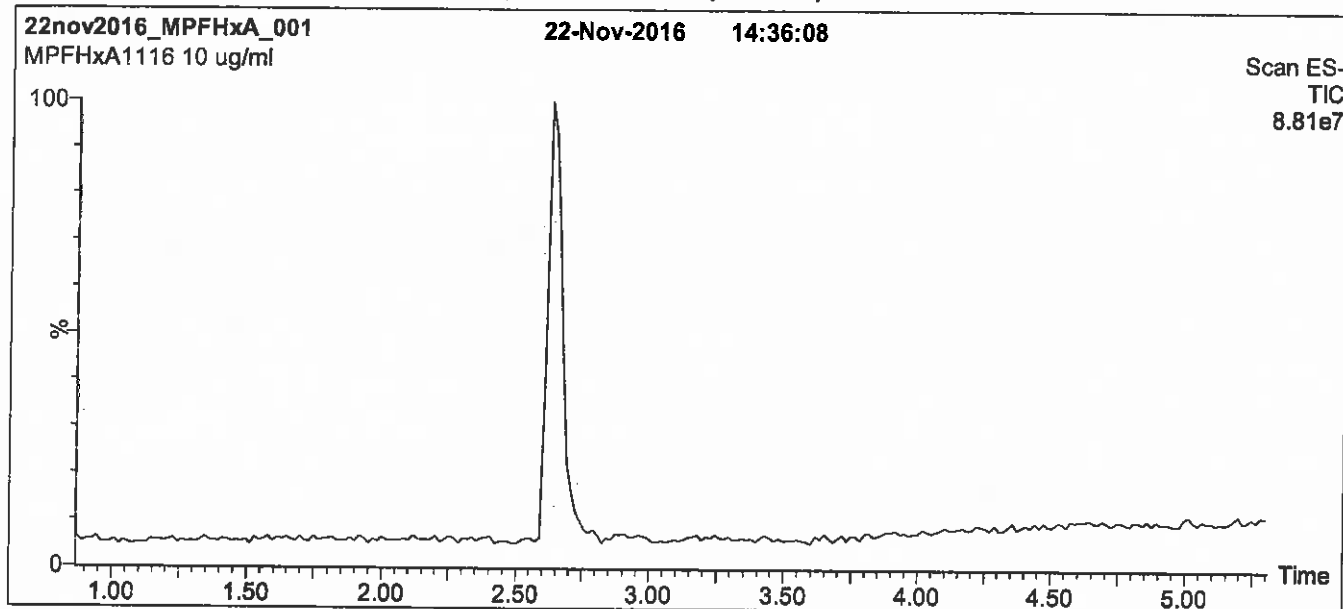
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

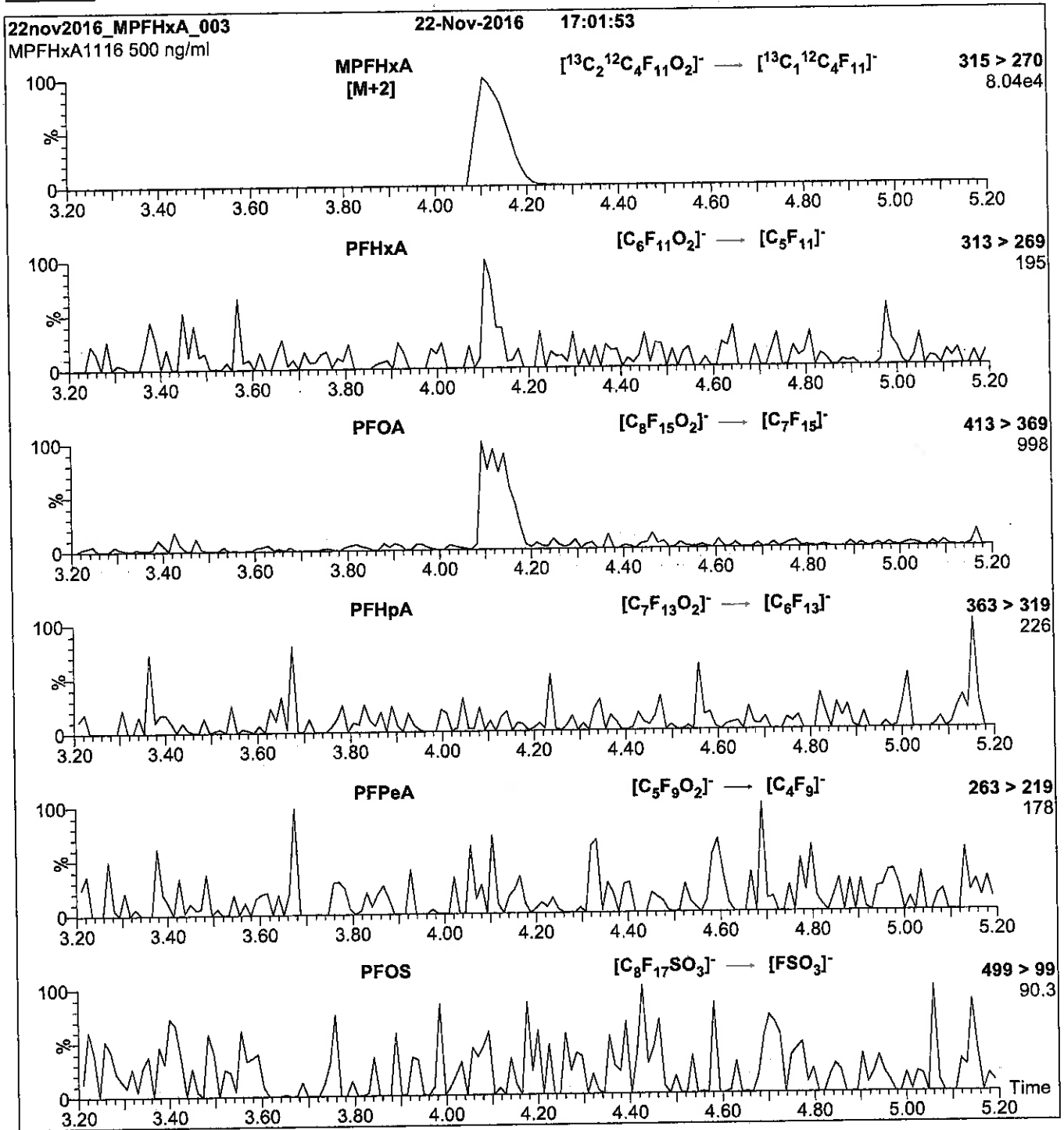
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCMPFOS_00024

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:

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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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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.

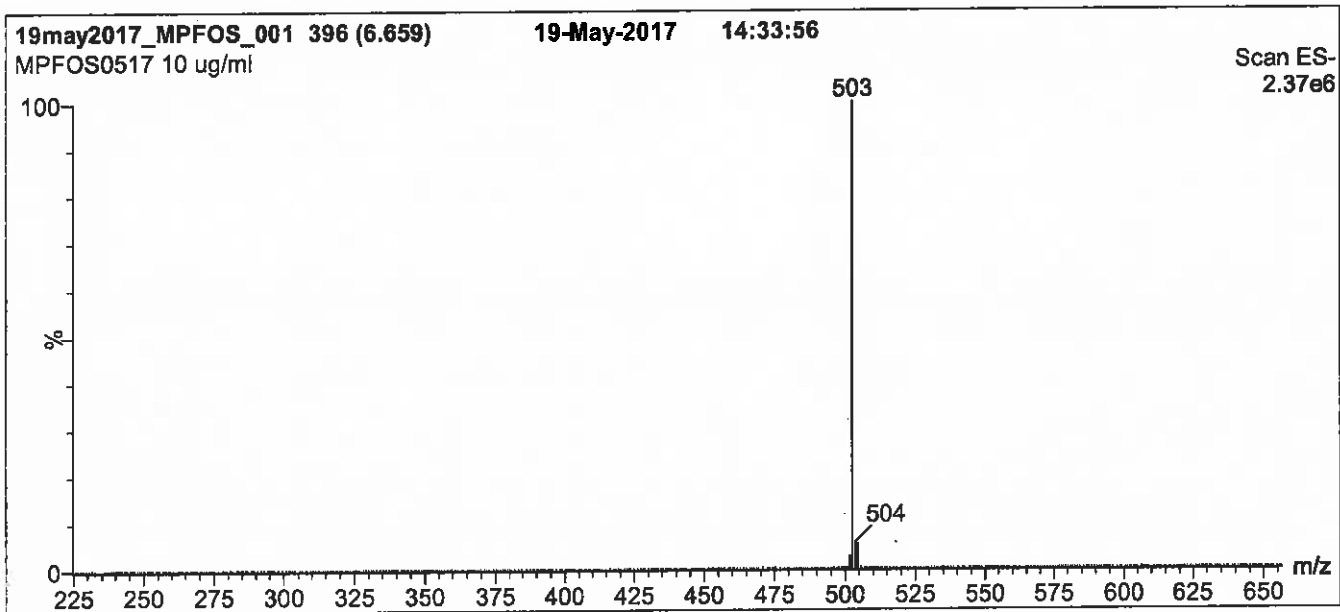
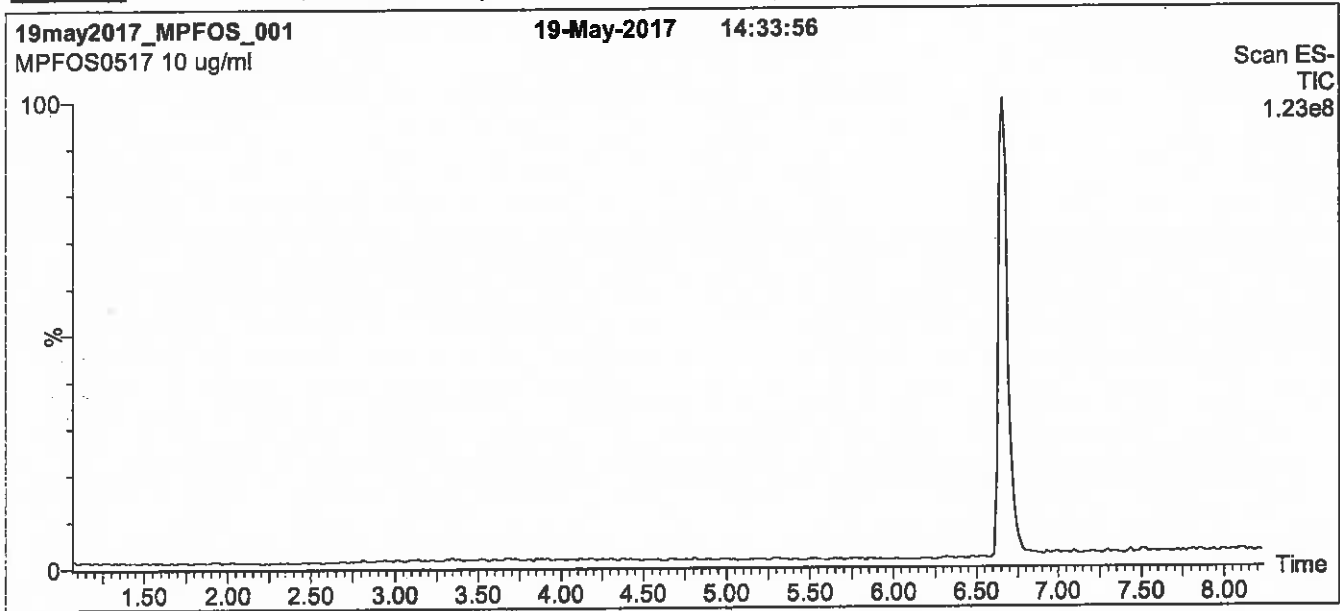
QUALITY MANAGEMENT:

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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: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 8 min and hold for 1 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

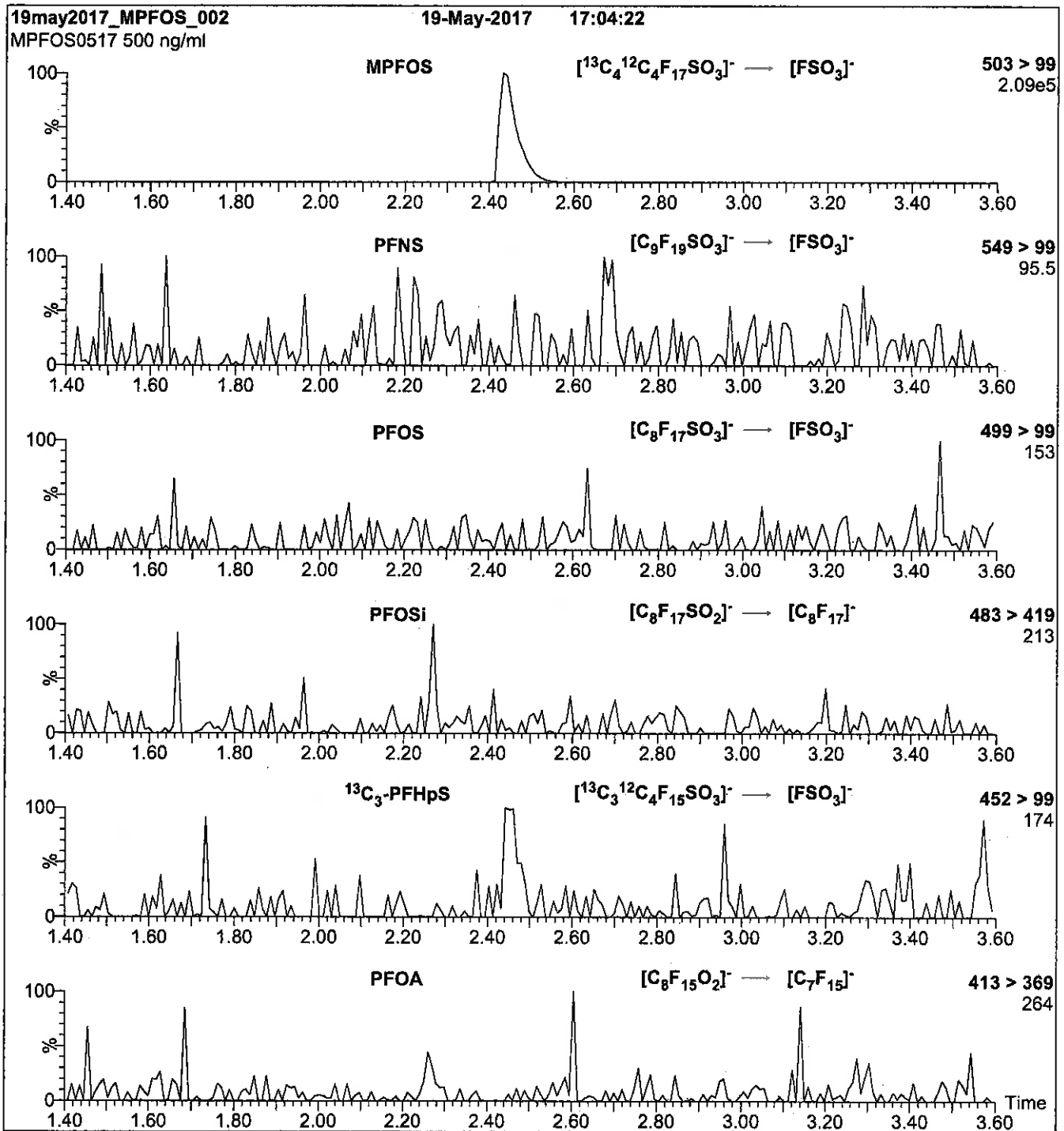
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 40

Reagent

LCPFBSA_00002

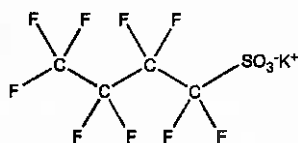
n: 12/17 SKW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS **LOT NUMBER:** LPFBS1116
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE: **CAS #:** 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K **MOLECULAR WEIGHT:** 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol
44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/02/2016
EXPIRY DATE: (mm/dd/yyyy) 12/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

• See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/05/2016
B.G. Chittim (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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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, 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.

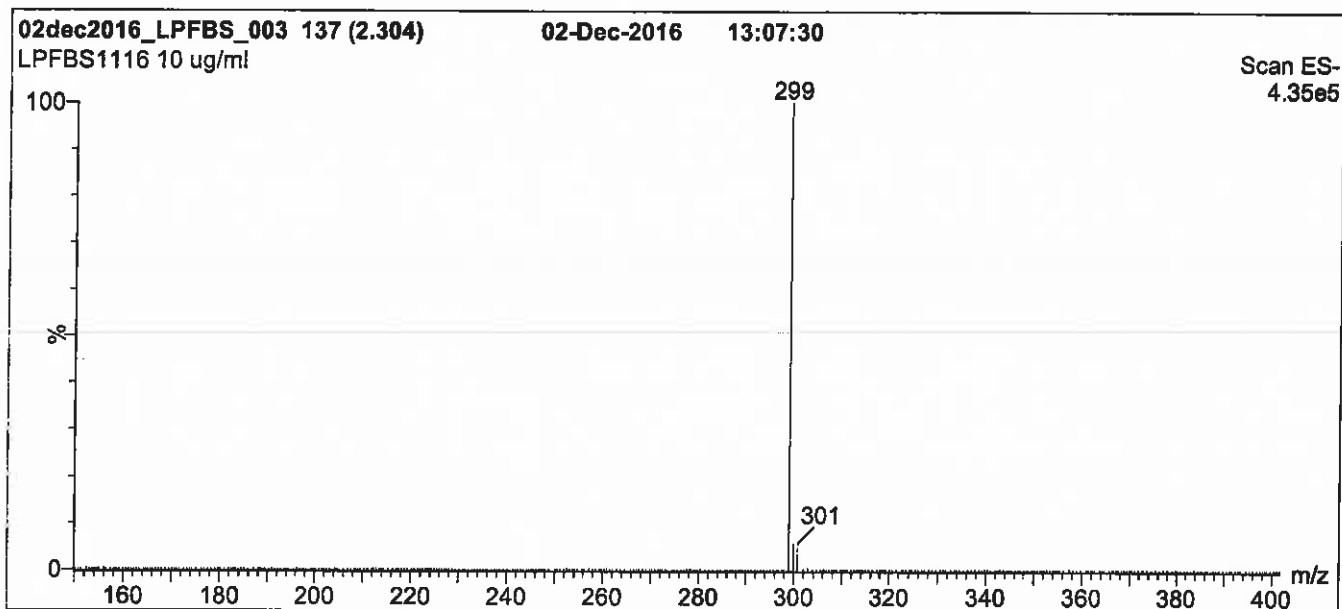
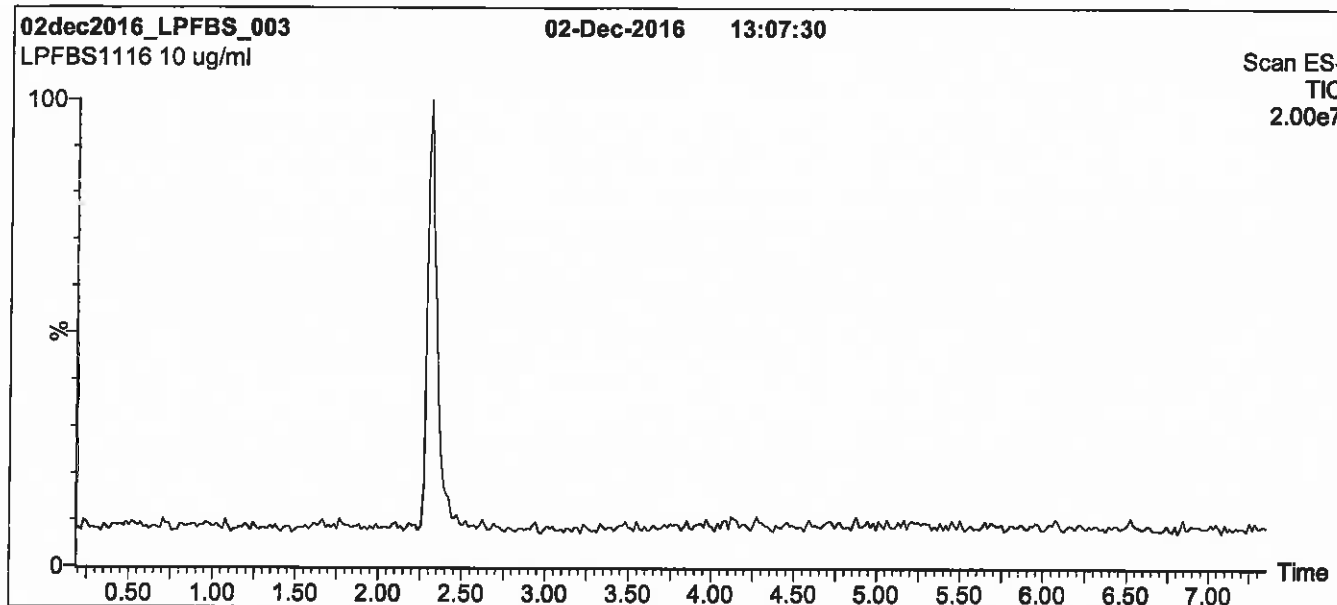
QUALITY MANAGEMENT:

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: 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 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

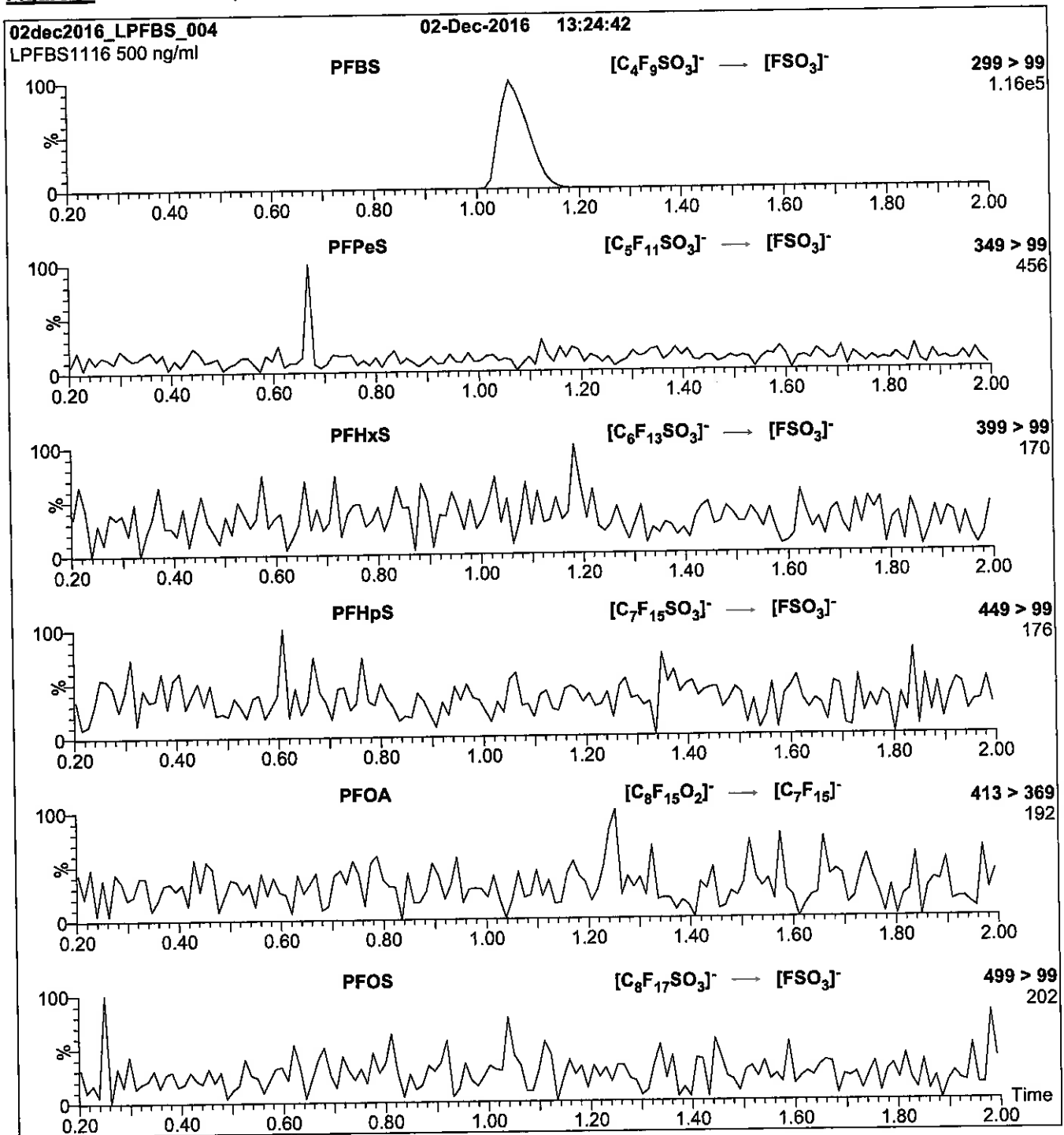
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 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) = 3.28e-3
 Collision Energy (eV) = 25

Reagent

LCPFHpA_00009

INTENDED USE:

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HAZARDS:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

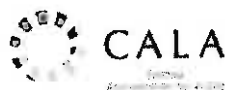
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LIMITED WARRANTY:

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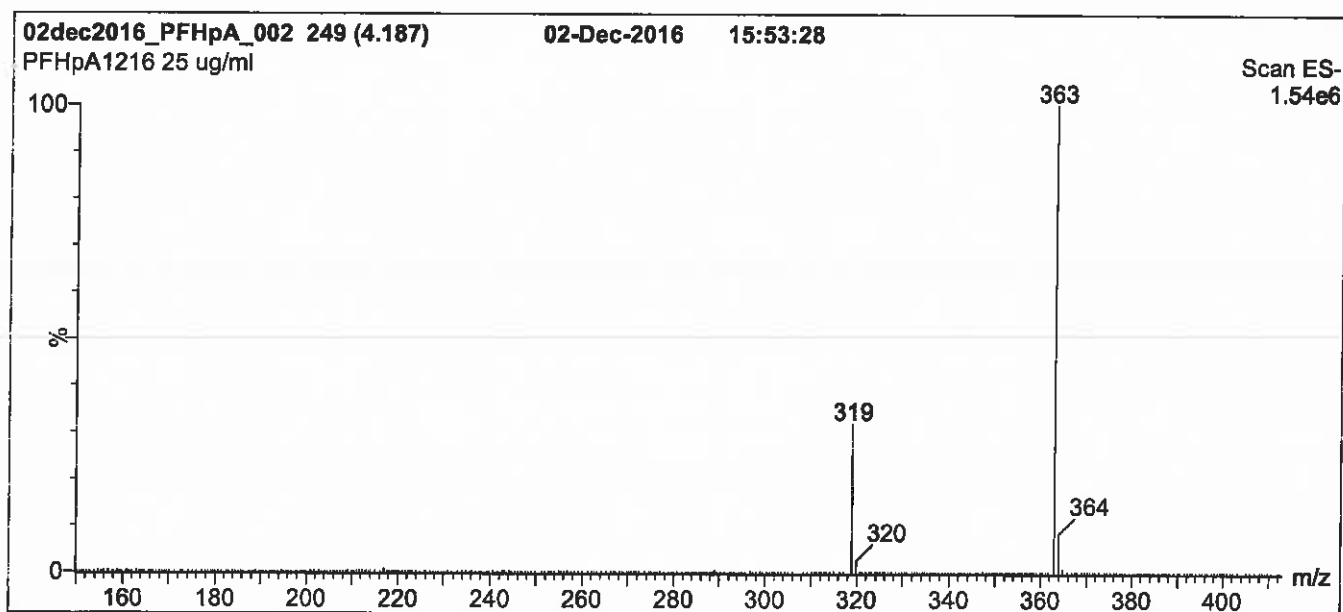
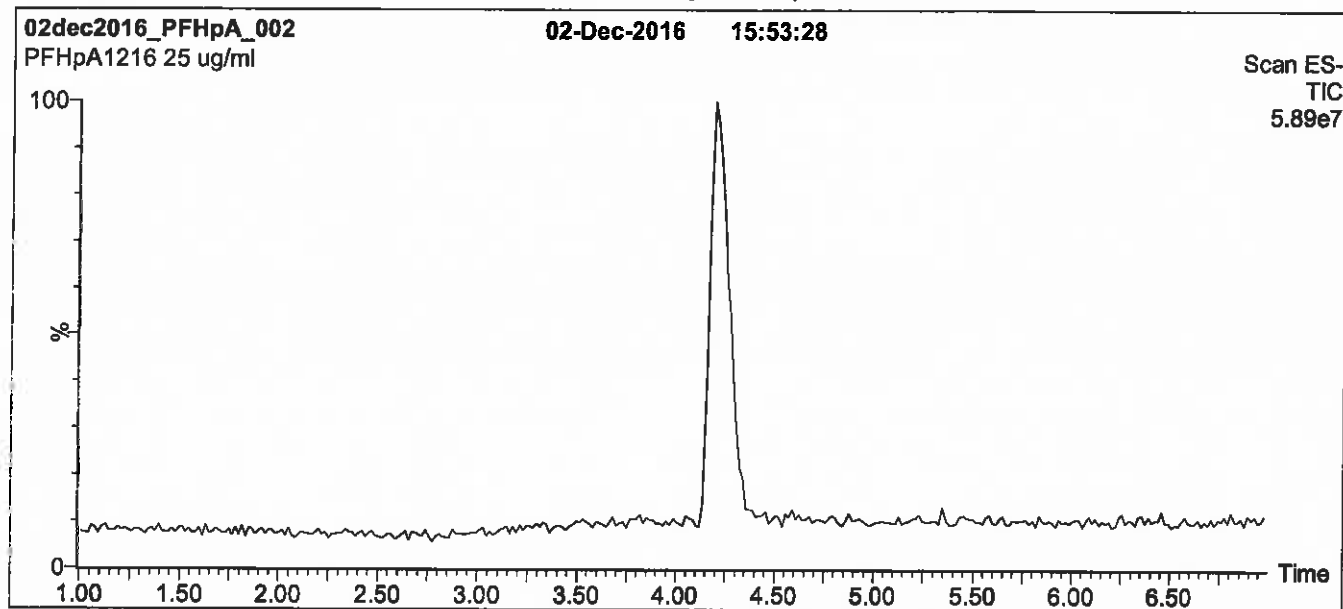
QUALITY MANAGEMENT:

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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 Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

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

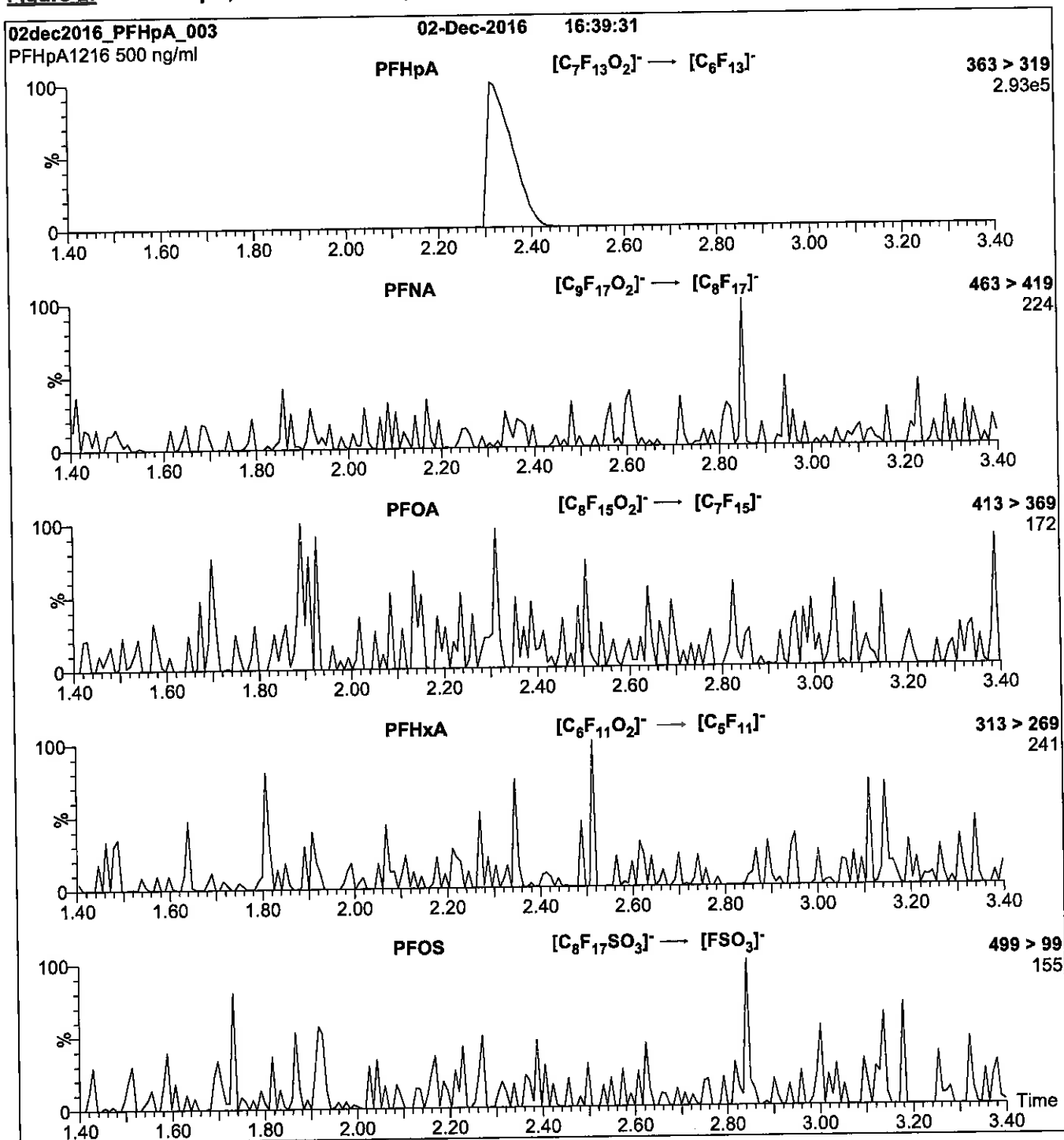
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.50e-3
 Collision Energy (eV) = 11

Reagent

LCPFHxS-br_00005



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE: br-PFHxSK
LOT NUMBER: brPFHxSK0117
CONCENTRATION: 50.0 ± 2.5 µg/ml (total potassium salt)
 45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 01/03/2017
LAST TESTED: (mm/dd/yyyy) 01/04/2017
EXPIRY DATE: (mm/dd/yyyy) 01/04/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS Data (SIR)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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 compounds 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

Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

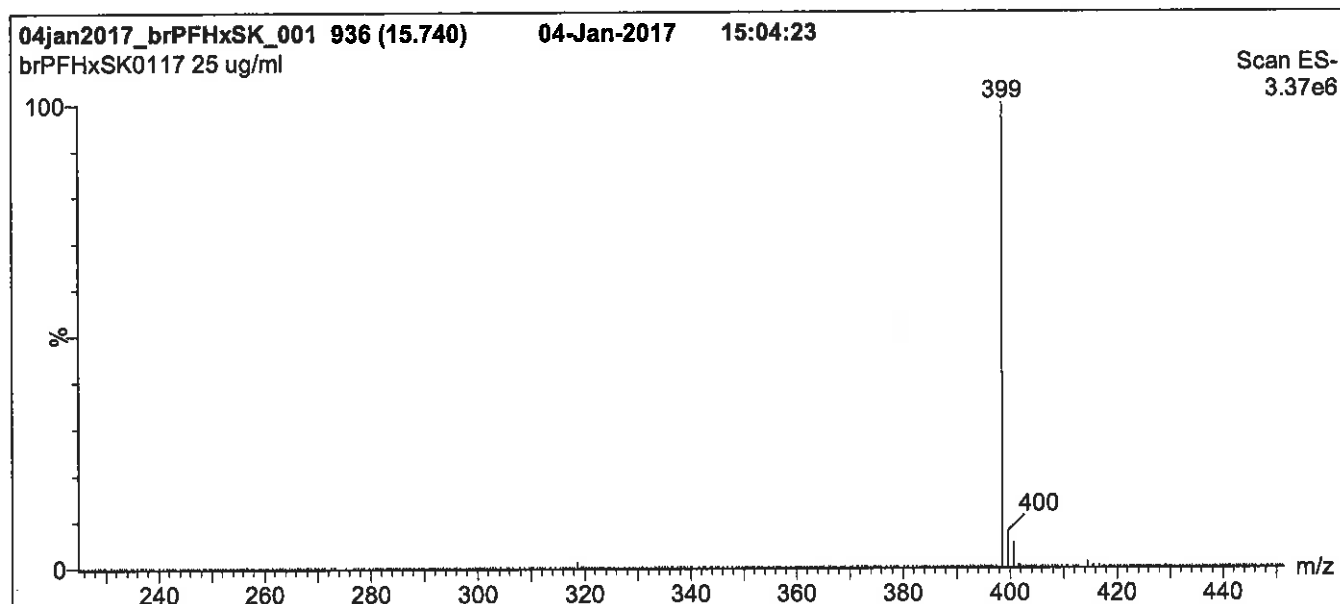
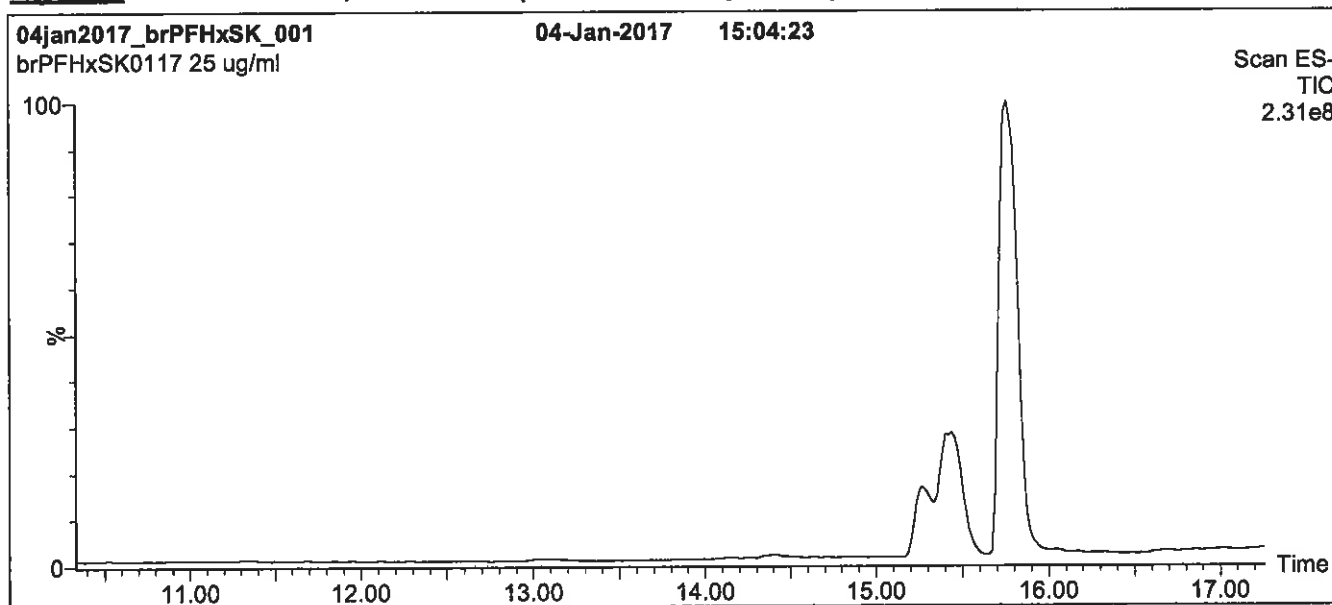
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3^-\text{K}^+) \\ \\ \text{CF}_3 \end{array}$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{C}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 01/20/2017
(mm/dd/yyyy)

Figure 1: br-PFHxSK; 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: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

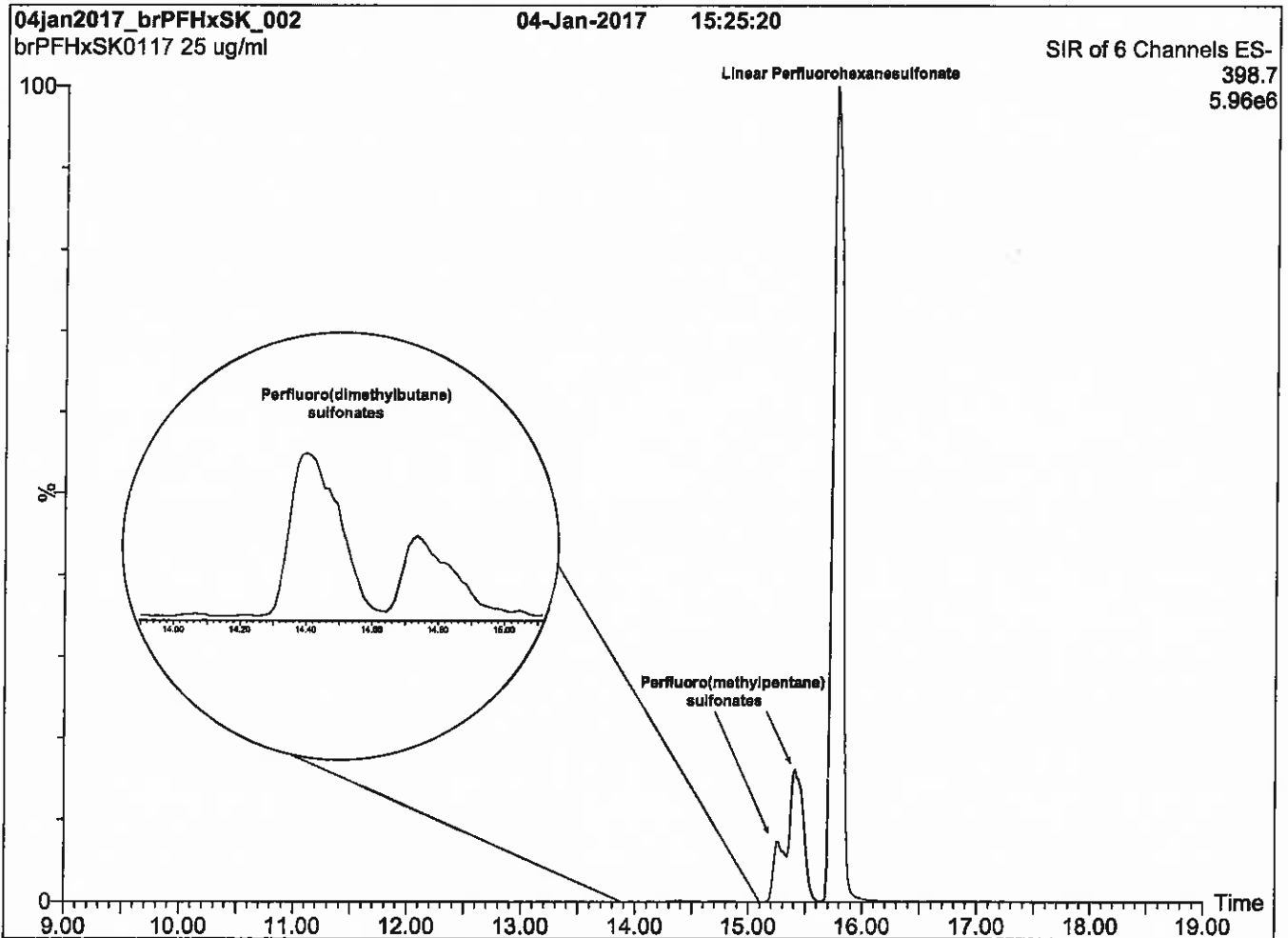
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFHxSK; LC/MS Data (SIR)



Conditions for Figure 2:

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: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

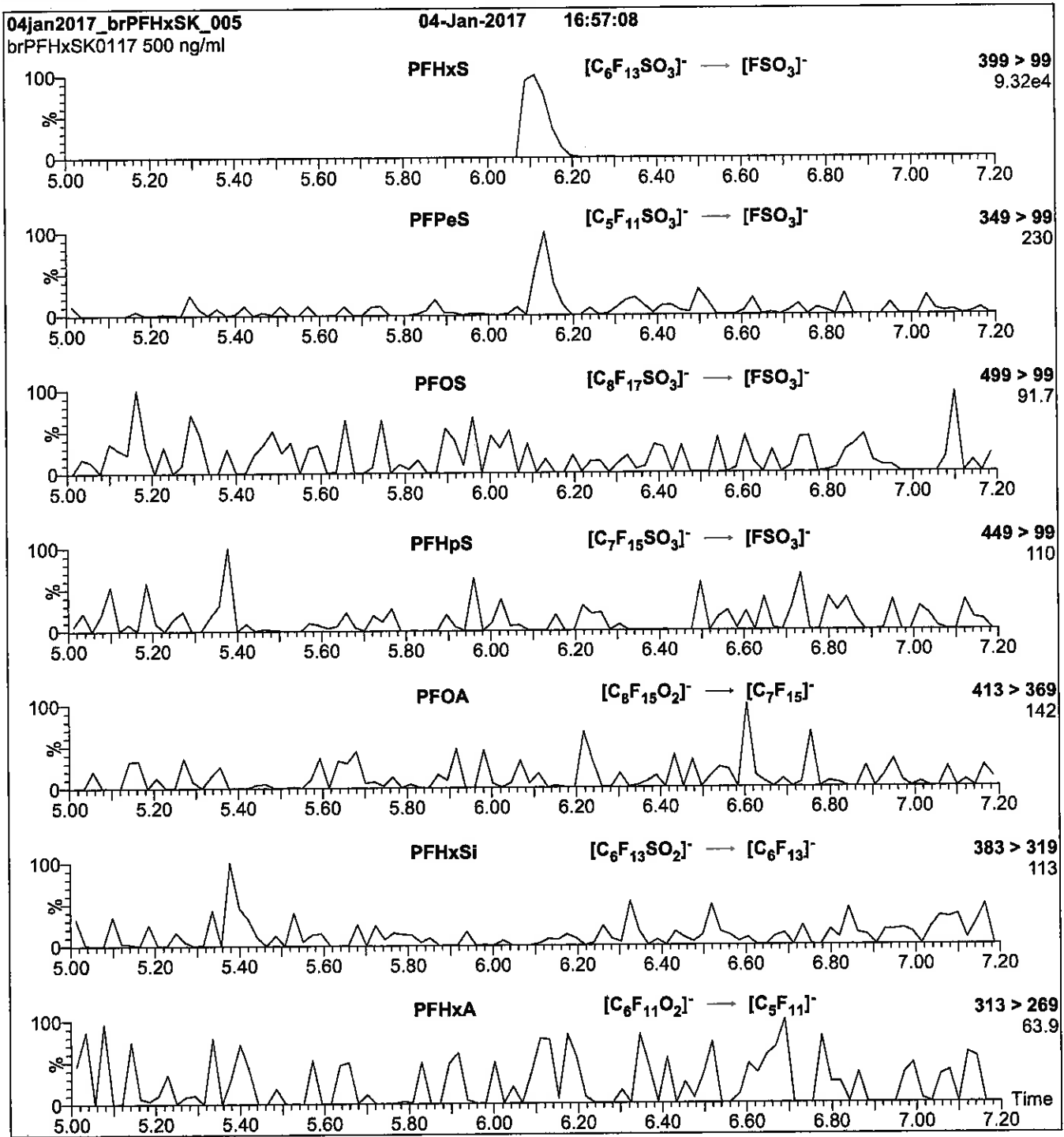
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

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) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00009

r: 9/2/17 SKJ

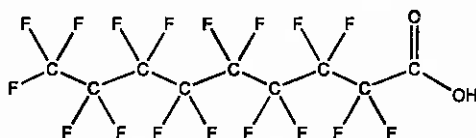


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA **LOT NUMBER:** PFNA0717
COMPOUND: Perfluoro-n-nonanoic acid

STRUCTURE: **CAS #:** 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$ **MOLECULAR WEIGHT:** 464.08
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
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), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager **Date:** 07/24/2017
(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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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.

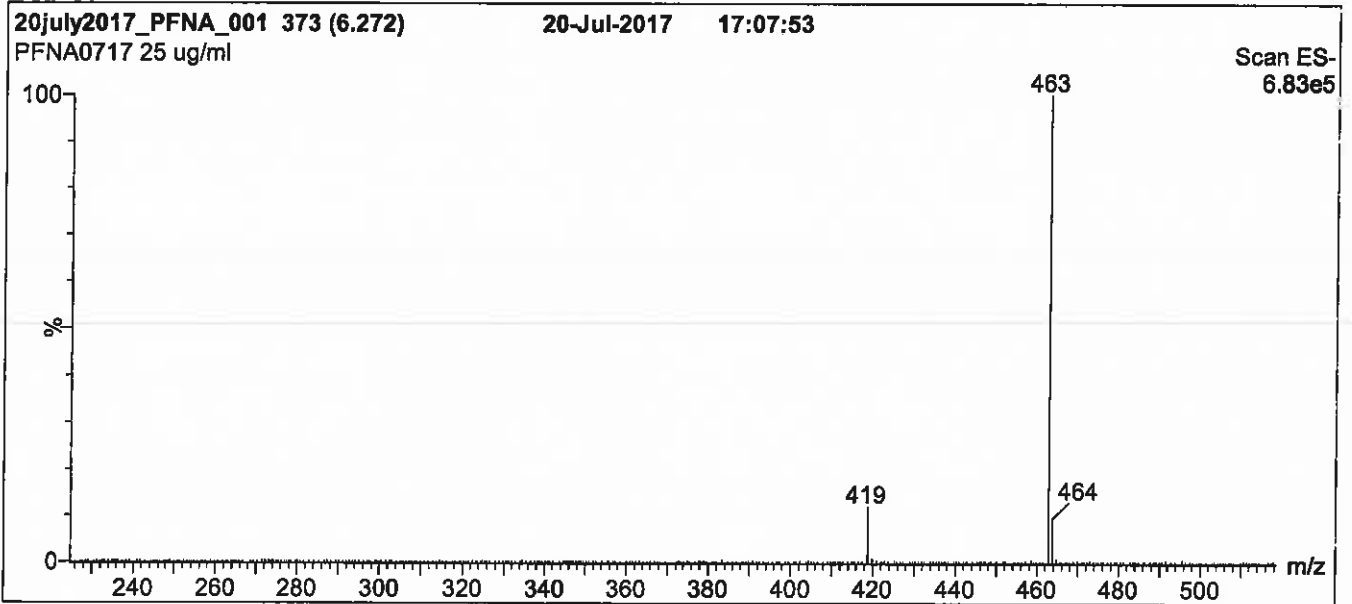
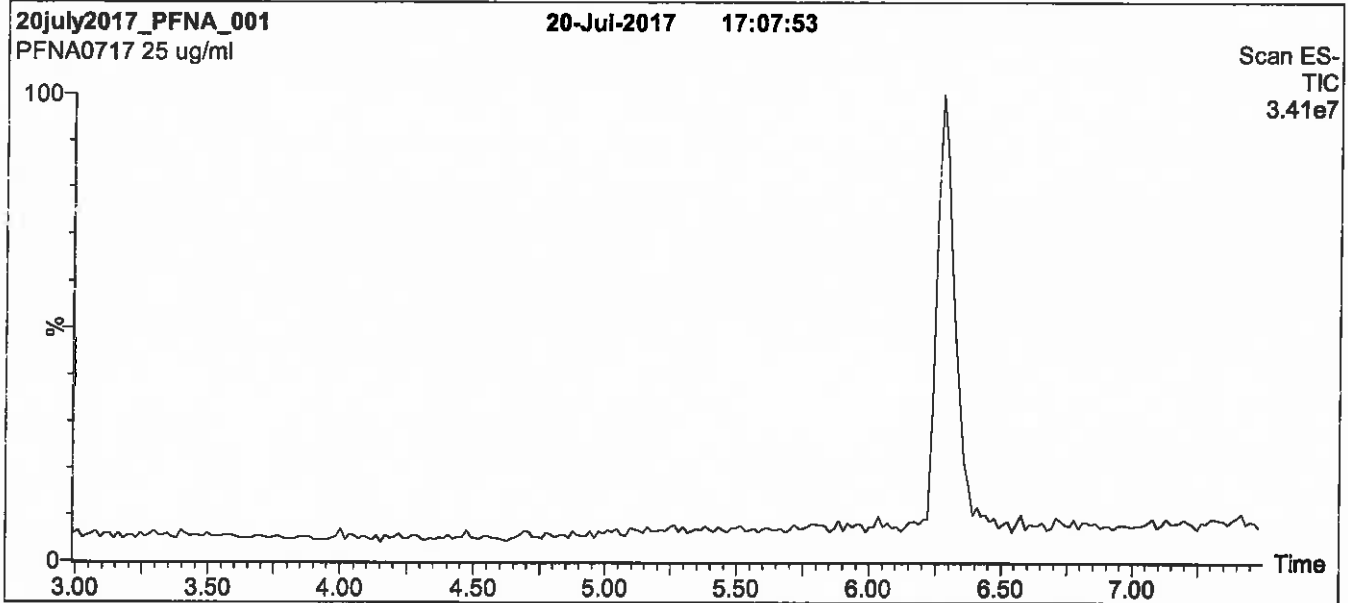
QUALITY MANAGEMENT:

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: 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 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)
 Hold for 1 min. Ramp to 90% organic over 7 min and hold
 for 1 min before returning to initial conditions in 0.5 min.
 Time: 10 min

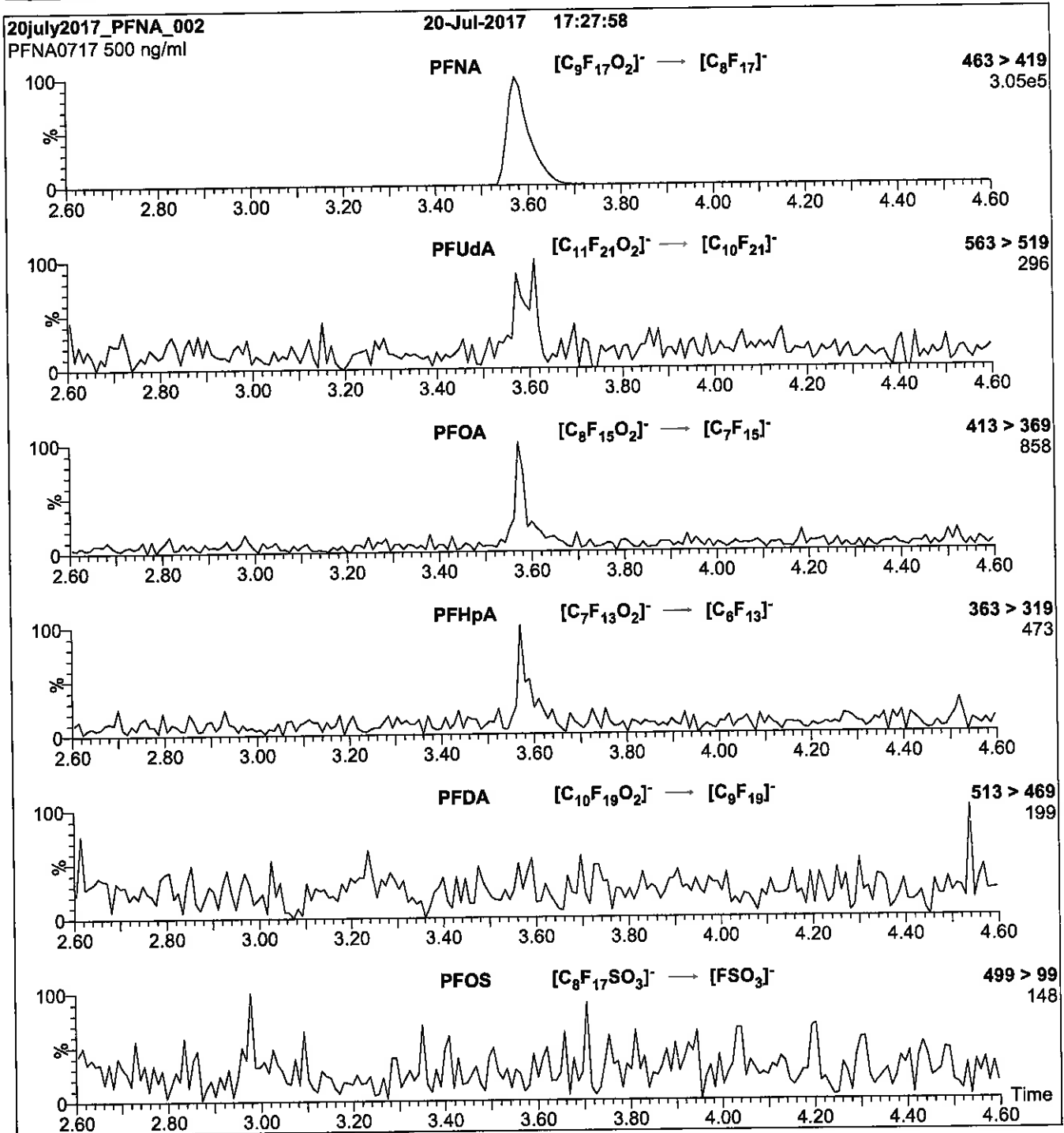
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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: 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) = 3.50e-3
 Collision Energy (eV) = 11

Reagent

LCPFOA_00010

P: 10/2017 SKV



WELLINGTON LABORATORIES

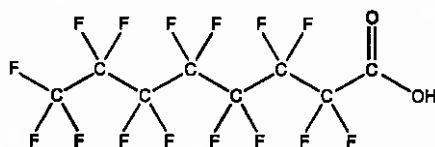
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0917

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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, General Manager

Date: 09/28/2017
(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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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

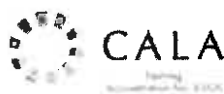
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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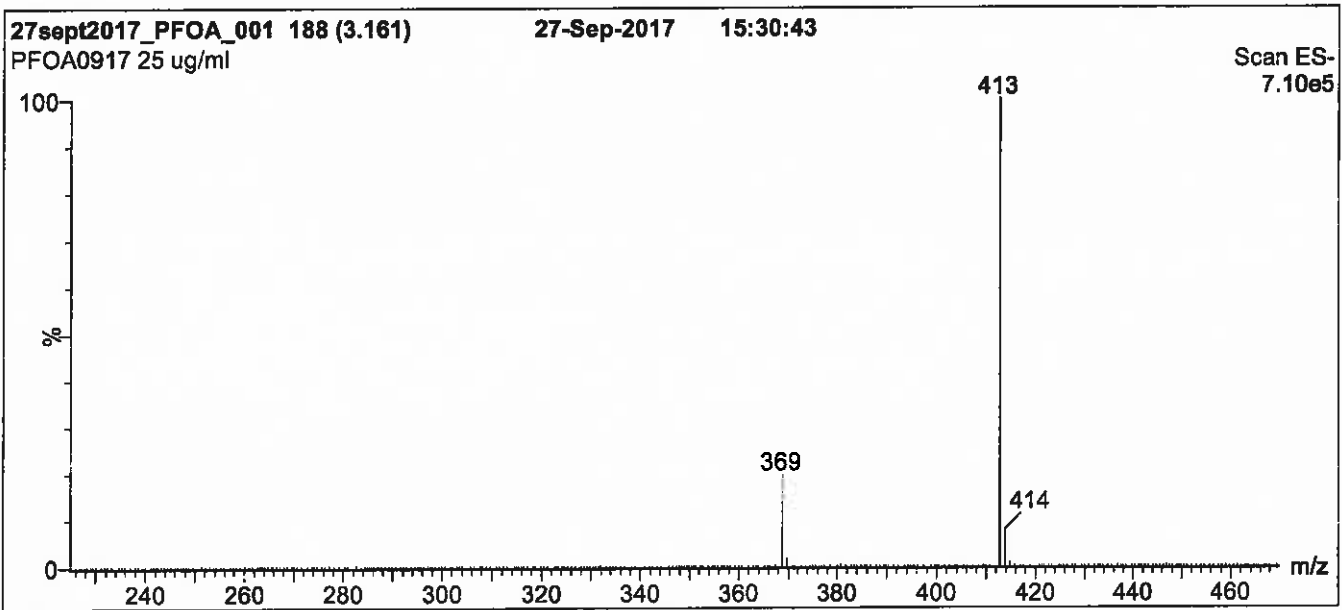
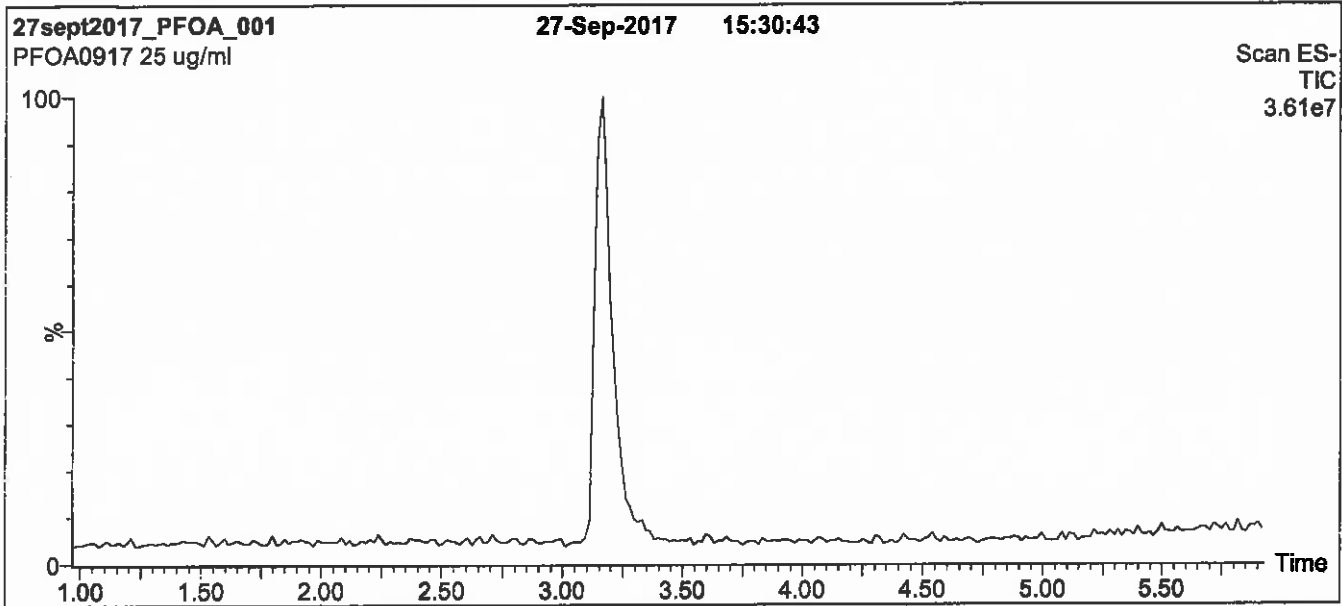
QUALITY MANAGEMENT:

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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: 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: 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

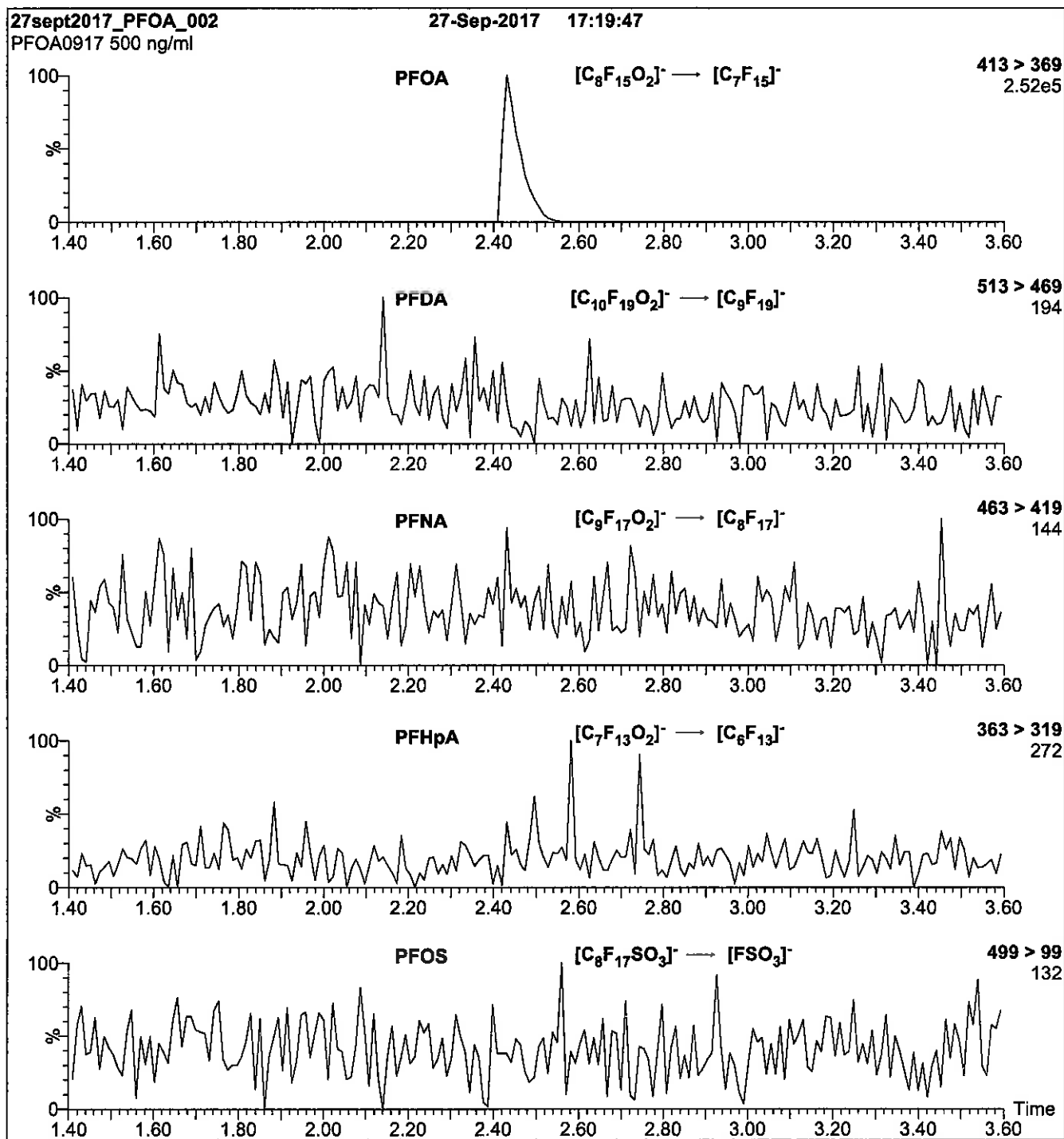
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
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) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCPFOS-br_00005

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK0117
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 01/09/2017
LAST TESTED: (mm/dd/yyyy) 01/12/2017
EXPIRY DATE: (mm/dd/yyyy) 01/12/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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 compounds 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:

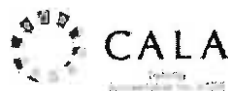
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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

Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

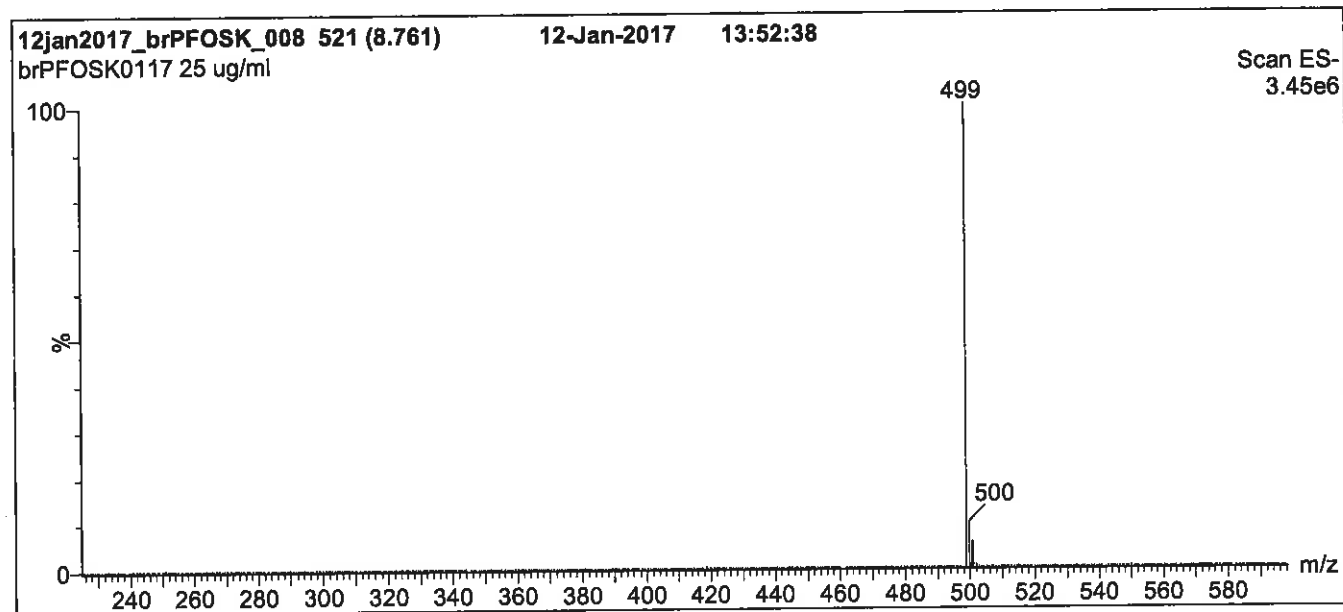
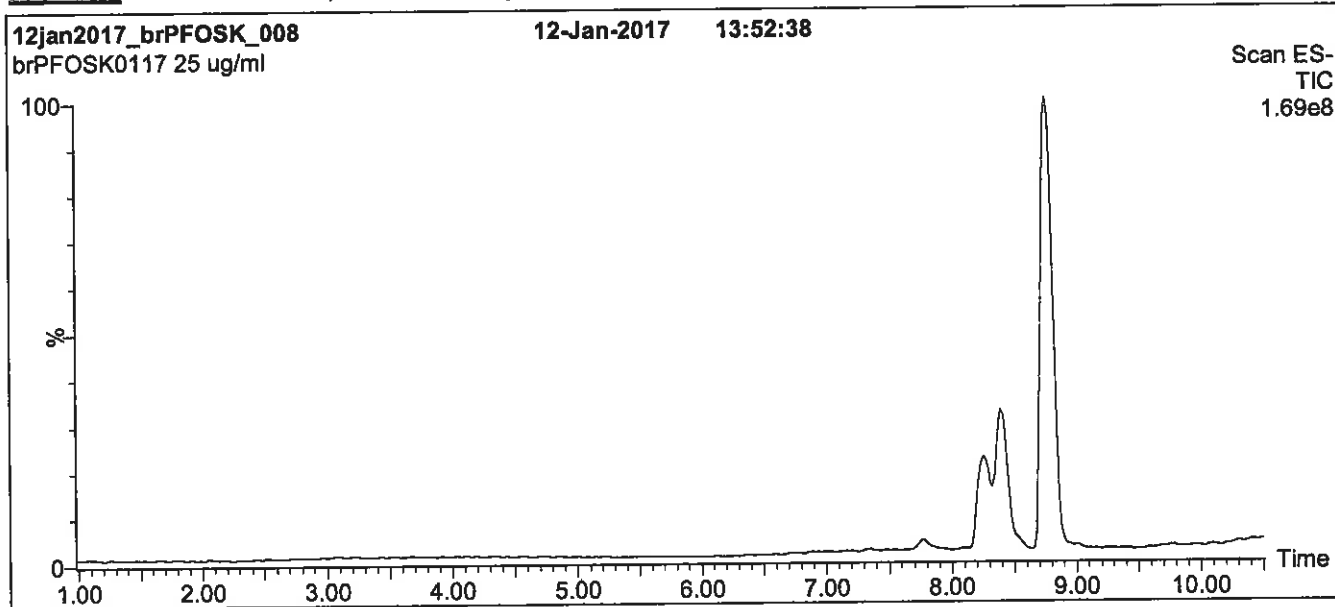
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labeled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 01/20/2017
 (mm/dd/yyyy)

Figure 1: br-PFOSK; 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 12 min and hold for 2 min.
 Return to initial conditions over 0.5 min.
 Time: 16 min

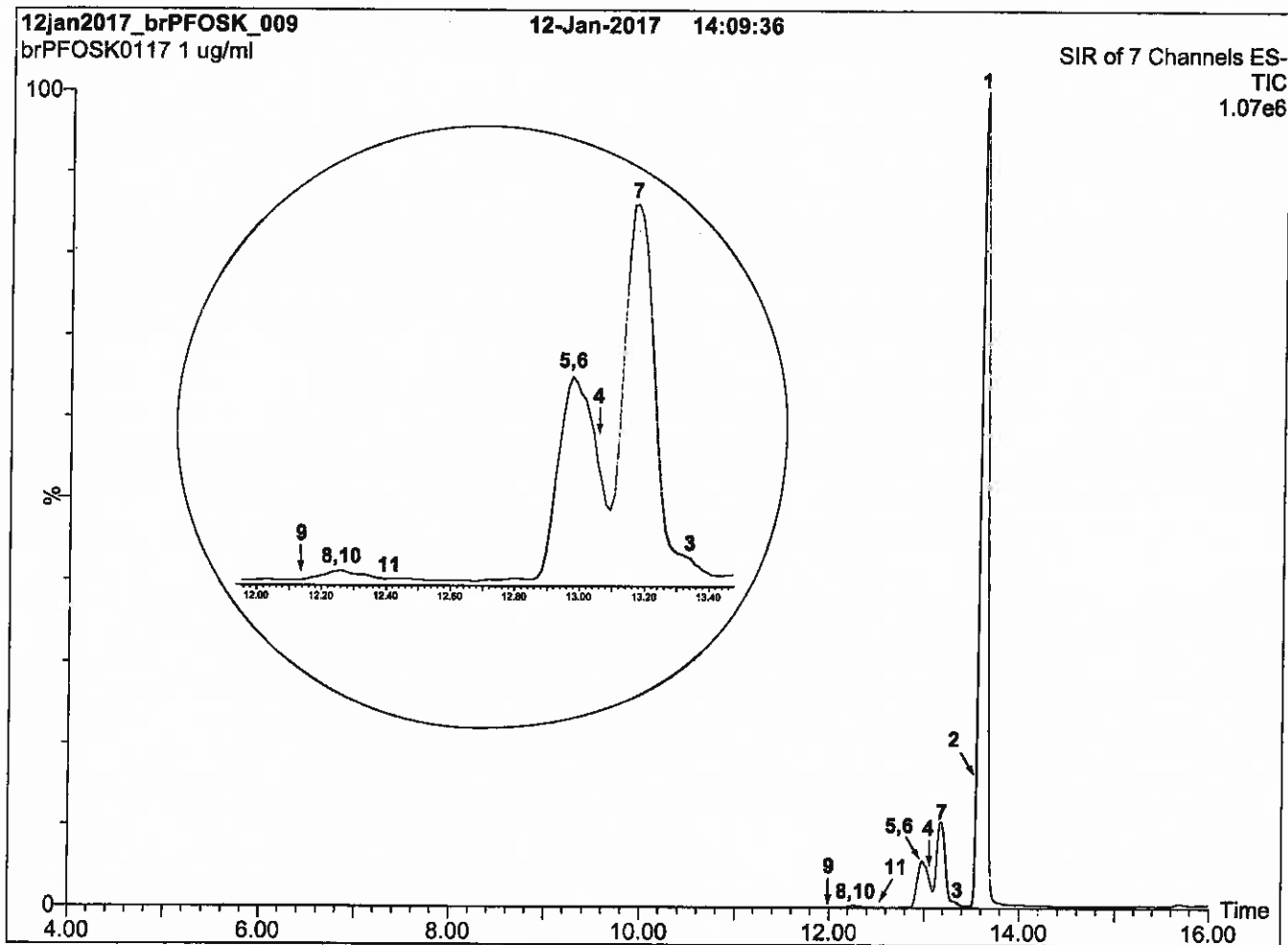
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

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

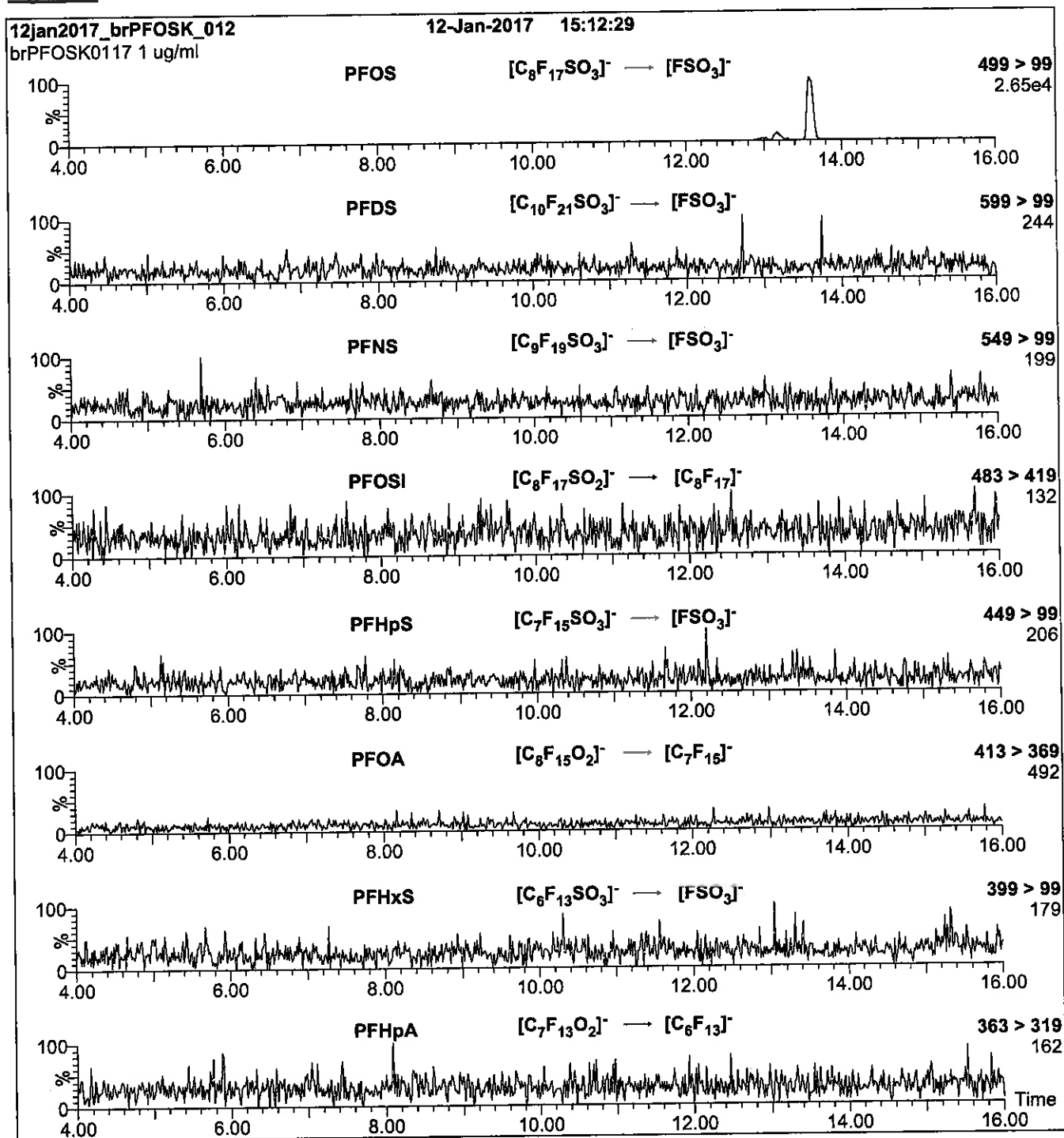
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to Initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3

Collision Energy (eV) = 11-50 (variable)

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-080718-RW-4848	320-41889-1	86	89
WGNA-080718-FRB-4848	320-41889-2	93	90
WGNA-080718-RW-0344	320-41889-3	94	89
WGNA-080718-FRB-0344	320-41889-4	94	89
WGNA-080718-RW-0104	320-41889-5	93	93
WGNA-080718-FRB-0104	320-41889-6	94	90
NAWC-080718-RW-1066	320-41889-7	88	85
NAWC-080718-FRB-1066	320-41889-8	90	88
WGNA-080718-RW-3322	320-41889-9	91	89
WGNA-080718-FRB-3322	320-41889-10	90	92
NAWC-080718-RW-0811	320-41889-11	91	89
NAWC-080718-FRB-0811	320-41889-12	92	88
NAWC-080718-RW-0822	320-41889-13	92	93
NAWC-080718-FRB-0822	320-41889-14	92	88
NAWC-080718-RW-2588	320-41889-15	92	87
NAWC-080718-FRB-2588	320-41889-16	89	87
NAWC-080718-RW-2077	320-41889-17	94	90
NAWC-080718-FRB-2077	320-41889-18	90	88
WGNA-080718-DUP-44	320-41889-19	90	87
	MB 320-240636/1-A	94	85
	LLCS 320-240636/2-A	92	85
NAWC-080718-RW-207 LMS	320-41889-17 LMS	90	88
NAWC-080718-RW-207 LMSD	320-41889-17 LMSD	90	85

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.20_537A_015.d
 Lab ID: LLCS 320-240636/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	103	50-150	
Perfluorooctanoic acid (PFOA)	20.0	18.8 J	94	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.1 J	96	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.3	110	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.0	100	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	105	117	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.20_537A_035.d
 Lab ID: 320-41889-17 LMS Client ID: NAWC-080718-RW-207 LMS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	LMS CONCENTRATION (ng/L)	LMS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	37.7	15 U	44.5	118	50-150	
Perfluorooctanoic acid (PFOA)	18.7	6.4 J	23.9	93	50-150	
Perfluorononanoic acid (PFNA)	18.7	19 U	18.1 J	96	50-150	
Perfluorohexanesulfonic acid (PFHxS)	28.4	11 U	30.1	106	50-150	
Perfluoroheptanoic acid (PFHpA)	9.37	3.8 U	9.20 J	98	50-150	
Perfluorobutanesulfonic acid (PFBS)	84.5	34 U	103	122	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 2018.08.20_537A_038.d

Lab ID: 320-41889-17 LMSD Client ID: NAWC-080718-RW-207 LMSD

COMPOUND	SPIKE ADDED (ng/L)	LMSD CONCENTRATION (ng/L)	LMSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.8	52.3	128	16	50	50-150	
Perfluorooctanoic acid (PFOA)	20.3	27.6	105	15	50	50-150	
Perfluorononanoic acid (PFNA)	20.3	19.3 J	95	6	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.8	32.8	107	9	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.1	10.1	100	9	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	91.5	109	120	6	50	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab File ID: 2018.08.20_537A_014.d Lab Sample ID: MB 320-240636/1-A
 Matrix: Water Date Extracted: 08/17/2018 20:02
 Instrument ID: A8_N Date Analyzed: 08/20/2018 17:11
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-240636/2-A	2018.08.20_537A 015.d	08/20/2018 17:15
WGNA-080718-RW-4848	320-41889-1	2018.08.20_537A 016.d	08/20/2018 17:20
WGNA-080718-FRB-4848	320-41889-2	2018.08.20_537A 017.d	08/20/2018 17:25
WGNA-080718-RW-0344	320-41889-3	2018.08.20_537A 018.d	08/20/2018 17:29
WGNA-080718-FRB-0344	320-41889-4	2018.08.20_537A 019.d	08/20/2018 17:34
WGNA-080718-RW-0104	320-41889-5	2018.08.20_537A 020.d	08/20/2018 17:39
WGNA-080718-FRB-0104	320-41889-6	2018.08.20_537A 021.d	08/20/2018 17:43
NAWC-080718-RW-106	320-41889-7	2018.08.20_537A 022.d	08/20/2018 17:48
NAWC-080718-FRB-106	320-41889-8	2018.08.20_537A 023.d	08/20/2018 17:53
WGNA-080718-RW-3322	320-41889-9	2018.08.20_537A 026.d	08/20/2018 18:07
WGNA-080718-FRB-3322	320-41889-10	2018.08.20_537A 027.d	08/20/2018 18:11
NAWC-080718-RW-081	320-41889-11	2018.08.20_537A 028.d	08/20/2018 18:16
NAWC-080718-FRB-081	320-41889-12	2018.08.20_537A 029.d	08/20/2018 18:21
NAWC-080718-RW-082	320-41889-13	2018.08.20_537A 030.d	08/20/2018 18:25
NAWC-080718-FRB-082	320-41889-14	2018.08.20_537A 031.d	08/20/2018 18:30
NAWC-080718-RW-258	320-41889-15	2018.08.20_537A 032.d	08/20/2018 18:35
NAWC-080718-FRB-258	320-41889-16	2018.08.20_537A 033.d	08/20/2018 18:39
NAWC-080718-RW-207	320-41889-17	2018.08.20_537A 034.d	08/20/2018 18:44
NAWC-080718-RW-207 LMS	320-41889-17 LMS	2018.08.20_537A 035.d	08/20/2018 18:49
NAWC-080718-RW-207 LMSD	320-41889-17 LMSD	2018.08.20_537A 038.d	08/20/2018 19:03
NAWC-080718-FRB-207	320-41889-18	2018.08.20_537A 039.d	08/20/2018 19:07
WGNA-080718-DUP-44	320-41889-19	2018.08.20_537A 040.d	08/20/2018 19:12

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-240166/9	1006603	1.84	2388436	2.10		
ICV 320-240166/11	1022273	1.84	2551643	2.10		
CCVL 320-240968/1	1080920	1.86	2508240	2.11		
CCV 320-240970/10 CCVIS	997051	1.85	2521958	2.10		
MB 320-240636/1-A	1043452	1.86	2514398	2.11		
LLCS 320-240636/2-A	1048348	1.85	2560394	2.11		
320-41889-1	WGNA-080718-RW-4848	1017318	1.85	2445657	2.11	
320-41889-2	WGNA-080718-FRB-4848	911784	1.86	2210739	2.12	
320-41889-3	WGNA-080718-RW-0344	1043234	1.85	2593121	2.10	
320-41889-4	WGNA-080718-FRB-0344	1068783	1.85	2570764	2.11	
320-41889-5	WGNA-080718-RW-0104	1038784	1.85	2529065	2.11	
320-41889-6	WGNA-080718-FRB-0104	977783	1.86	2433594	2.11	
320-41889-7	NAWC-080718-RW-106	1059234	1.85	2549617	2.11	
320-41889-8	NAWC-080718-FRB-106	1002543	1.85	2386513	2.10	
CCV 320-240970/22 CCVIS	1001941	1.85	2495250	2.11		
CCV 320-240971/22 CCVIS	1001941	1.85	2495250	2.11		
320-41889-9	WGNA-080718-RW-3322	1043293	1.85	2566611	2.10	
320-41889-10	WGNA-080718-FRB-3322	990544	1.85	2507055	2.10	
320-41889-11	NAWC-080718-RW-081	1072384	1.85	2539525	2.11	
320-41889-12	NAWC-080718-FRB-081	1078564	1.84	2599060	2.10	
320-41889-13	NAWC-080718-RW-082	964435	1.85	2347526	2.10	
320-41889-14	NAWC-080718-FRB-082	1110754	1.84	2585217	2.10	
320-41889-15	NAWC-080718-RW-258	1037426	1.84	2496872	2.09	
320-41889-16	NAWC-080718-FRB-258	1077494	1.84	2563616	2.10	
320-41889-17	NAWC-080718-RW-207	1074750	1.85	2644977	2.10	
320-41889-17 LMS	NAWC-080718-RW-207 LMS	1086637	1.84	2576287	2.10	
CCV 320-240971/34 CCVIS	962352	1.84	2437811	2.09		

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area

RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-240972/34 CCVIS		962352	1.84	2437811	2.09	
320-41889-17 LMSD	NAWC-080718-RW-207 LMSD	1074351	1.84	2531785	2.10	
320-41889-18	NAWC-080718-FRB-207	1051278	1.85	2544130	2.10	
320-41889-19	WGNA-080718-DUP-44	1067268	1.85	2610922	2.10	
CCV 320-240972/39 CCVIS		972350	1.84	2461190	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240970/10 Date Analyzed: 08/20/2018 17:01
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_012 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	997051	1.85	2521958	2.10		
UPPER LIMIT	1395871	2.35	3530741	2.60		
LOWER LIMIT	697936	1.35	1765371	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-240636/1-A		1043452	1.86	2514398	2.11	
LLCS 320-240636/2-A		1048348	1.85	2560394	2.11	
320-41889-1	WGNA-080718-RW-4848	1017318	1.85	2445657	2.11	
320-41889-2	WGNA-080718-FRB-4848	911784	1.86	2210739	2.12	
320-41889-3	WGNA-080718-RW-0344	1043234	1.85	2593121	2.10	
320-41889-4	WGNA-080718-FRB-0344	1068783	1.85	2570764	2.11	
320-41889-5	WGNA-080718-RW-0104	1038784	1.85	2529065	2.11	
320-41889-6	WGNA-080718-FRB-0104	977783	1.86	2433594	2.11	
320-41889-7	NAWC-080718-RW-106	1059234	1.85	2549617	2.11	
320-41889-8	NAWC-080718-FRB-106	1002543	1.85	2386513	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240970/22 Date Analyzed: 08/20/2018 17:57
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_024 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1001941	1.85	2495250	2.11		
UPPER LIMIT	1402717	2.35	3493350	2.61		
LOWER LIMIT	701359	1.35	1746675	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-240636/1-A		1043452	1.86	2514398	2.11	
LLCS 320-240636/2-A		1048348	1.85	2560394	2.11	
320-41889-1	WGNA-080718-RW-4848	1017318	1.85	2445657	2.11	
320-41889-2	WGNA-080718-FRB-4848	911784	1.86	2210739	2.12	
320-41889-3	WGNA-080718-RW-0344	1043234	1.85	2593121	2.10	
320-41889-4	WGNA-080718-FRB-0344	1068783	1.85	2570764	2.11	
320-41889-5	WGNA-080718-RW-0104	1038784	1.85	2529065	2.11	
320-41889-6	WGNA-080718-FRB-0104	977783	1.86	2433594	2.11	
320-41889-7	NAWC-080718-RW-106	1059234	1.85	2549617	2.11	
320-41889-8	NAWC-080718-FRB-106	1002543	1.85	2386513	2.10	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area

RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240971/22 Date Analyzed: 08/20/2018 17:57
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_024 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1001941	1.85	2495250	2.11		
UPPER LIMIT	1402717	2.35	3493350	2.61		
LOWER LIMIT	701359	1.35	1746675	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-9	WGNA-080718-RW-3322	1043293	1.85	2566611	2.10	
320-41889-10	WGNA-080718-FRB-3322	990544	1.85	2507055	2.10	
320-41889-11	NAWC-080718-RW-081	1072384	1.85	2539525	2.11	
320-41889-12	NAWC-080718-FRB-081	1078564	1.84	2599060	2.10	
320-41889-13	NAWC-080718-RW-082	964435	1.85	2347526	2.10	
320-41889-14	NAWC-080718-FRB-082	1110754	1.84	2585217	2.10	
320-41889-15	NAWC-080718-RW-258	1037426	1.84	2496872	2.09	
320-41889-16	NAWC-080718-FRB-258	1077494	1.84	2563616	2.10	
320-41889-17	NAWC-080718-RW-207	1074750	1.85	2644977	2.10	
320-41889-17 LMS	NAWC-080718-RW-207 LMS	1086637	1.84	2576287	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240971/34 Date Analyzed: 08/20/2018 18:53
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_036 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	962352	1.84	2437811	2.09		
UPPER LIMIT	1347293	2.34	3412935	2.59		
LOWER LIMIT	673646	1.34	1706468	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-9	WGNA-080718-RW-3322	1043293	1.85	2566611	2.10	
320-41889-10	WGNA-080718-FRB-3322	990544	1.85	2507055	2.10	
320-41889-11	NAWC-080718-RW-081	1072384	1.85	2539525	2.11	
320-41889-12	NAWC-080718-FRB-081	1078564	1.84	2599060	2.10	
320-41889-13	NAWC-080718-RW-082	964435	1.85	2347526	2.10	
320-41889-14	NAWC-080718-FRB-082	1110754	1.84	2585217	2.10	
320-41889-15	NAWC-080718-RW-258	1037426	1.84	2496872	2.09	
320-41889-16	NAWC-080718-FRB-258	1077494	1.84	2563616	2.10	
320-41889-17	NAWC-080718-RW-207	1074750	1.85	2644977	2.10	
320-41889-17 LMS	NAWC-080718-RW-207 LMS	1086637	1.84	2576287	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240972/34 Date Analyzed: 08/20/2018 18:53
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_036 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	962352	1.84	2437811	2.09		
UPPER LIMIT	1347293	2.34	3412935	2.59		
LOWER LIMIT	673646	1.34	1706468	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-17 LMSD	NAWC-080718-RW-207 LMSD	1074351	1.84	2531785	2.10	
320-41889-18	NAWC-080718-FRB-207	1051278	1.85	2544130	2.10	
320-41889-19	WGNA-080718-DUP-44	1067268	1.85	2610922	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240972/39 Date Analyzed: 08/20/2018 19:17
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_041 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	972350	1.84	2461190	2.10		
UPPER LIMIT	1361290	2.34	3445666	2.60		
LOWER LIMIT	680645	1.34	1722833	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-17 LMSD	NAWC-080718-RW-207 LMSD	1074351	1.84	2531785	2.10	
320-41889-18	NAWC-080718-FRB-207	1051278	1.85	2544130	2.10	
320-41889-19	WGNA-080718-DUP-44	1067268	1.85	2610922	2.10	

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

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

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-4848 Lab Sample ID: 320-41889-1
 Matrix: Water Lab File ID: 2018.08.20_537A_016.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:25
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 245 (mL) Date Analyzed: 08/20/2018 17:20
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U M	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_016.d
 Lims ID: 320-41889-A-1-A
 Client ID: WGNA-080718-RW-4848
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:20:21 ALS Bottle#: 9 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:51:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	914639	8.65	6813	
* 6 13C2-PFOA	415.00 > 370.00	1.851	1.851	0.0		1017318	10.0	7626	
5 Perfluorooctanoic acid									M
413.00 > 369.00	1.851	1.851	0.0	1.000	54585	0.4925		4.9	M
413.00 > 169.00	1.851	1.851	0.0	1.000	33401		1.63(0.00-0.00)	52.7	
* 7 13C4 PFOS	503.00 > 80.00	2.109	2.102	0.007		2445657	28.7	3998	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	720719	8.94	5634	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_016.d

Injection Date: 20-Aug-2018 17:20:21

Instrument ID: A8_N

Lims ID: 320-41889-A-1-A

Lab Sample ID: 320-41889-1

Client ID: WGNA-080718-RW-4848

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

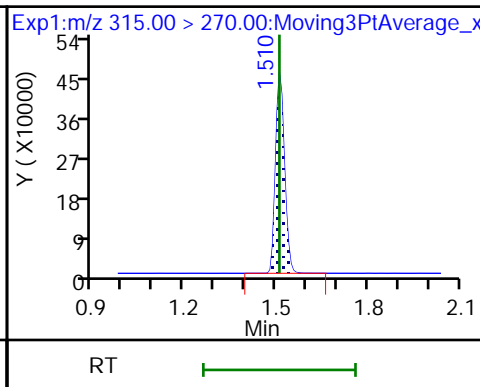
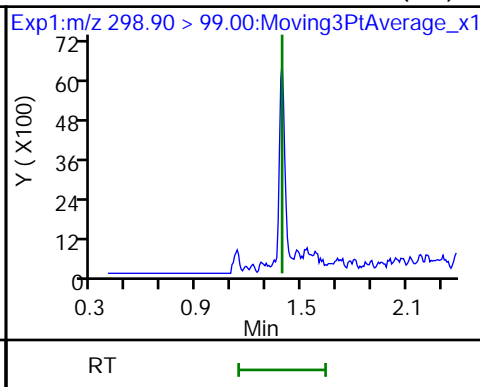
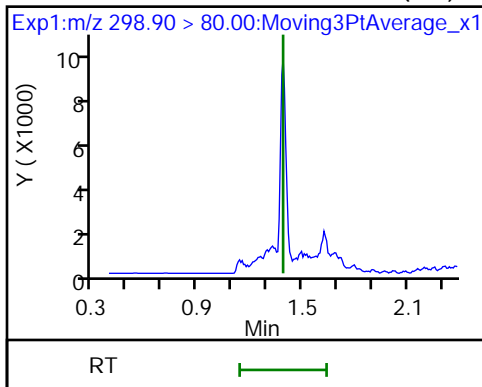
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

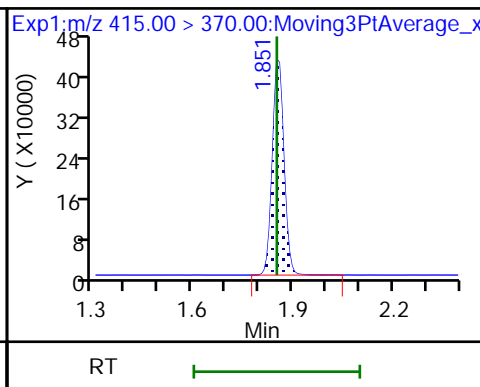
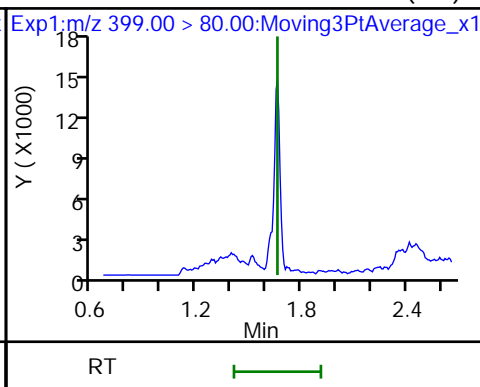
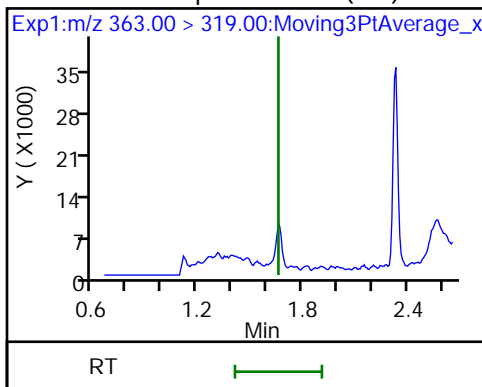
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

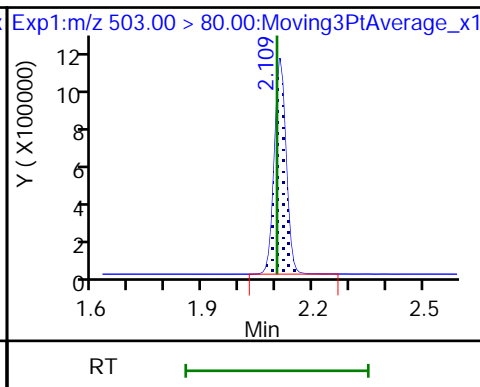
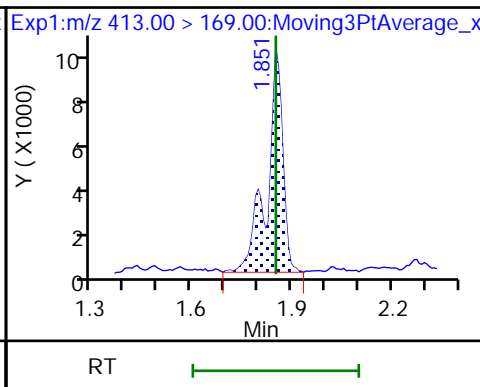
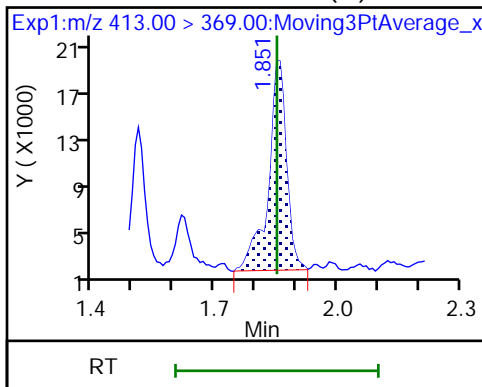
* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

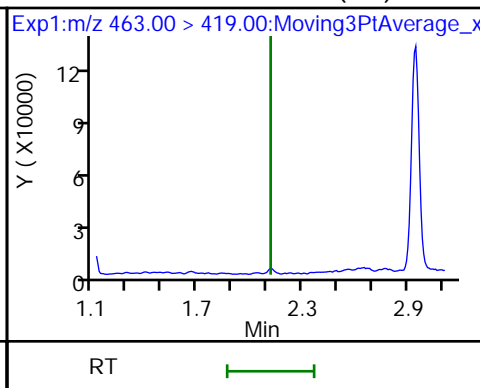
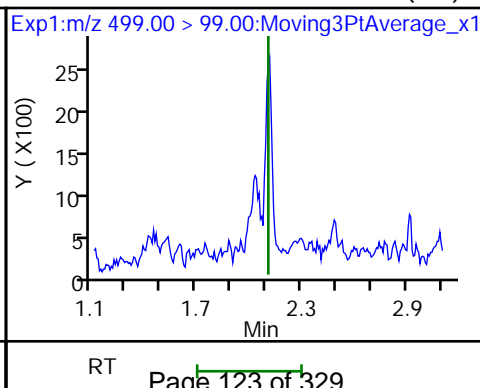
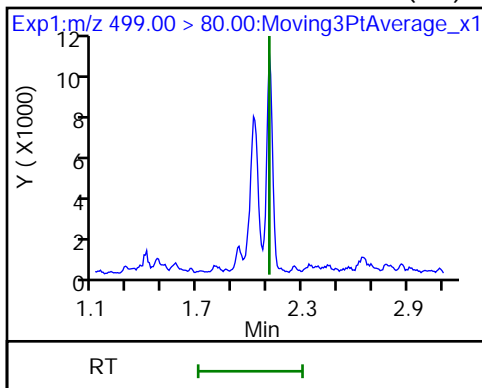
* 7 13C4 PFOS



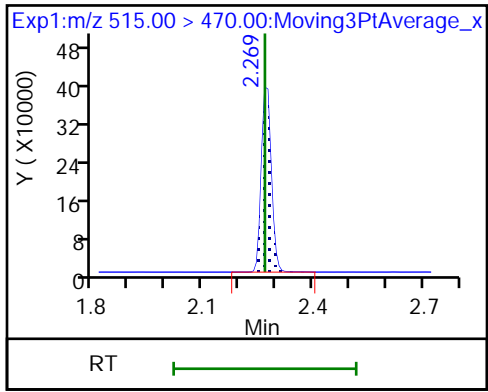
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_016.d
 Lims ID: 320-41889-A-1-A
 Client ID: WGNA-080718-RW-4848
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:20:21 ALS Bottle#: 9 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:51:14

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.65	86.50
\$ 10 13C2 PFDA	10.0	8.94	89.44

TestAmerica Sacramento

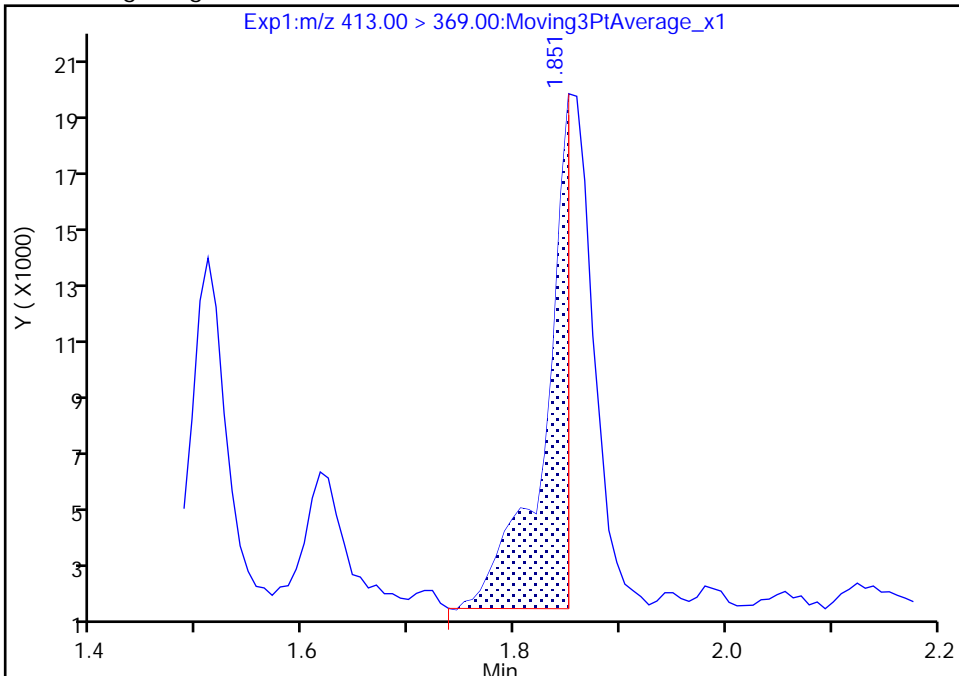
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Injection Date: 20-Aug-2018 17:20:21 Instrument ID: A8_N
Lims ID: 320-41889-A-1-A Lab Sample ID: 320-41889-1
Client ID: WGNA-080718-RW-4848
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

5 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

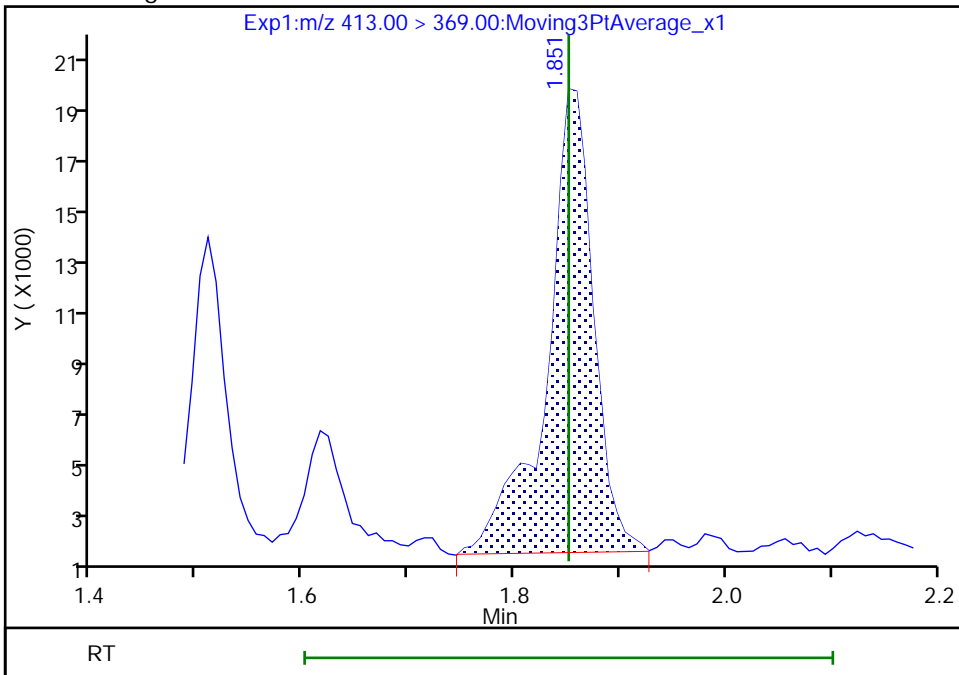
RT: 1.85
Area: 26209
Amount: 0.236455
Amount Units: ng/ml

Processing Integration Results



RT: 1.85
Area: 54585
Amount: 0.492460
Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 21-Aug-2018 10:50:53
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-4848 Lab Sample ID: 320-41889-2
 Matrix: Water Lab File ID: 2018.08.20_537A_017.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:20
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 271.1(mL) Date Analyzed: 08/20/2018 17:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_017.d
 Lims ID: 320-41889-A-2-A
 Client ID: WGNA-080718-FRB-4848
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:25:00 ALS Bottle#: 10 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.517	1.510	0.007	1.000	878728	9.27	8271	
* 6 13C2-PFOA	415.00 > 370.00	1.859	1.851	0.008		911784	10.0	6994	
* 7 13C4 PFOS	503.00 > 80.00	2.117	2.102	0.015		2210739	28.7	4731	
\$ 10 13C2 PFDA	515.00 > 470.00	2.276	2.269	0.008	1.000	651486	9.02	4299	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_017.d

Injection Date: 20-Aug-2018 17:25:00

Instrument ID: A8_N

Lims ID: 320-41889-A-2-A

Lab Sample ID: 320-41889-2

Client ID: WGNA-080718-FRB-4848

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

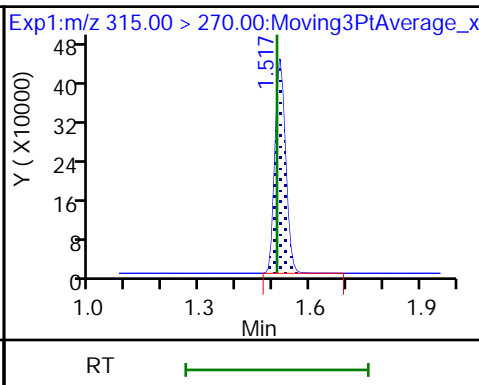
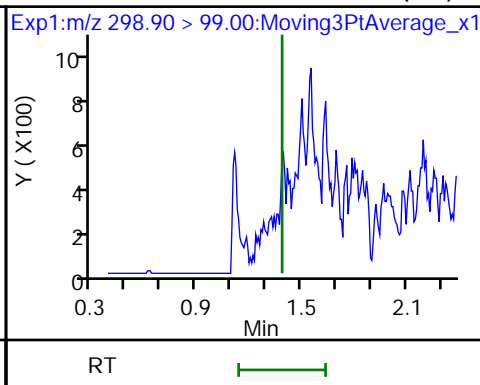
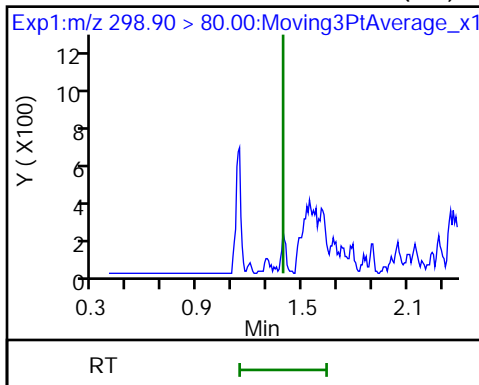
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

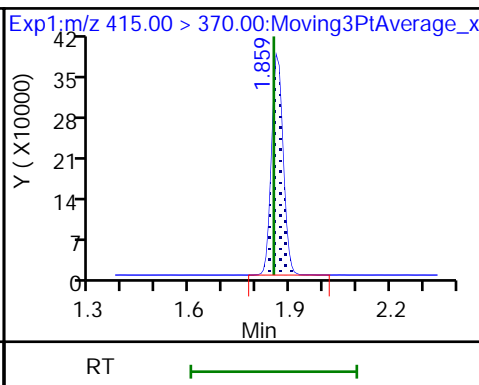
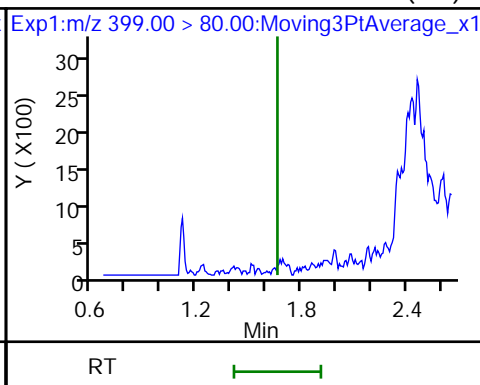
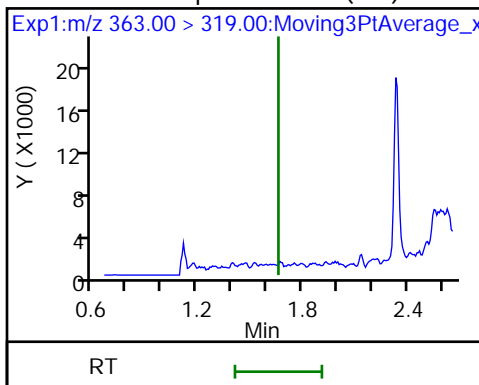
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

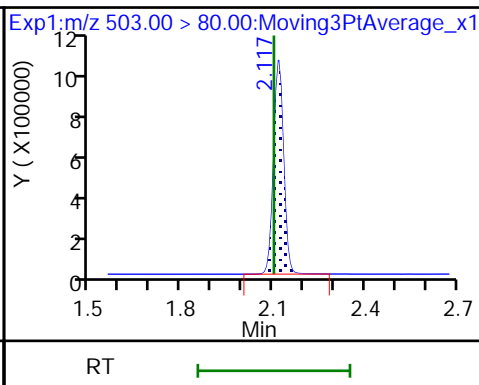
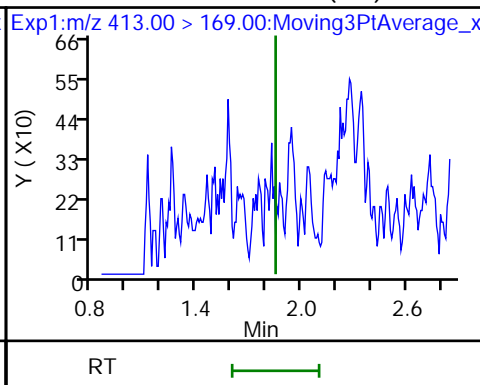
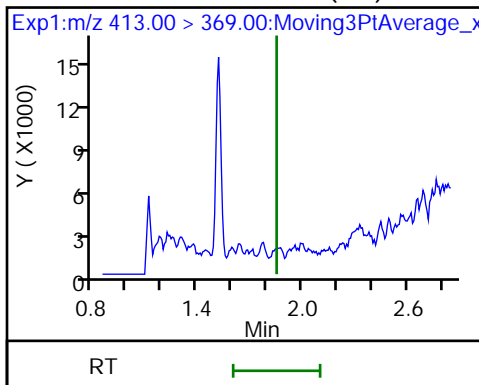
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

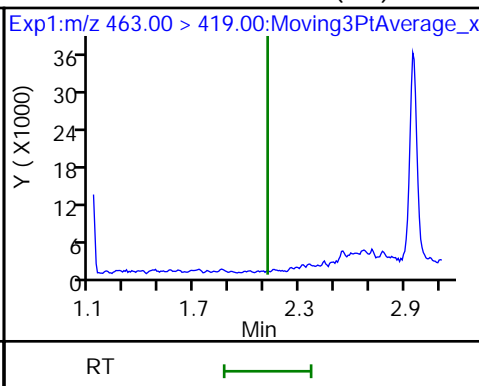
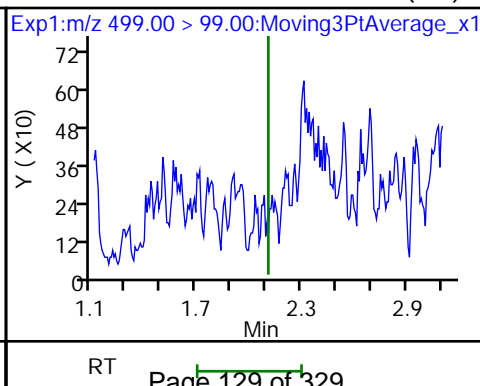
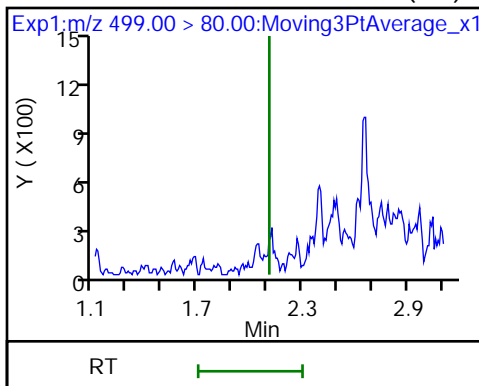
* 7 13C4 PFOS



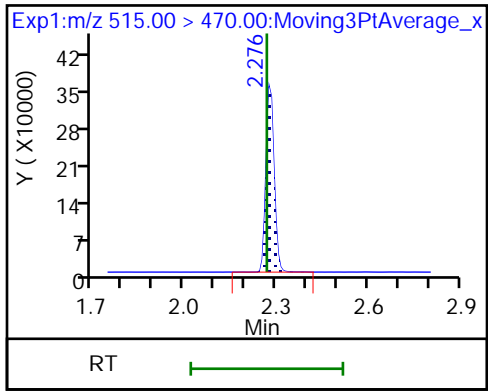
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_017.d
 Lims ID: 320-41889-A-2-A
 Client ID: WGNA-080718-FRB-4848
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:25:00 ALS Bottle#: 10 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.27	92.72
\$ 10 13C2 PFDA	10.0	9.02	90.20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-0344 Lab Sample ID: 320-41889-3
 Matrix: Water Lab File ID: 2018.08.20_537A_018.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 269.2 (mL) Date Analyzed: 08/20/2018 17:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	27		19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	35		22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_018.d
 Lims ID: 320-41889-A-3-A
 Client ID: WGNA-080718-RW-0344
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:29:41 ALS Bottle#: 11 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:51:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.388	-0.007	1.000	176079	1.70		269	
298.90 > 99.00	1.381	1.388	-0.007	1.000	120993		1.46(0.00-0.00)	174	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.510	-0.008	1.000	1023020	9.43		9519	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.662	-0.008	1.000	184940	1.68		27.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.662	-0.008	1.000	795094	5.31		354	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1043234	10.0		8042	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	819564	7.21		72.5	
413.00 > 169.00	1.851	1.851	0.0	1.000	501341		1.63(0.00-0.00)	765	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2593121	28.7		2882	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	731048	7.48		433	
499.00 > 99.00	2.102	2.109	-0.007	0.996	133852		5.46(0.00-0.00)	124	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	804726	9.36		62.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	732220	8.86		4937	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_018.d

Injection Date: 20-Aug-2018 17:29:41

Instrument ID: A8_N

Lims ID: 320-41889-A-3-A

Lab Sample ID: 320-41889-3

Client ID: WGNA-080718-RW-0344

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

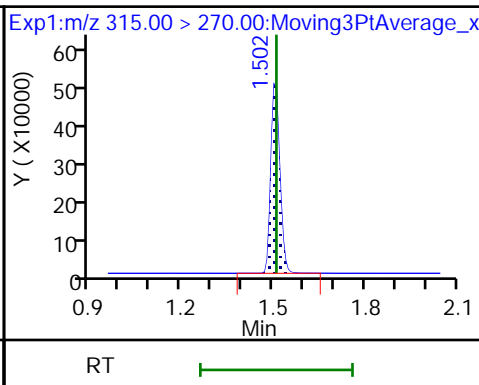
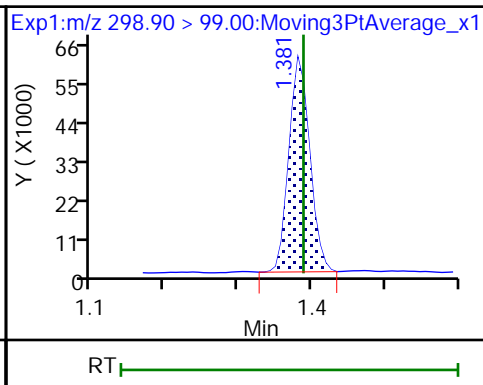
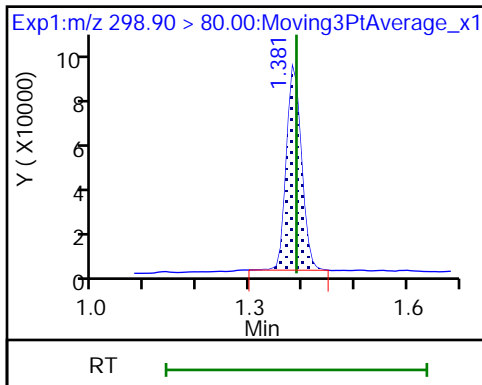
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

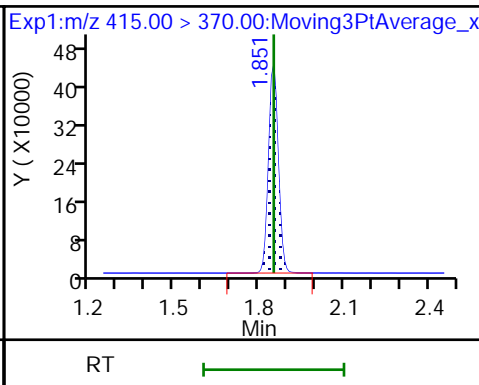
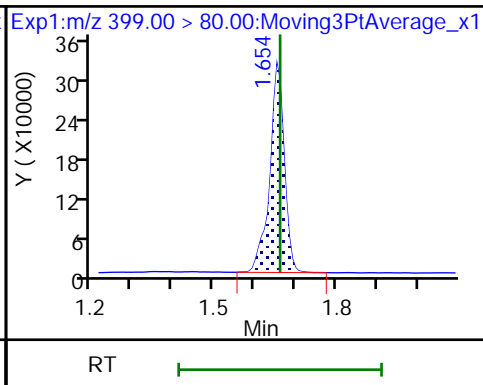
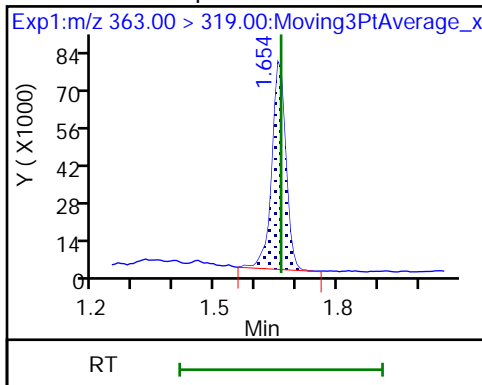
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

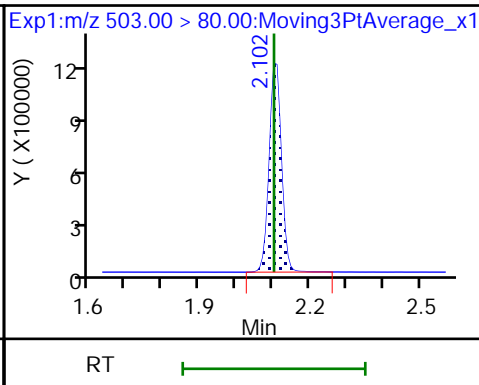
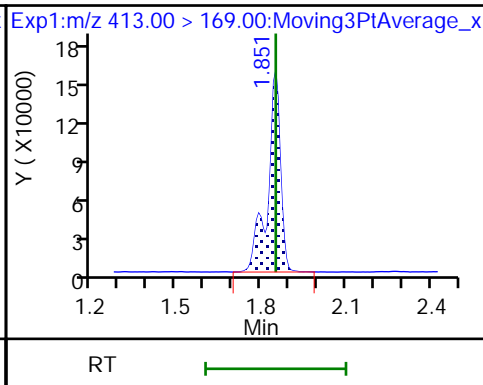
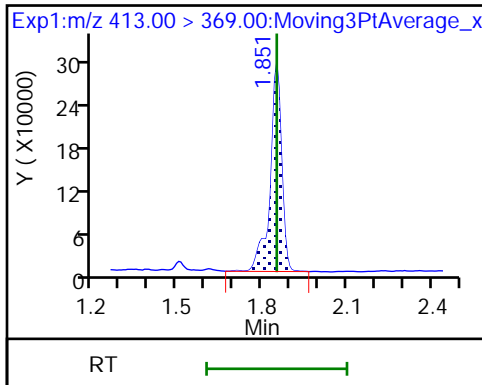
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

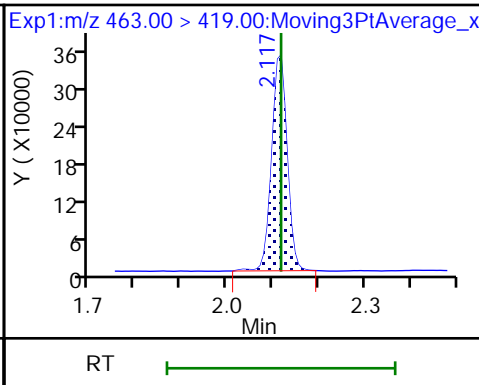
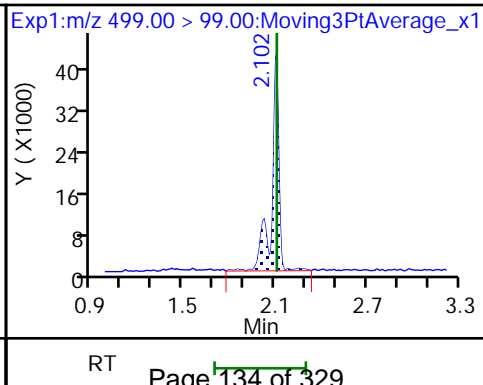
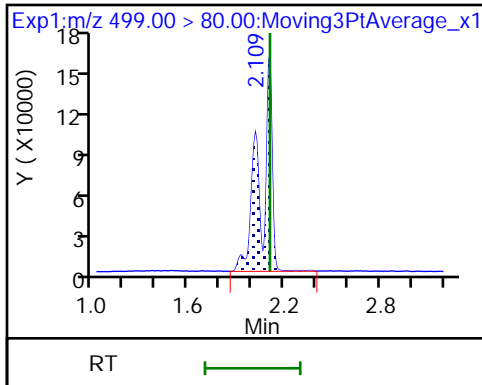
* 7 13C4 PFOS



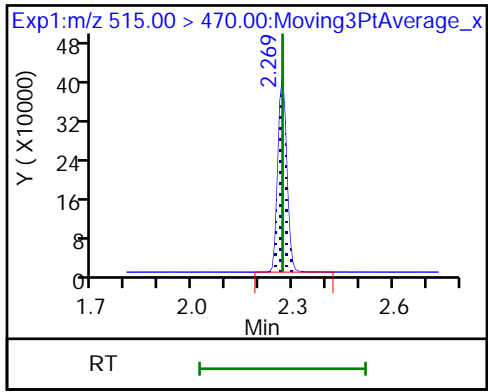
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_018.d
 Lims ID: 320-41889-A-3-A
 Client ID: WGNA-080718-RW-0344
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:29:41 ALS Bottle#: 11 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-3-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:51:37

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.43	94.35
\$ 10 13C2 PFDA	10.0	8.86	88.61

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-0344 Lab Sample ID: 320-41889-4
 Matrix: Water Lab File ID: 2018.08.20_537A_019.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 285.3(mL) Date Analyzed: 08/20/2018 17:34
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_019.d
 Lims ID: 320-41889-A-4-A
 Client ID: WGNA-080718-FRB-0344
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:34:22 ALS Bottle#: 12 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	1046960	9.42	10358	
* 6 13C2-PFOA	415.00 > 370.00	1.851	1.851	0.0		1068783	10.0	7730	
* 7 13C4 PFOS	503.00 > 80.00	2.109	2.102	0.007		2570764	28.7	5401	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	753985	8.91	5021	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_019.d

Injection Date: 20-Aug-2018 17:34:22

Instrument ID: A8_N

Lims ID: 320-41889-A-4-A

Lab Sample ID: 320-41889-4

Client ID: WGNA-080718-FRB-0344

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

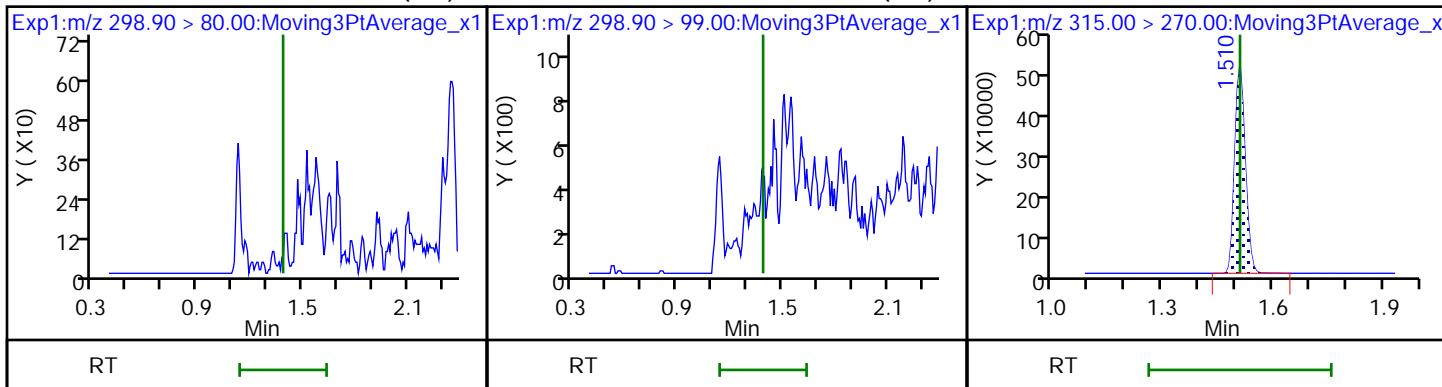
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

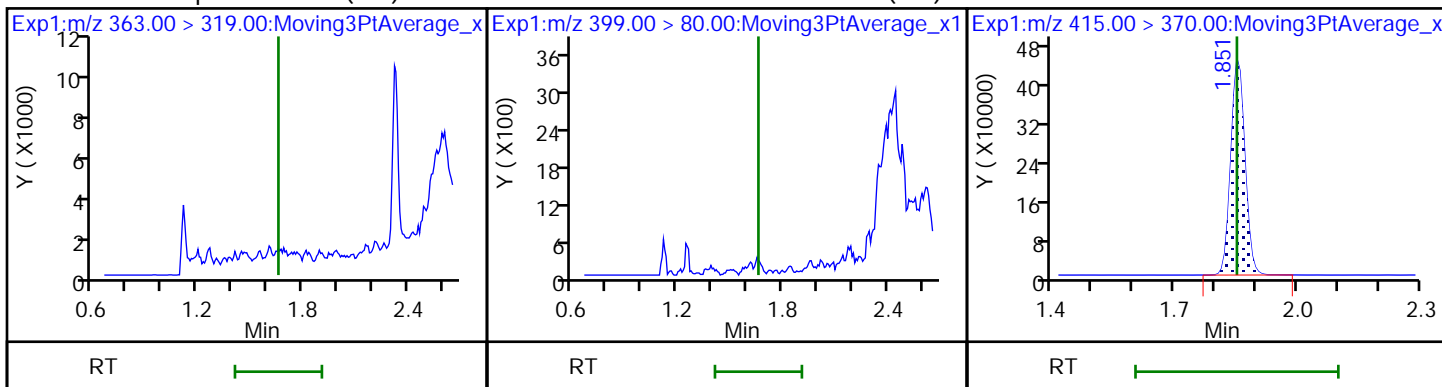
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

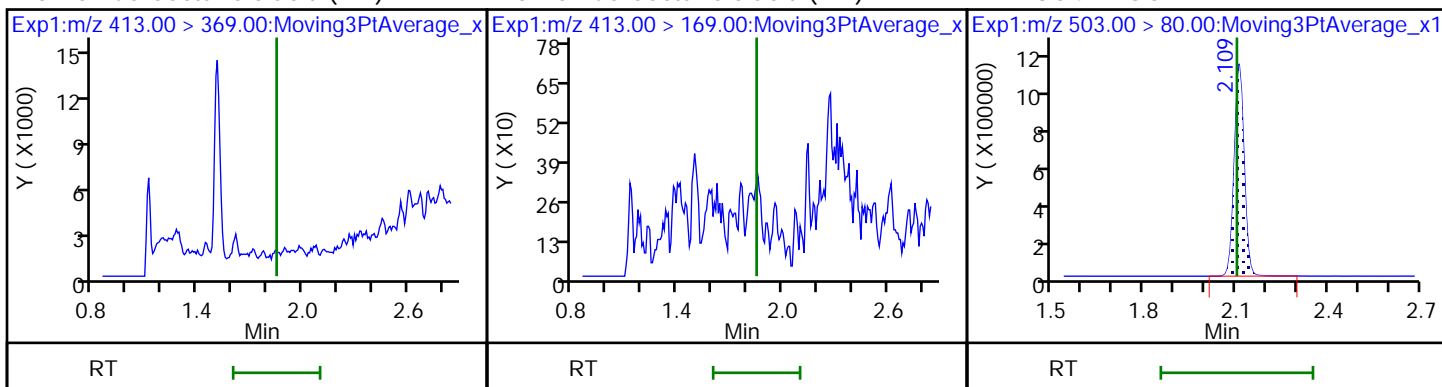
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

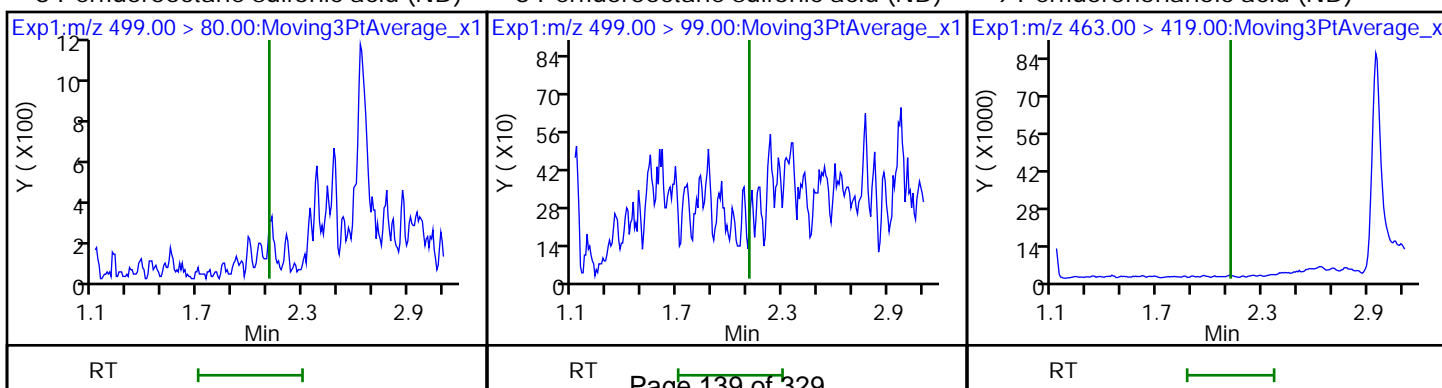
* 7 13C4 PFOS



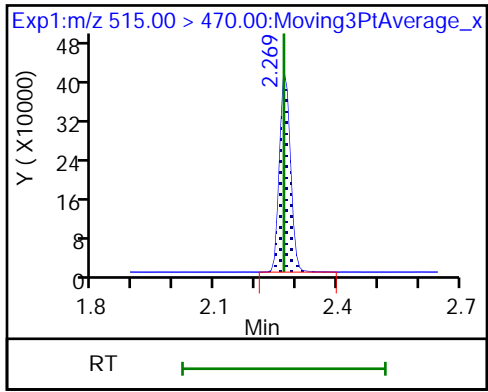
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_019.d
 Lims ID: 320-41889-A-4-A
 Client ID: WGNA-080718-FRB-0344
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:34:22 ALS Bottle#: 12 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-4-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.42	94.24
\$ 10 13C2 PFDA	10.0	8.91	89.06

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-0104 Lab Sample ID: 320-41889-5
 Matrix: Water Lab File ID: 2018.08.20_537A_020.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 262.2 (mL) Date Analyzed: 08/20/2018 17:39
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39		38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32		29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.4	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_020.d
 Lims ID: 320-41889-A-5-A
 Client ID: WGNA-080718-RW-0104
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:39:04 ALS Bottle#: 13 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:51:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	268346	2.66		448	
298.90 > 99.00	1.388	1.388	0.0	1.000	186836		1.44(0.00-0.00)	278	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	999177	9.25		9189	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.662	0.0	1.000	156254	1.42		28.0	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.662	0.0	1.000	1231338	8.43		702	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1038784	10.0		8003	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.851	0.008	1.000	565126	4.99		57.3	
413.00 > 169.00	1.851	1.851	0.0	0.996	333053		1.70(0.00-0.00)	517	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2529065	28.7		4373	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	979600	10.3		897	
499.00 > 99.00	2.109	2.109	0.0	1.000	195646		5.01(0.00-0.00)	228	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.269	0.008	1.000	765900	9.31		5235	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_020.d

Injection Date: 20-Aug-2018 17:39:04

Instrument ID: A8_N

Lims ID: 320-41889-A-5-A

Lab Sample ID: 320-41889-5

Client ID: WGNA-080718-RW-0104

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

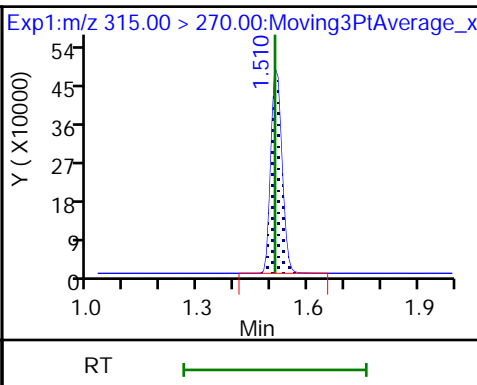
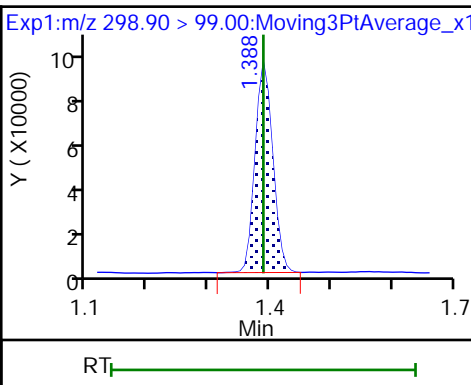
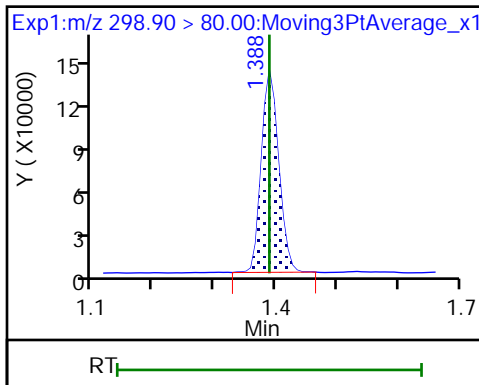
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

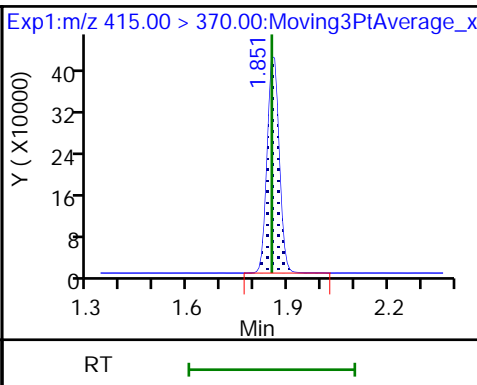
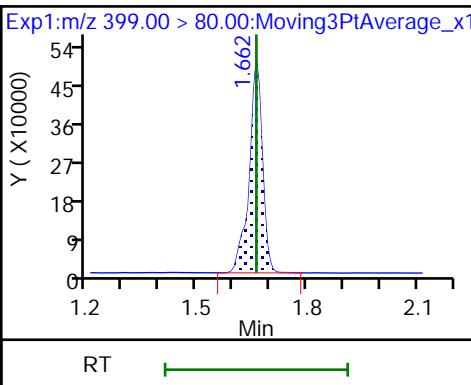
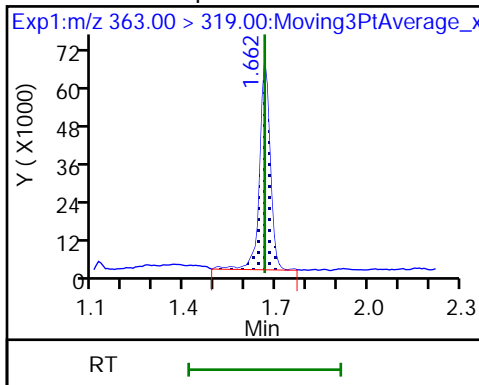
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

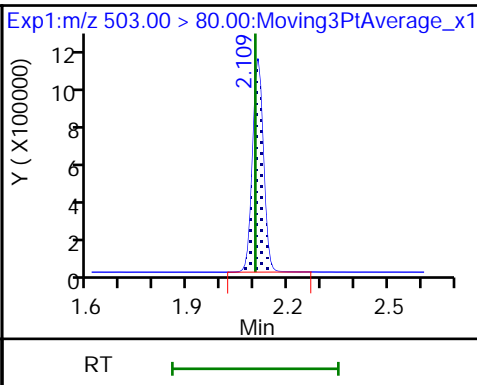
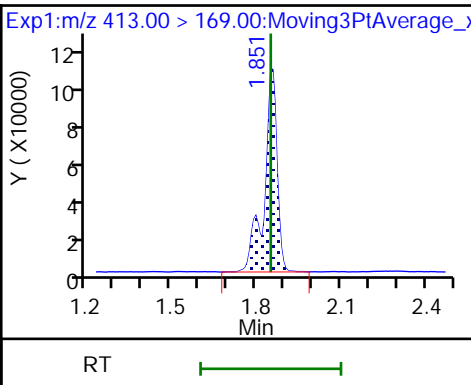
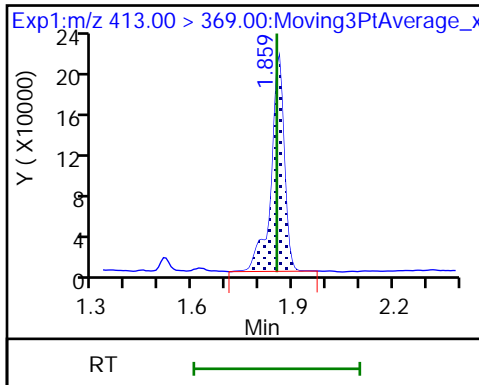
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

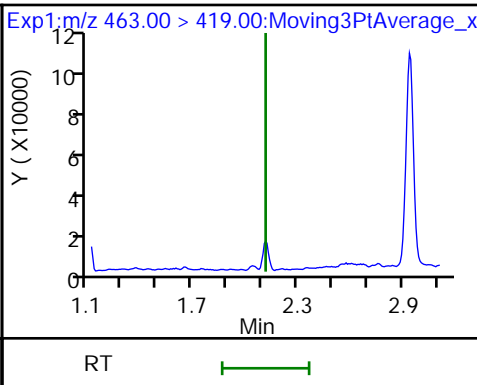
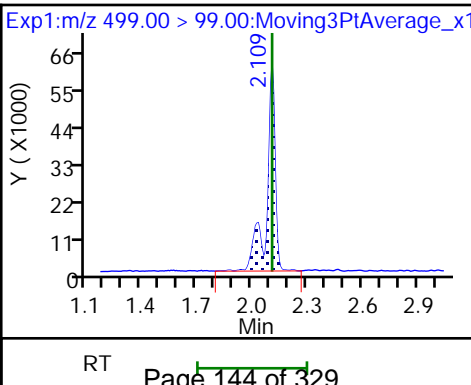
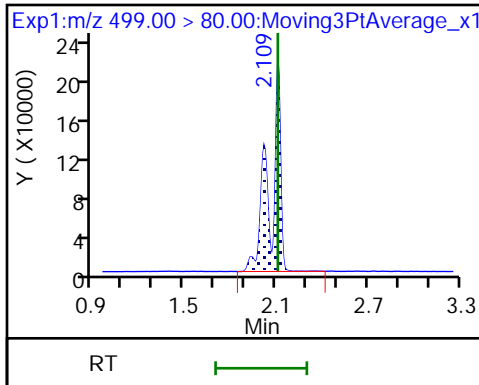
* 7 13C4 PFOS



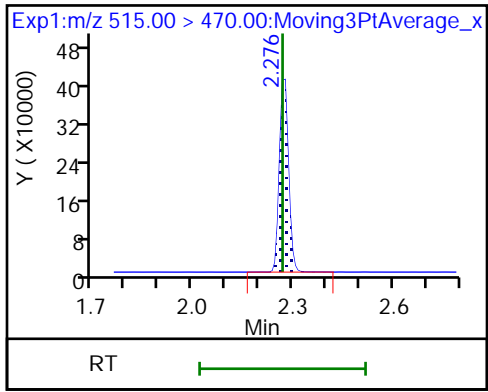
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_020.d
 Lims ID: 320-41889-A-5-A
 Client ID: WGNA-080718-RW-0104
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:39:04 ALS Bottle#: 13 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-5-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:51:59

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.25	92.54
\$ 10 13C2 PFDA	10.0	9.31	93.08

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-0104 Lab Sample ID: 320-41889-6
 Matrix: Water Lab File ID: 2018.08.20_537A_021.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.1(mL) Date Analyzed: 08/20/2018 17:43
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_021.d
 Lims ID: 320-41889-A-6-A
 Client ID: WGNA-080718-FRB-0104
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:43:46 ALS Bottle#: 14 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	955330	9.40	8084	
* 6 13C2-PFOA	415.00 > 370.00	1.859	1.851	0.008		977783	10.0	6807	
* 7 13C4 PFOS	503.00 > 80.00	2.109	2.102	0.007		2433594	28.7	5478	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	698157	9.01	4675	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_021.d

Injection Date: 20-Aug-2018 17:43:46

Instrument ID: A8_N

Lims ID: 320-41889-A-6-A

Lab Sample ID: 320-41889-6

Client ID: WGNA-080718-FRB-0104

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 19

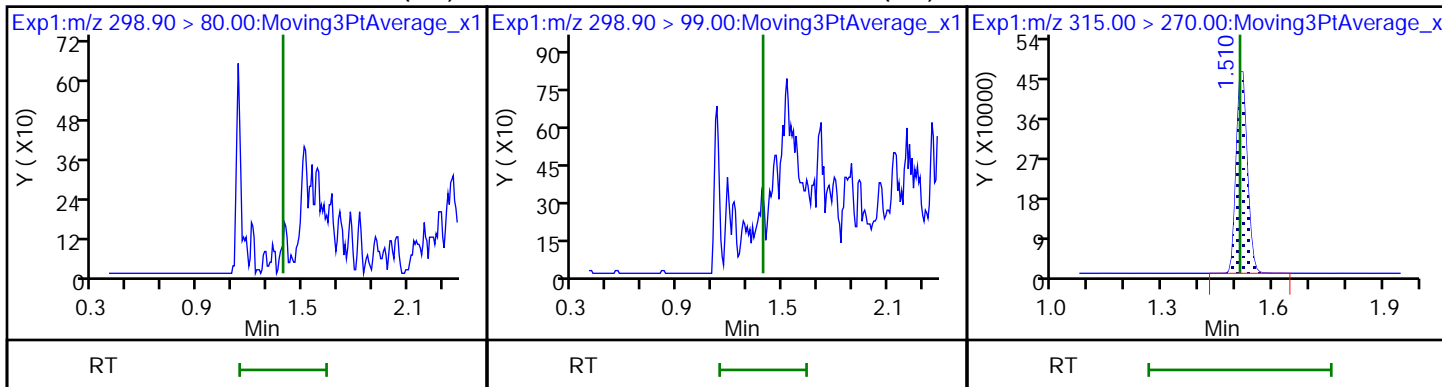
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

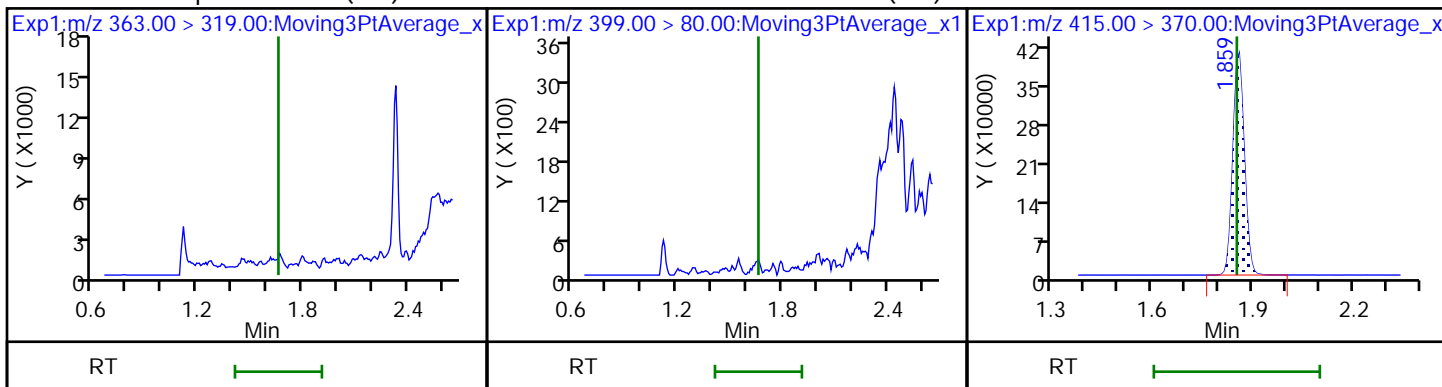
Method: 537_A8_N

Limit Group: LC 537 ICAL

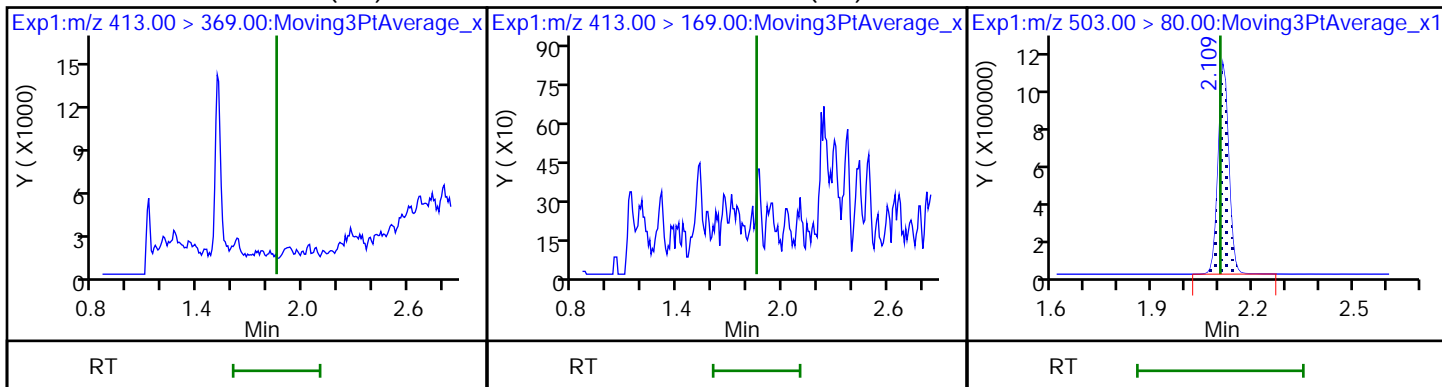
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



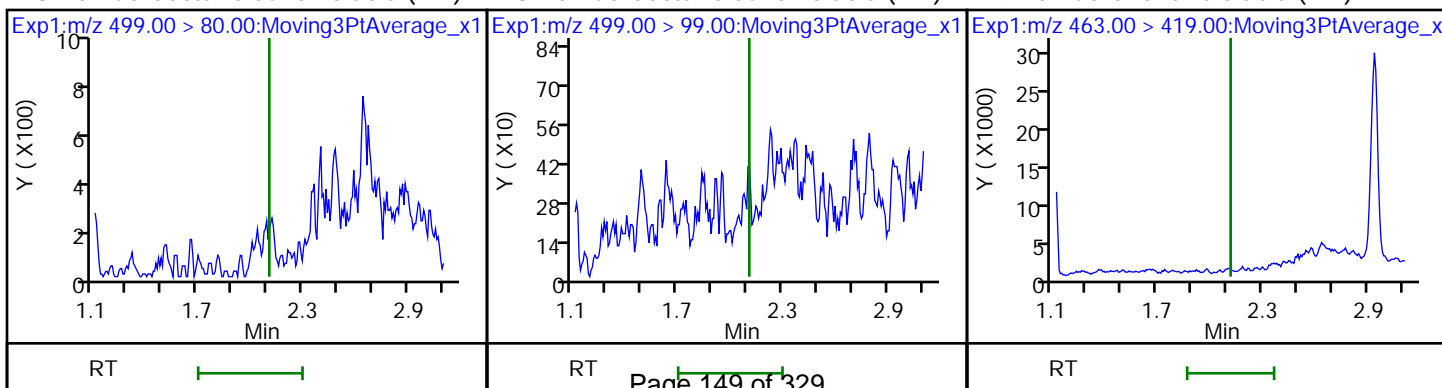
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



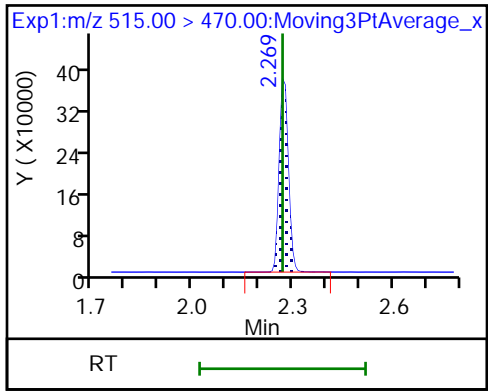
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) * 7 13C4 PFOS



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_021.d
 Lims ID: 320-41889-A-6-A
 Client ID: WGNA-080718-FRB-0104
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:43:46 ALS Bottle#: 14 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-6-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.40	94.00
\$ 10 13C2 PFDA	10.0	9.01	90.14

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-106 Lab Sample ID: 320-41889-7
 Matrix: Water Lab File ID: 2018.08.20_537A_022.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.2 (mL) Date Analyzed: 08/20/2018 17:48
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	21		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	85		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_022.d
 Lims ID: 320-41889-A-7-A
 Client ID: NAWC-080718-RW-106
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:48:27 ALS Bottle#: 15 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:52:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	292114	2.87		119	
298.90 > 99.00	1.388	1.388	0.0	1.000	192382		1.52(0.00-0.00)	242	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.517	1.510	0.007	1.000	967798	8.79		8349	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.662	0.0	1.000	267168	2.39		30.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.662	0.0	1.000	454816	3.09		109	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1059234	10.0		7756	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.851	0.008	1.000	698200	6.05		54.9	
413.00 > 169.00	1.851	1.851	0.0	0.996	401546		1.74(0.00-0.00)	609	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2549617	28.7		1585	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	546726	5.69		170	
499.00 > 99.00	2.109	2.109	0.0	1.000	100345		5.45(0.00-0.00)	83.0	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	90341	1.03		6.9	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	712288	8.49		5040	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_022.d

Injection Date: 20-Aug-2018 17:48:27

Instrument ID: A8_N

Lims ID: 320-41889-A-7-A

Lab Sample ID: 320-41889-7

Client ID: NAWC-080718-RW-106

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

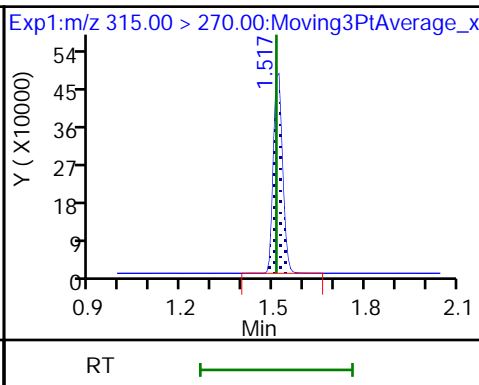
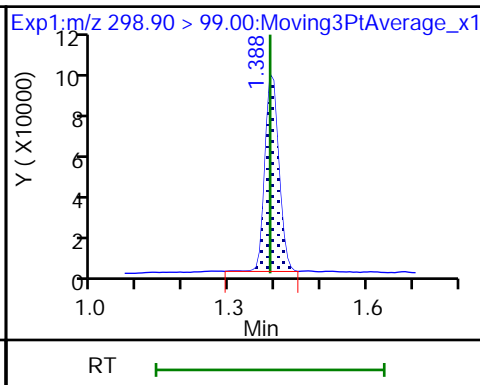
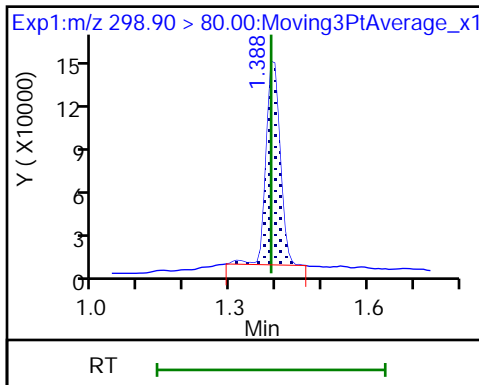
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

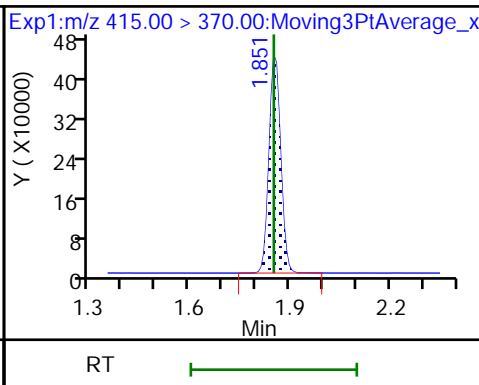
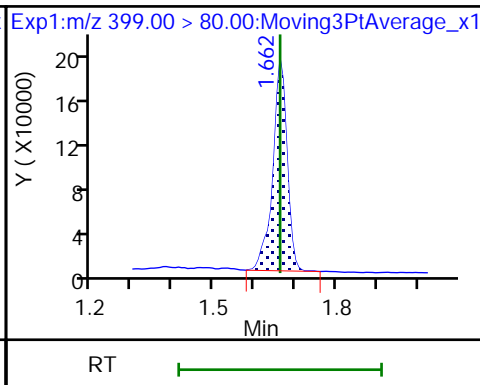
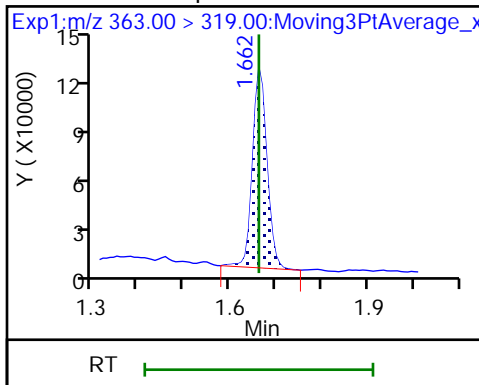
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

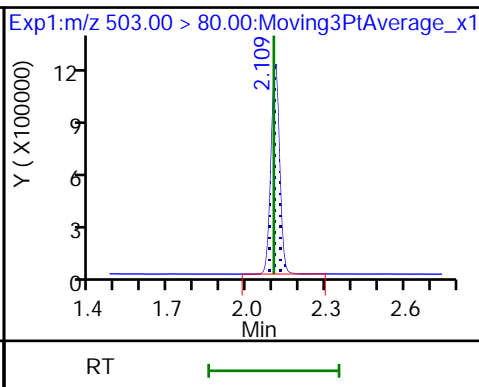
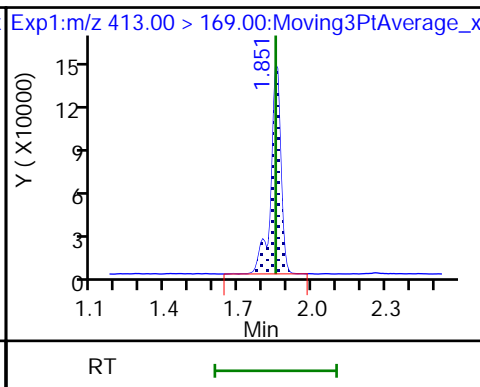
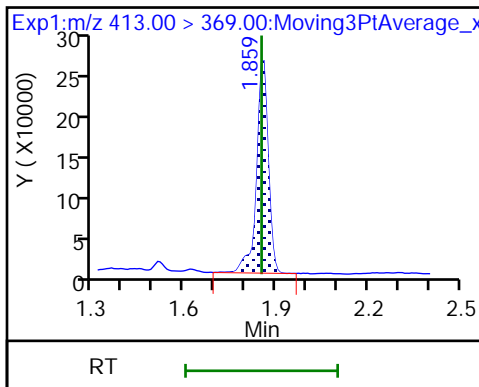
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

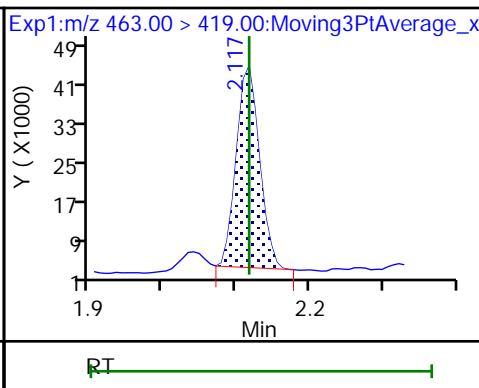
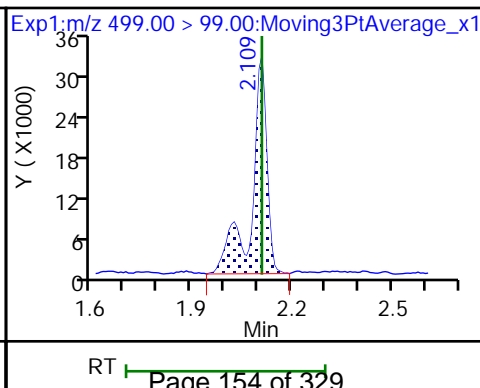
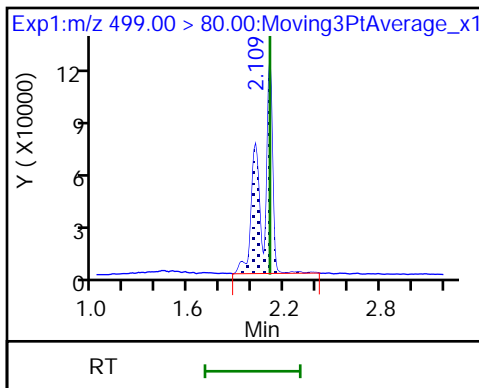
* 7 13C4 PFOS



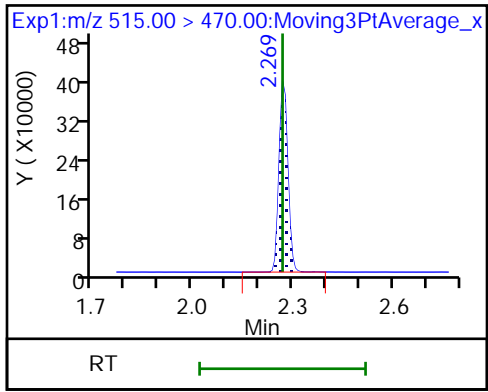
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_022.d
 Lims ID: 320-41889-A-7-A
 Client ID: NAWC-080718-RW-106
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:48:27 ALS Bottle#: 15 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-7-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:52:18

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.79	87.90
\$ 10 13C2 PFDA	10.0	8.49	84.89

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-106 Lab Sample ID: 320-41889-8
 Matrix: Water Lab File ID: 2018.08.20_537A_023.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 285.3(mL) Date Analyzed: 08/20/2018 17:53
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_023.d
 Lims ID: 320-41889-A-8-A
 Client ID: NAWC-080718-FRB-106
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:53:07 ALS Bottle#: 16 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	942785	9.05	8332	
* 6 13C2-PFOA	415.00 > 370.00	1.851	1.851	0.0		1002543	10.0	7277	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.102	0.0		2386513	28.7	5136	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	696005	8.76	4746	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_023.d

Injection Date: 20-Aug-2018 17:53:07

Instrument ID: A8_N

Lims ID: 320-41889-A-8-A

Lab Sample ID: 320-41889-8

Client ID: NAWC-080718-FRB-106

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

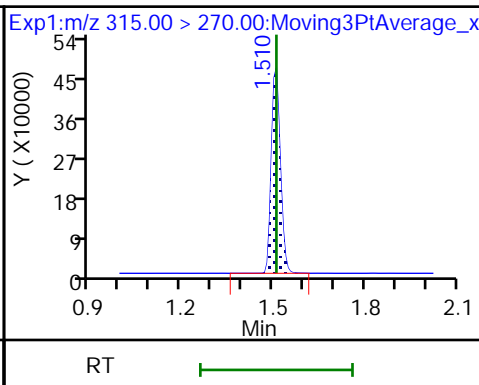
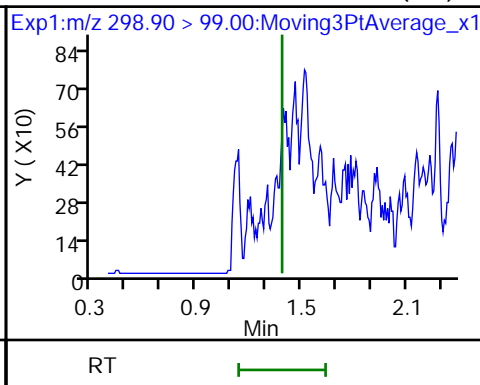
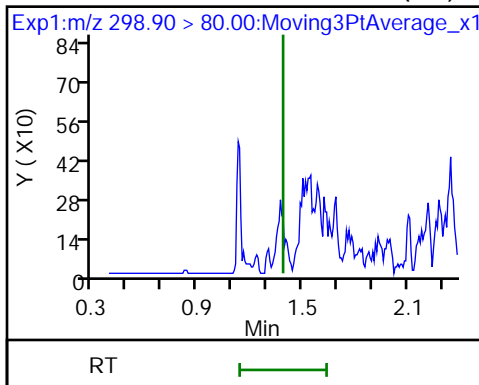
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

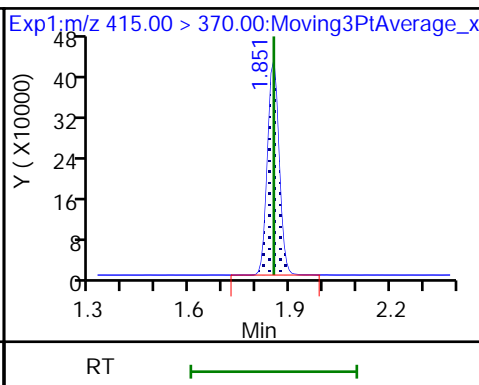
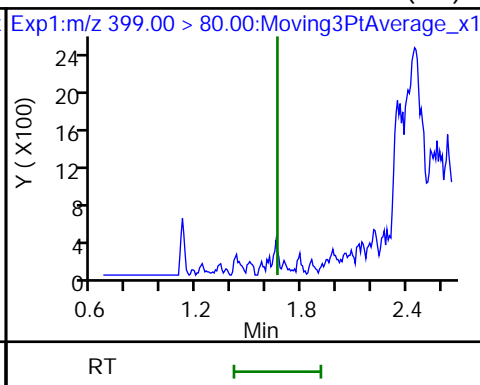
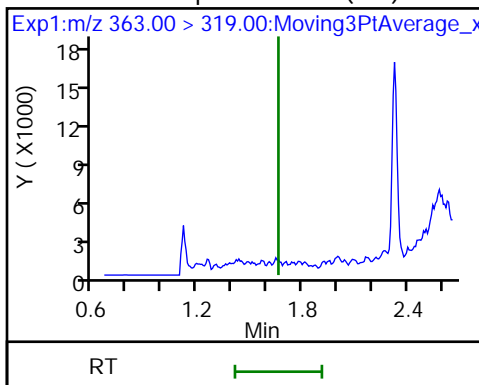
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

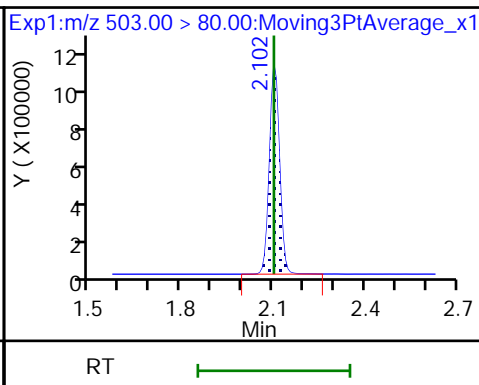
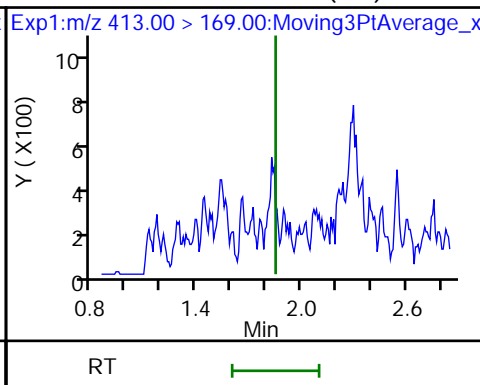
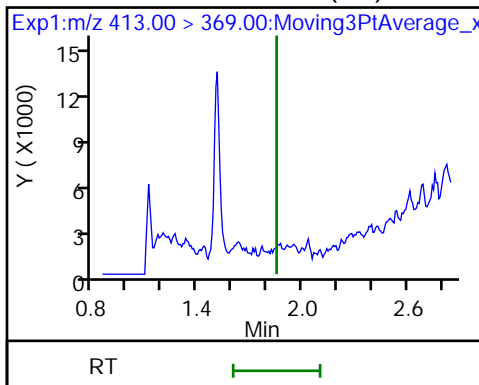
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

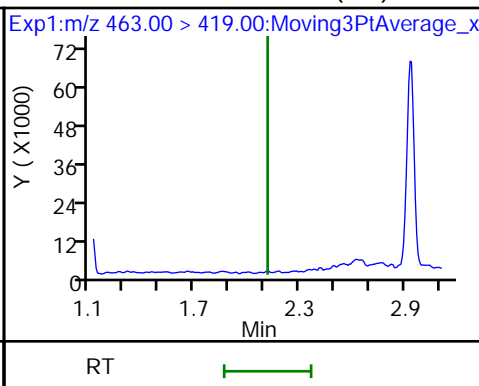
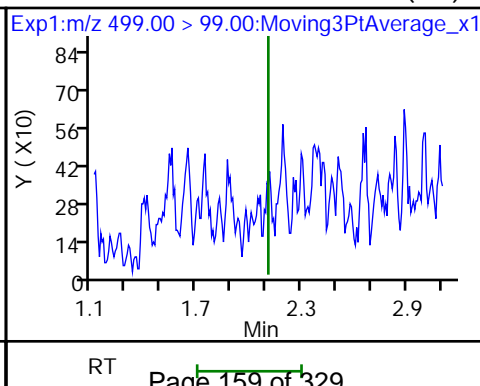
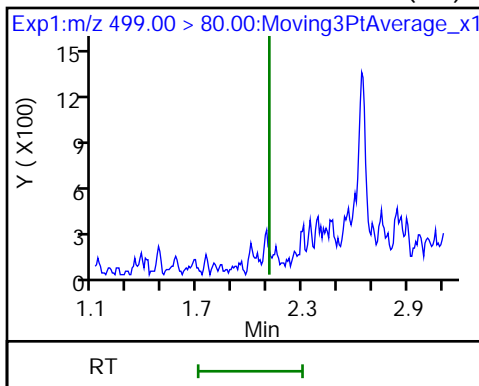
* 7 13C4 PFOS



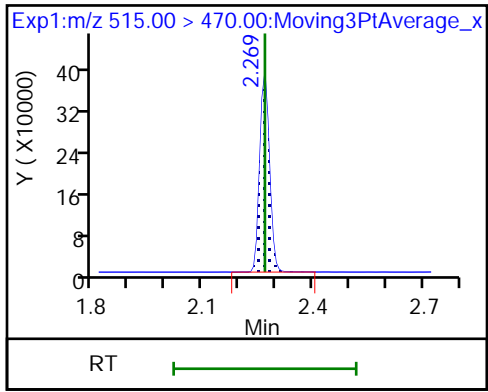
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_023.d
 Lims ID: 320-41889-A-8-A
 Client ID: NAWC-080718-FRB-106
 Sample Type: Client
 Inject. Date: 20-Aug-2018 17:53:07 ALS Bottle#: 16 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-8-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.05	90.47
\$ 10 13C2 PFDA	10.0	8.76	87.64

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-3322 Lab Sample ID: 320-41889-9
 Matrix: Water Lab File ID: 2018.08.20_537A_026.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 268.8(mL) Date Analyzed: 08/20/2018 18:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_026.d
 Lims ID: 320-41889-A-9-A
 Client ID: WGNA-080718-RW-3322
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:07:08 ALS Bottle#: 17 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:57:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	340412	3.32		507	
298.90 > 99.00	1.388	1.388	0.0	1.000	230434		1.48(0.00-0.00)	328	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	991318	9.14		8210	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.662	-0.008	1.000	161724	1.47		19.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.662	-0.008	1.000	211494	1.43		90.0	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1043293	10.0		7128	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	560308	4.93		50.9	
413.00 > 169.00	1.851	1.851	0.0	1.000	330637		1.69(0.00-0.00)	531	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.109	-0.007		2566611	28.7		2757	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	611968	6.33		330	
499.00 > 99.00	2.102	2.109	-0.007	1.000	107268		5.71(0.00-0.00)	96.8	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	52967	0.6159		3.4	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	737475	8.92		4814	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_026.d

Injection Date: 20-Aug-2018 18:07:08

Instrument ID: A8_N

Lims ID: 320-41889-A-9-A

Lab Sample ID: 320-41889-9

Client ID: WGNA-080718-RW-3322

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

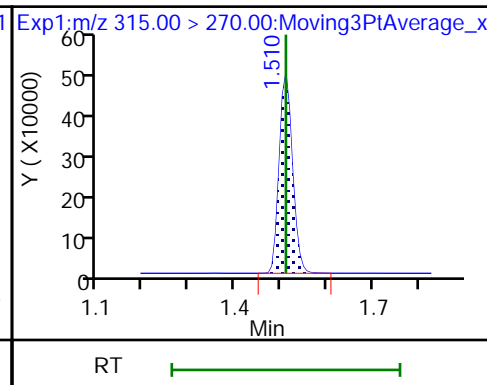
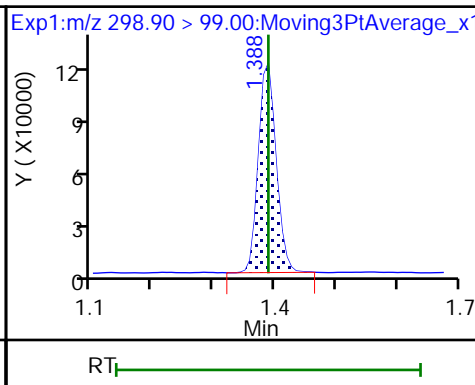
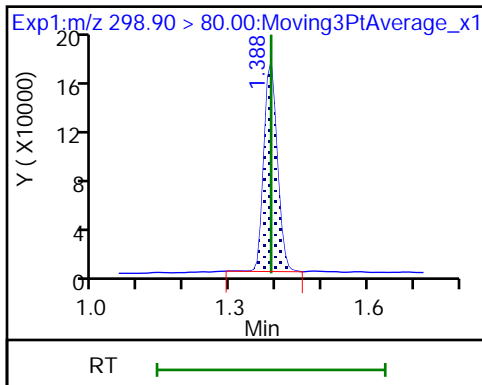
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

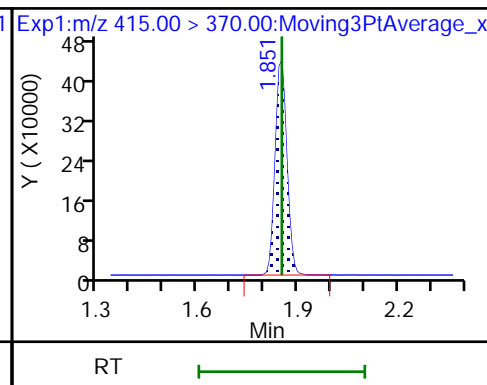
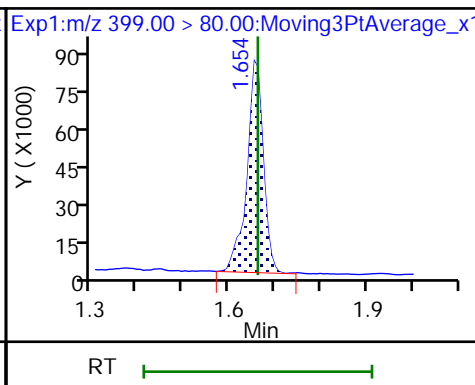
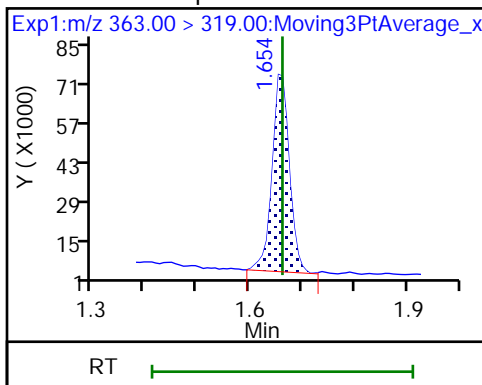
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

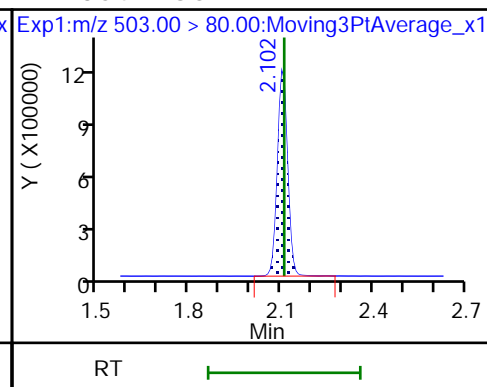
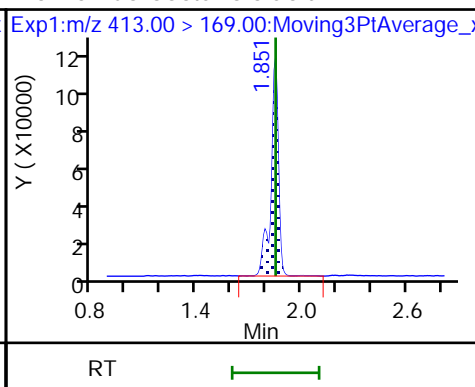
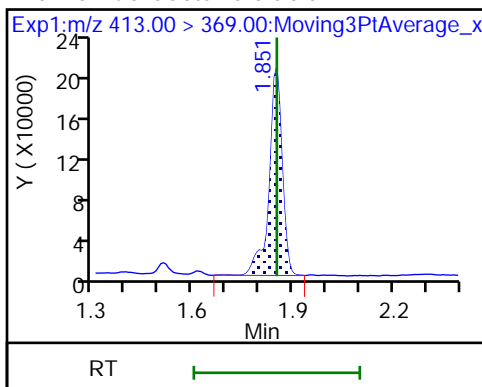
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

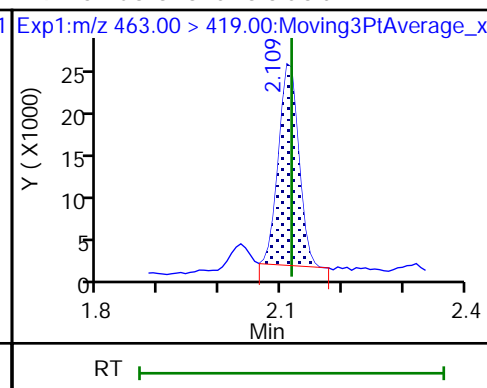
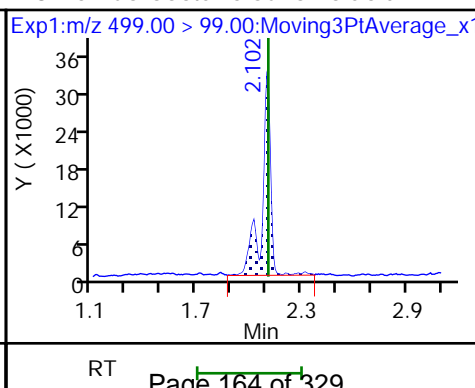
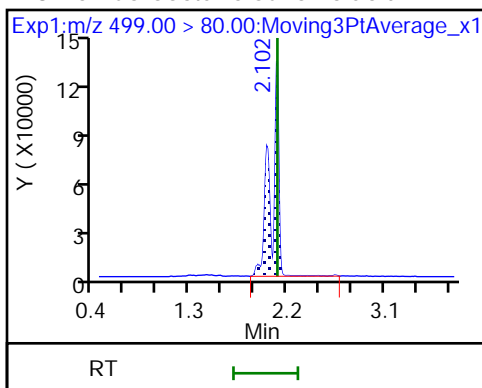
* 7 13C4 PFOS



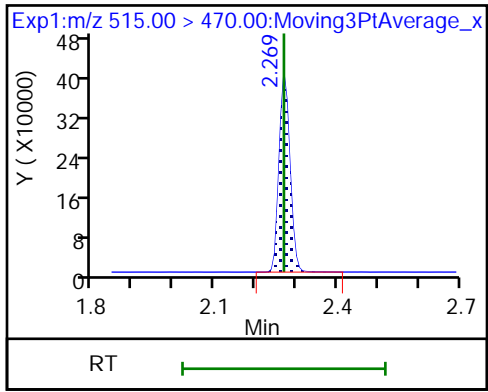
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_026.d
 Lims ID: 320-41889-A-9-A
 Client ID: WGNA-080718-RW-3322
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:07:08 ALS Bottle#: 17 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-9-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:57:37

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.14	91.42
\$ 10 13C2 PFDA	10.0	8.92	89.24

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-3322 Lab Sample ID: 320-41889-10
 Matrix: Water Lab File ID: 2018.08.20_537A_027.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 276.7(mL) Date Analyzed: 08/20/2018 18:11
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_027.d
 Lims ID: 320-41889-A-10-A
 Client ID: WGNA-080718-FRB-3322
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:11:49 ALS Bottle#: 18 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	930191	9.03	7629	
* 6 13C2-PFOA	415.00 > 370.00	1.851	1.851	0.0		990544	10.0	7038	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.109	-0.007		2507055	28.7	4997	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	720728	9.19	4924	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_027.d

Injection Date: 20-Aug-2018 18:11:49

Instrument ID: A8_N

Lims ID: 320-41889-A-10-A

Lab Sample ID: 320-41889-10

Client ID: WGNA-080718-FRB-3322

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

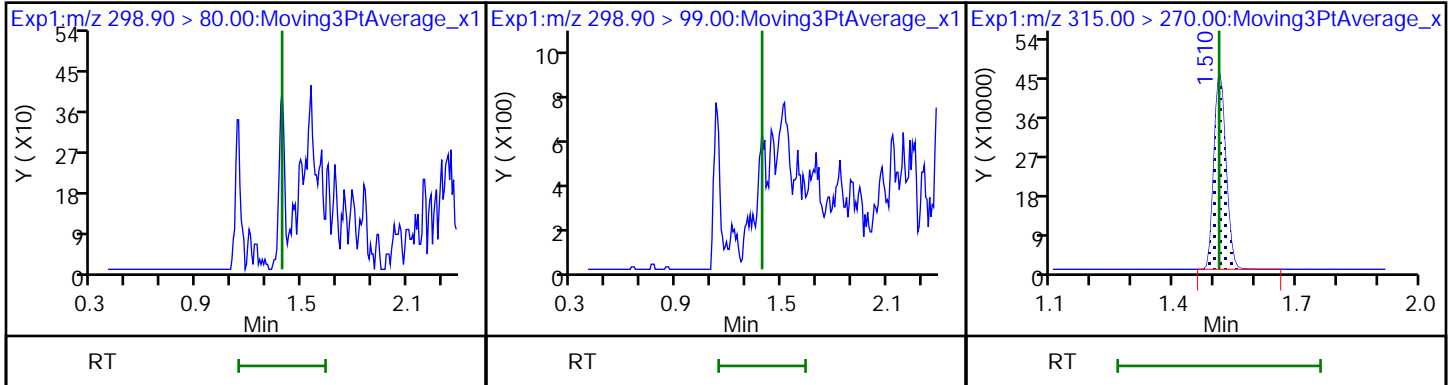
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

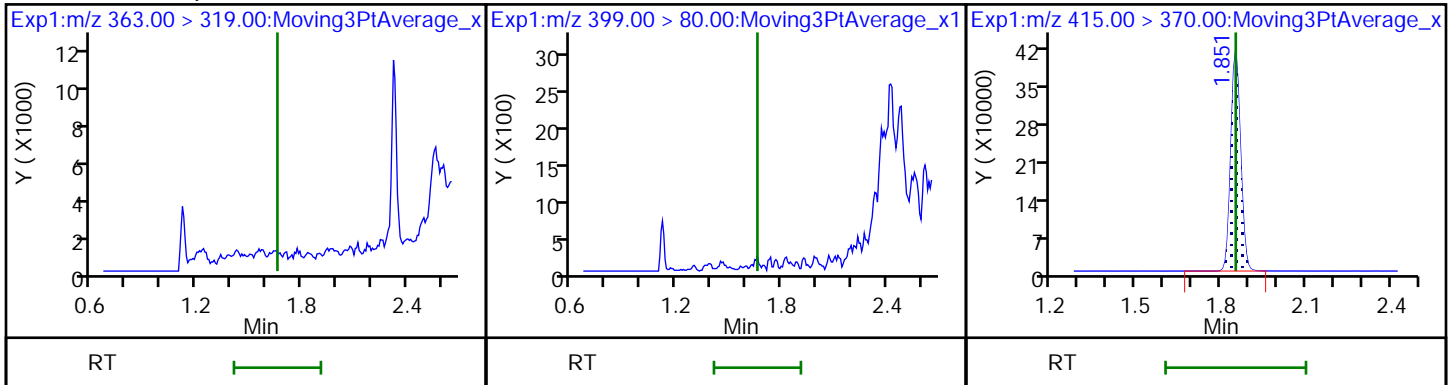
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

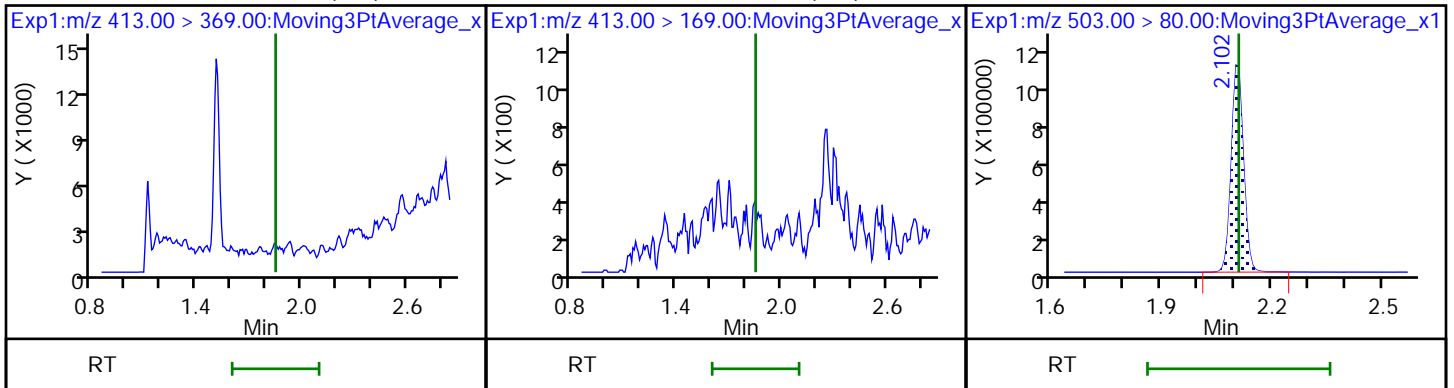
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

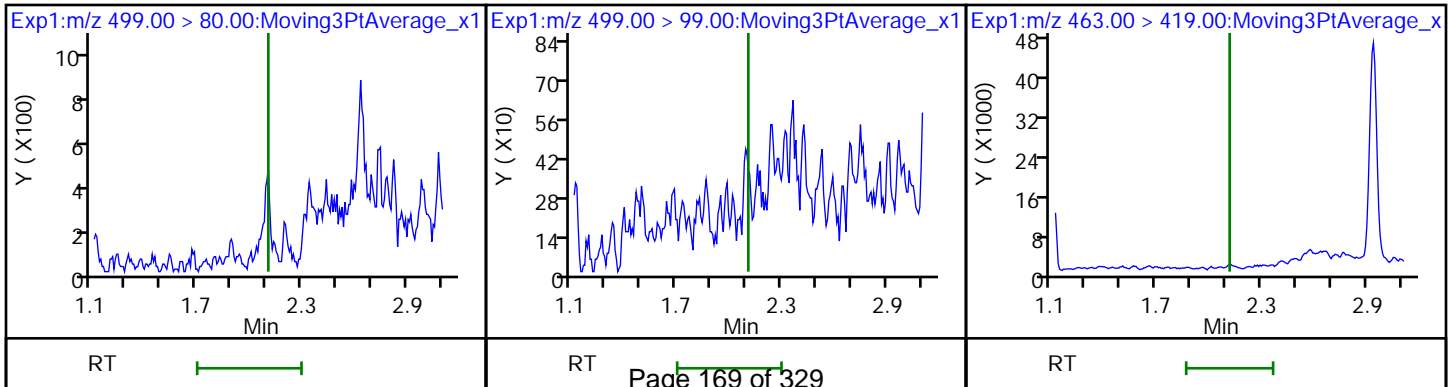
* 7 13C4 PFOS



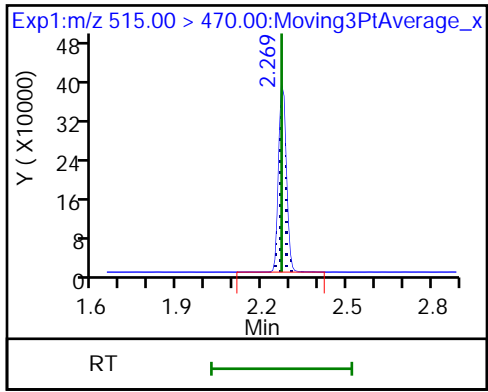
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_027.d
 Lims ID: 320-41889-A-10-A
 Client ID: WGNA-080718-FRB-3322
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:11:49 ALS Bottle#: 18 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-10-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.03	90.35
\$ 10 13C2 PFDA	10.0	9.19	91.86

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-081 Lab Sample ID: 320-41889-11
 Matrix: Water Lab File ID: 2018.08.20_537A_028.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 270.4 (mL) Date Analyzed: 08/20/2018 18:16
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.4	J	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	89		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_028.d
 Lims ID: 320-41889-A-11-A
 Client ID: NAWC-080718-RW-081
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:16:31 ALS Bottle#: 19 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:59:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	134855	1.33		143	
298.90 > 99.00	1.388	1.388	0.0	1.000	95119		1.42(0.00-0.00)	132	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	1017326	9.13		9493	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.662	-0.008	1.000	134505	1.19		19.2	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.662	-0.008	1.000	426628	2.91		170	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1072384	10.0		7521	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	478787	4.10		43.5	
413.00 > 169.00	1.851	1.851	0.0	1.000	281741		1.70(0.00-0.00)	442	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.109	0.0		2539525	28.7		2602	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	517210	5.41		301	
499.00 > 99.00	2.109	2.109	0.0	1.000	99839		5.18(0.00-0.00)	104	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	758781	8.93		5037	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_028.d

Injection Date: 20-Aug-2018 18:16:31

Instrument ID: A8_N

Lims ID: 320-41889-A-11-A

Lab Sample ID: 320-41889-11

Client ID: NAWC-080718-RW-081

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

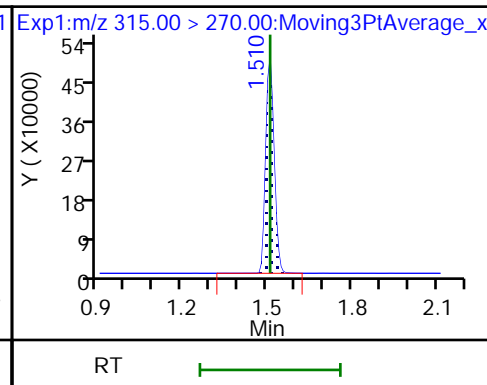
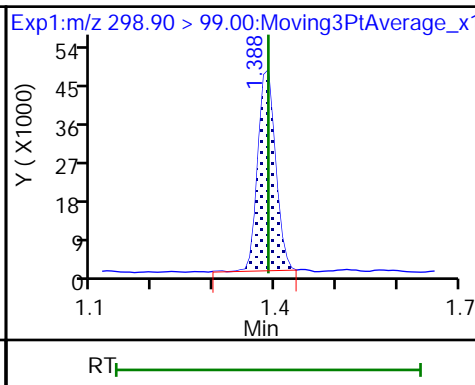
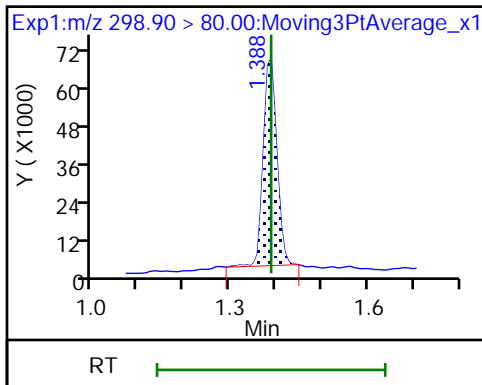
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

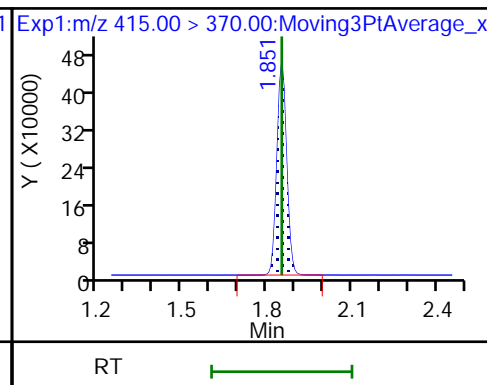
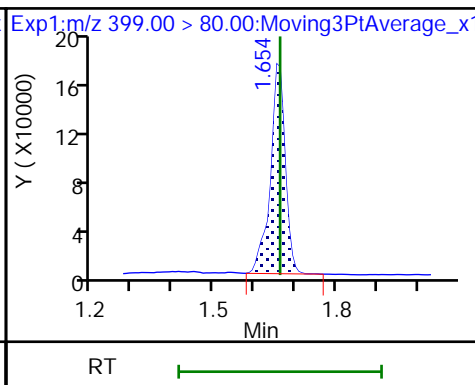
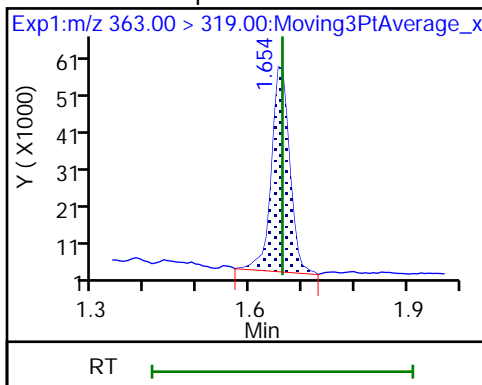
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

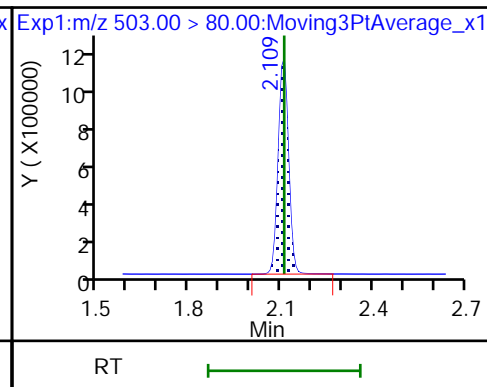
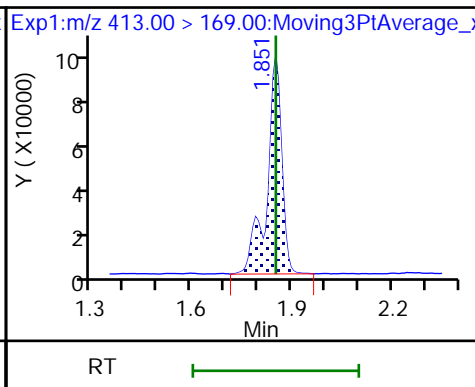
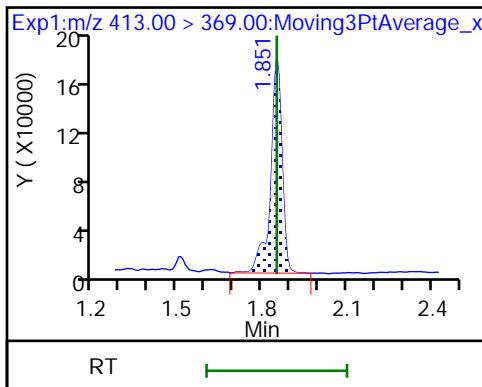
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

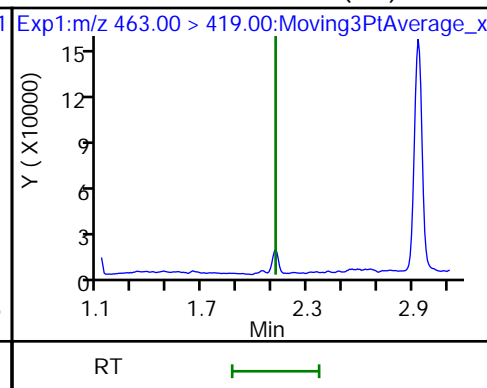
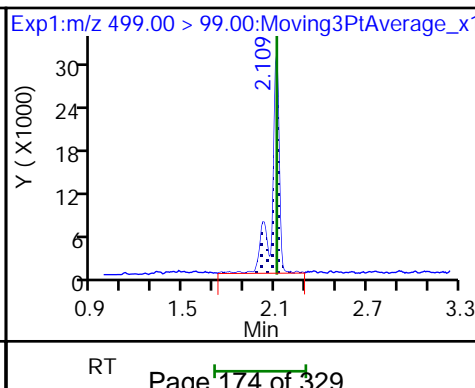
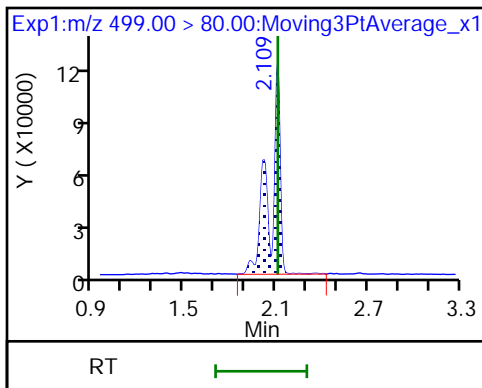
* 7 13C4 PFOS



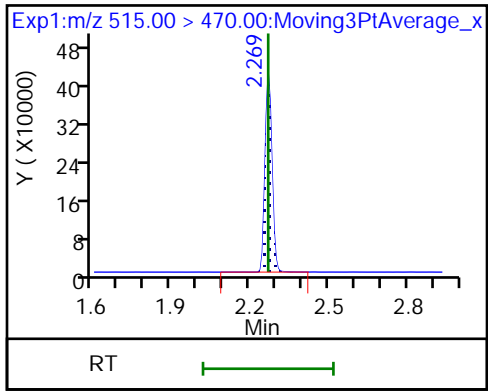
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_028.d
 Lims ID: 320-41889-A-11-A
 Client ID: NAWC-080718-RW-081
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:16:31 ALS Bottle#: 19 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-11-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 10:59:37

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.13	91.27
\$ 10 13C2 PFDA	10.0	8.93	89.33

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-081 Lab Sample ID: 320-41889-12
 Matrix: Water Lab File ID: 2018.08.20_537A_029.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 287.2 (mL) Date Analyzed: 08/20/2018 18:21
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_029.d
 Lims ID: 320-41889-A-12-A
 Client ID: NAWC-080718-FRB-081
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:21:11 ALS Bottle#: 20 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.502	1.510	-0.008	1.000	1033477	9.22	9379	
* 6 13C2-PFOA	415.00 > 370.00	1.844	1.851	-0.007		1078564	10.0	9321	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.109	-0.007		2599060	28.7	5473	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	748863	8.77	5035	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_029.d

Injection Date: 20-Aug-2018 18:21:11

Instrument ID: A8_N

Lims ID: 320-41889-A-12-A

Lab Sample ID: 320-41889-12

Client ID: NAWC-080718-FRB-081

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

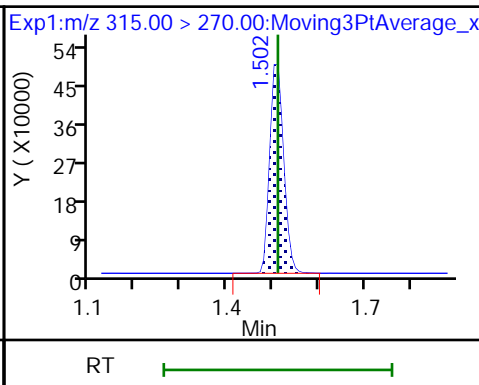
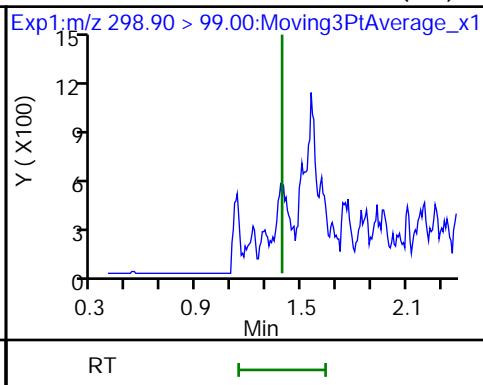
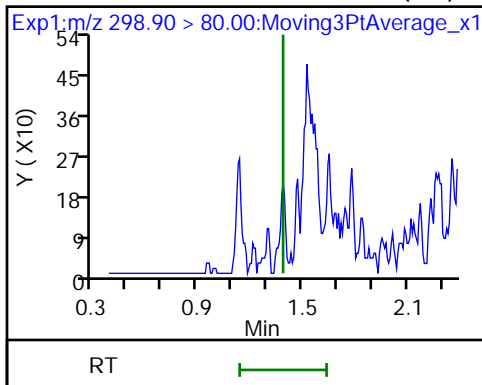
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

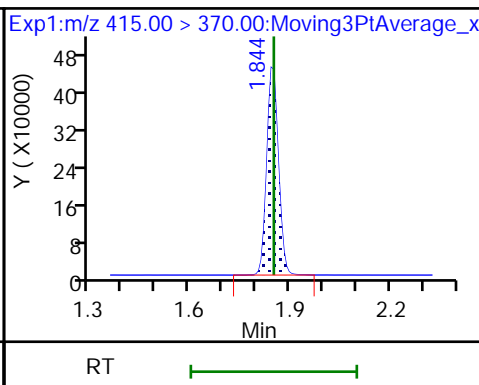
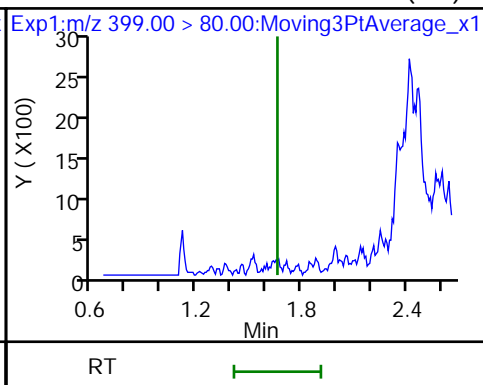
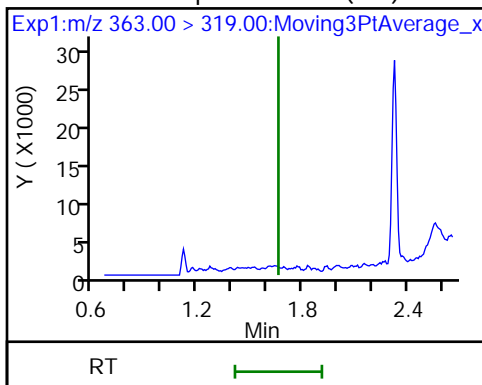
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

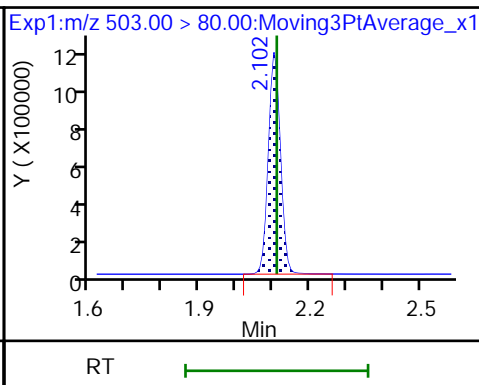
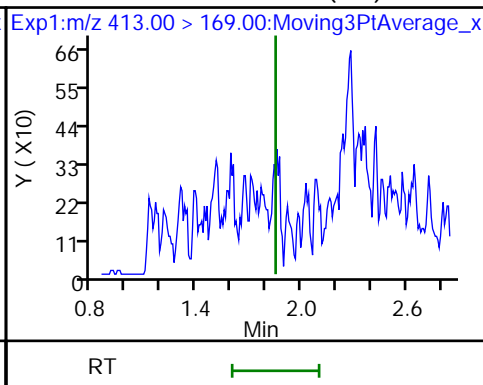
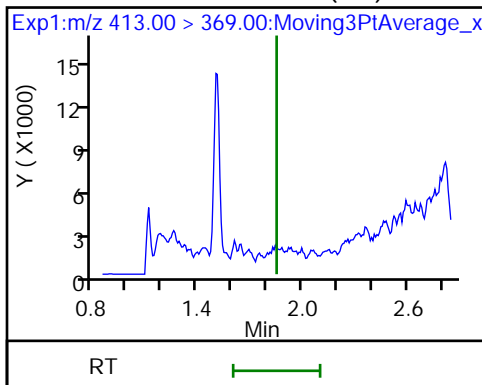
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

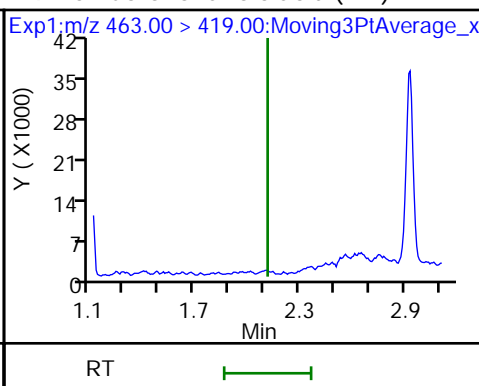
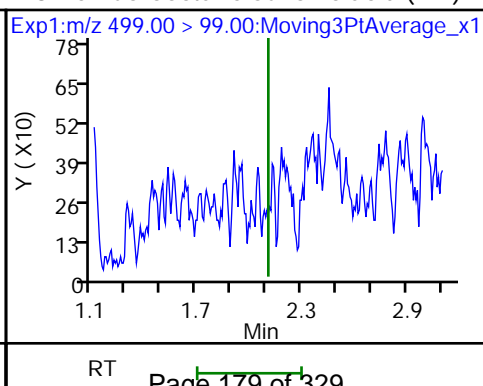
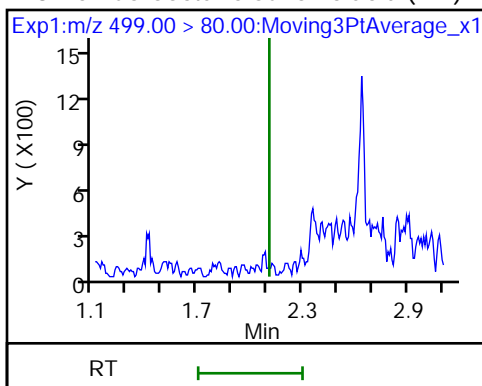
* 7 13C4 PFOS



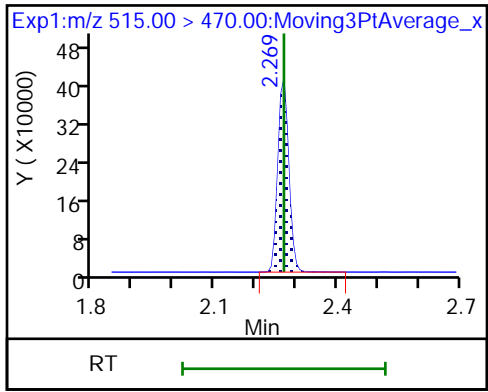
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_029.d
 Lims ID: 320-41889-A-12-A
 Client ID: NAWC-080718-FRB-081
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:21:11 ALS Bottle#: 20 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-12-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.22	92.19
\$ 10 13C2 PFDA	10.0	8.77	87.65

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-082 Lab Sample ID: 320-41889-13
 Matrix: Water Lab File ID: 2018.08.20_537A_030.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:20
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 273.3(mL) Date Analyzed: 08/20/2018 18:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.3	J	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_030.d
 Lims ID: 320-41889-A-13-A
 Client ID: NAWC-080718-RW-082
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:25:52 ALS Bottle#: 21 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:00:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	127467	1.36		142	
298.90 > 99.00	1.388	1.388	0.0	1.000	85877		1.48(0.00-0.00)	120	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	925686	9.23		9283	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.662	-0.008	1.000	148131	1.45		23.0	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.662	-0.008	1.000	441842	3.26		185	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		964435	10.0		7731	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	454025	4.32		44.9	
413.00 > 169.00	1.851	1.851	0.0	1.000	273031		1.66(0.00-0.00)	434	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.109	-0.007		2347526	28.7		2562	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	453060	5.12		250	
499.00 > 99.00	2.102	2.109	-0.007	1.000	86485		5.24(0.00-0.00)	82.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	713621	9.34		5388	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_030.d

Injection Date: 20-Aug-2018 18:25:52

Instrument ID: A8_N

Lims ID: 320-41889-A-13-A

Lab Sample ID: 320-41889-13

Client ID: NAWC-080718-RW-082

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

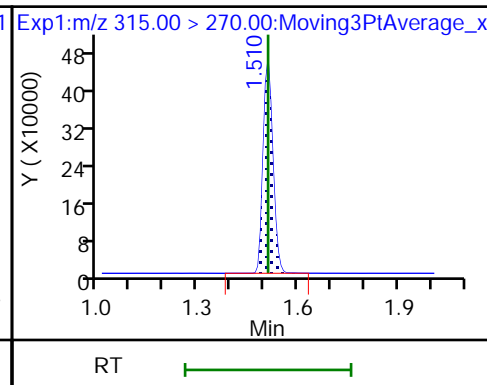
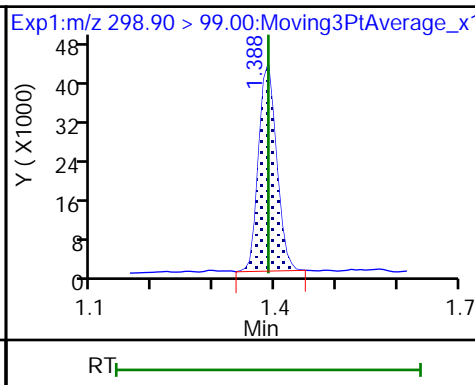
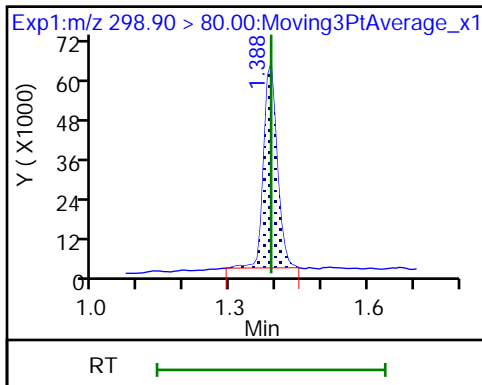
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

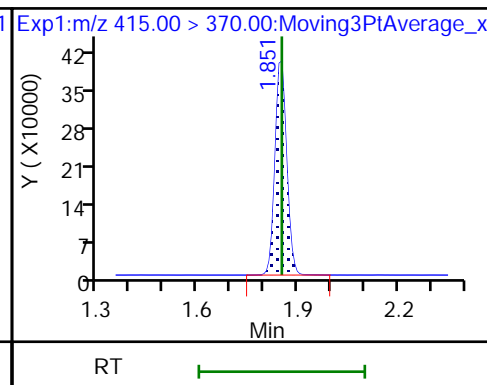
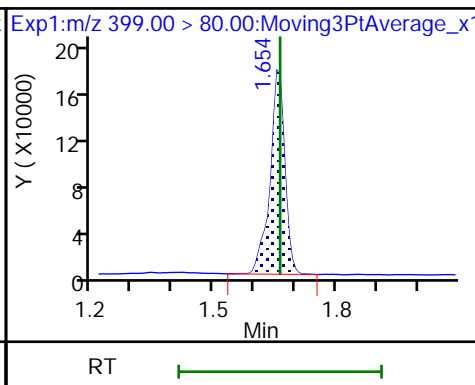
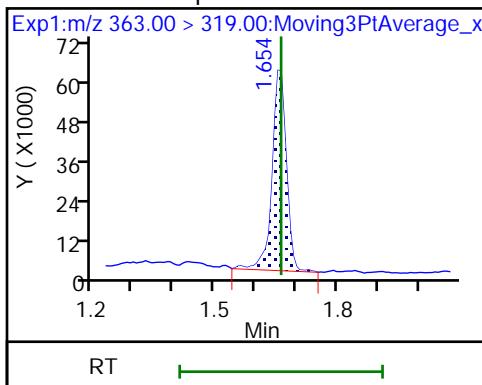
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

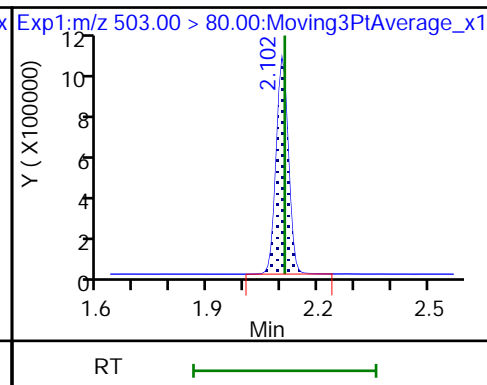
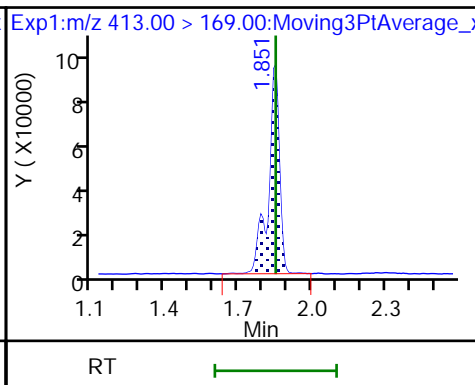
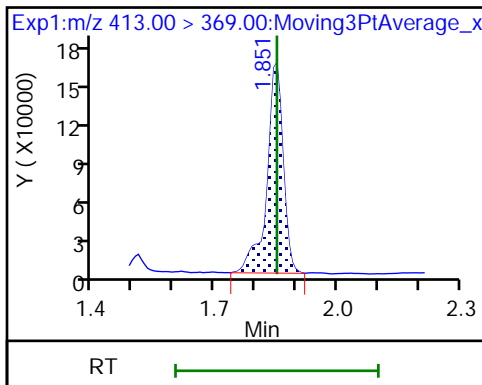
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

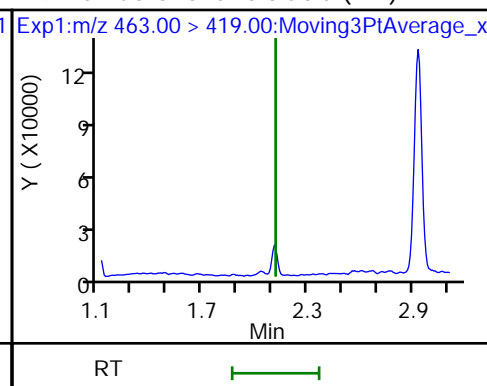
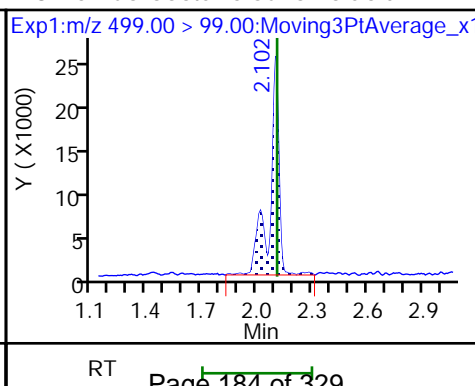
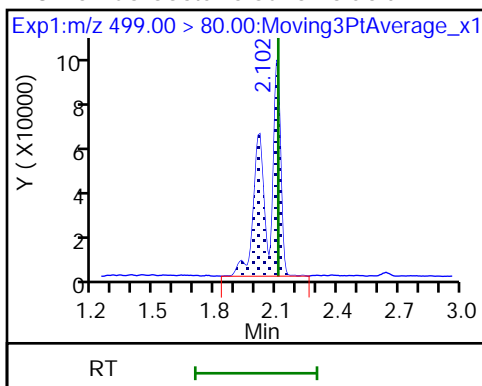
* 7 13C4 PFOS



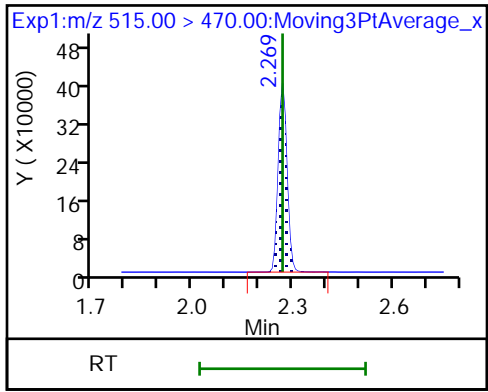
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_030.d
 Lims ID: 320-41889-A-13-A
 Client ID: NAWC-080718-RW-082
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:25:52 ALS Bottle#: 21 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-13-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:00:54

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.23	92.34
\$ 10 13C2 PFDA	10.0	9.34	93.41

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-082 Lab Sample ID: 320-41889-14
 Matrix: Water Lab File ID: 2018.08.20_537A_031.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:15
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 278.7(mL) Date Analyzed: 08/20/2018 18:30
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_031.d
 Lims ID: 320-41889-A-14-A
 Client ID: NAWC-080718-FRB-082
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:30:31 ALS Bottle#: 22 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	1060286	9.18	9250	
* 6 13C2-PFOA	415.00 > 370.00	1.844	1.851	-0.007		1110754	10.0	8491	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.109	-0.007		2585217	28.7	4436	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	774414	8.80	4918	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_031.d

Injection Date: 20-Aug-2018 18:30:31

Instrument ID: A8_N

Lims ID: 320-41889-A-14-A

Lab Sample ID: 320-41889-14

Client ID: NAWC-080718-FRB-082

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

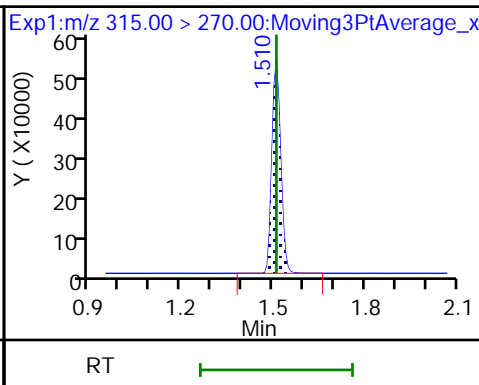
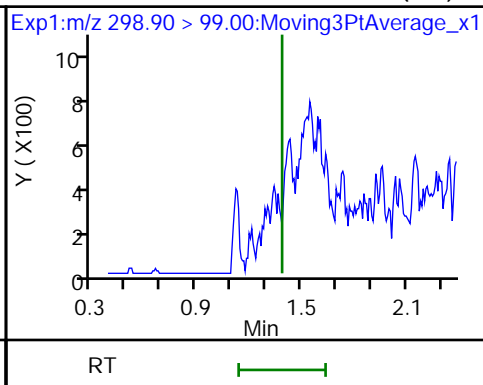
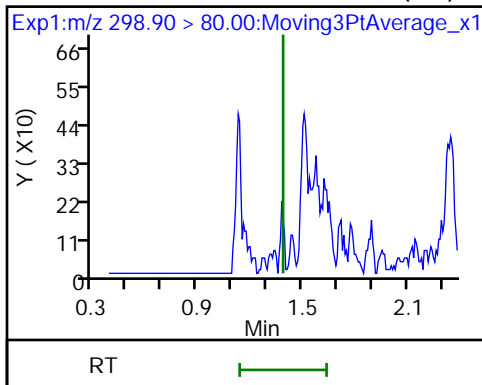
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

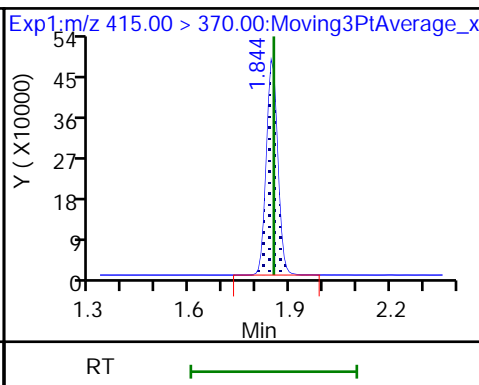
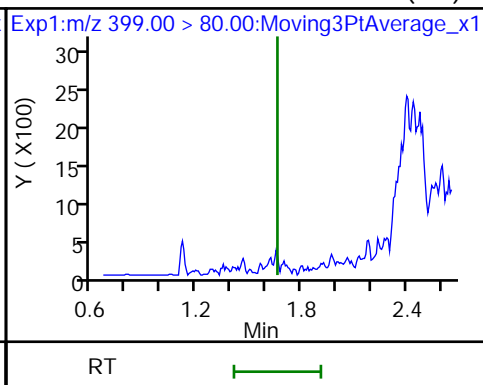
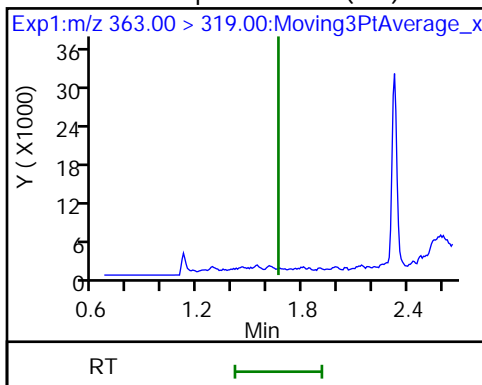
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

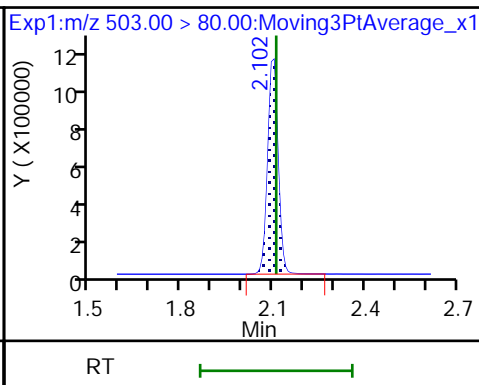
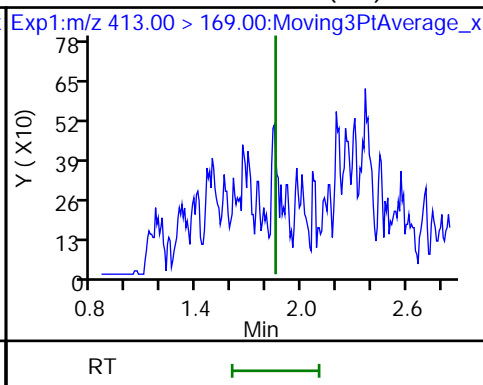
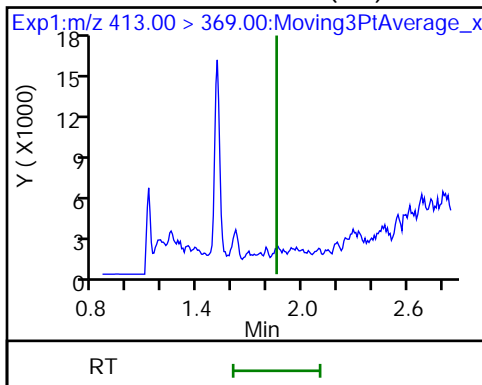
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

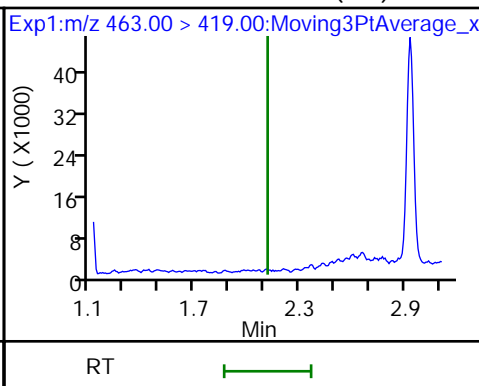
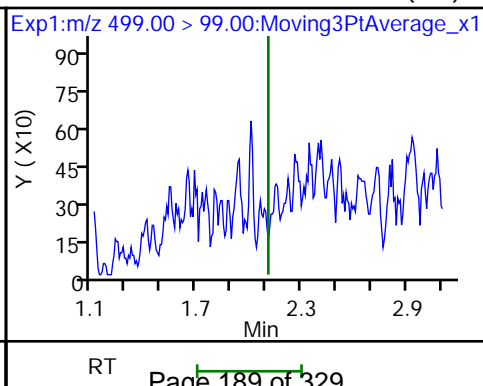
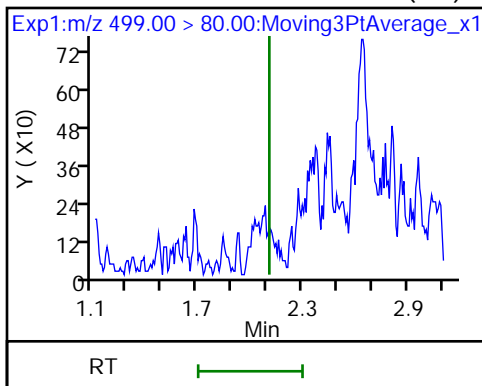
* 7 13C4 PFOS



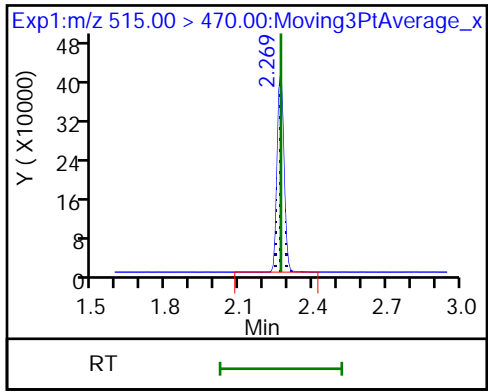
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_031.d
 Lims ID: 320-41889-A-14-A
 Client ID: NAWC-080718-FRB-082
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:30:31 ALS Bottle#: 22 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-14-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.18	91.84
\$ 10 13C2 PFDA	10.0	8.80	88.02

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-258 Lab Sample ID: 320-41889-15
 Matrix: Water Lab File ID: 2018.08.20_537A_032.d
 Analysis Method: 537 Date Collected: 08/07/2018 11:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 275.9(mL) Date Analyzed: 08/20/2018 18:35
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	19		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	9.4	J	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U M	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_032.d
 Lims ID: 320-41889-A-15-A
 Client ID: NAWC-080718-RW-258
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:35:12 ALS Bottle#: 23 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:01:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	232032	2.33		123	
298.90 > 99.00	1.388	1.388	0.0	1.000	155807		1.49(0.00-0.00)	208	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	991543	9.20		8403	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.662	-0.008	1.000	202150	1.84		24.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.662	-0.008	1.000	68011	0.4717		15.9	M
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.851	-0.007		1037426	10.0		7550	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.851	-0.007	1.000	578826	5.12		51.9	
413.00 > 169.00	1.844	1.851	-0.007	1.000	337625		1.71(0.00-0.00)	552	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.109	-0.015		2496872	28.7		1288	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	438998	4.67		131	
499.00 > 99.00	2.094	2.109	-0.015	0.996	81487		5.39(0.00-0.00)	80.8	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.117	-0.015	1.000	222562	2.60		13.1	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.269	-0.007	1.000	712721	8.67		4554	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_032.d

Injection Date: 20-Aug-2018 18:35:12

Instrument ID: A8_N

Lims ID: 320-41889-A-15-A

Lab Sample ID: 320-41889-15

Client ID: NAWC-080718-RW-258

Operator ID: SACINSTLCMS01

ALS Bottle#: 23

Worklist Smp#: 30

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

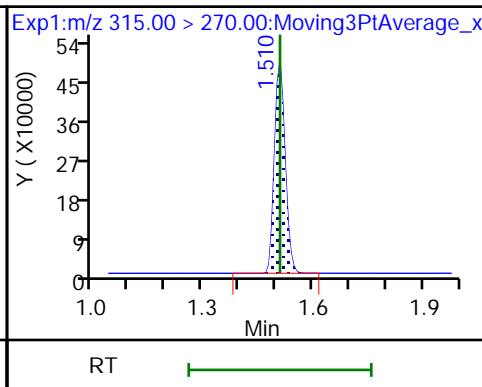
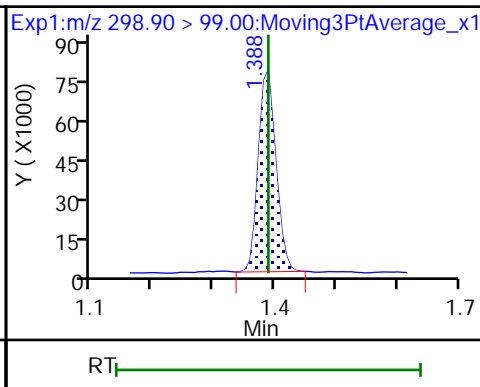
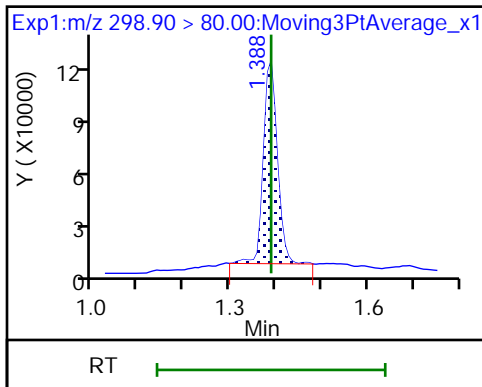
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

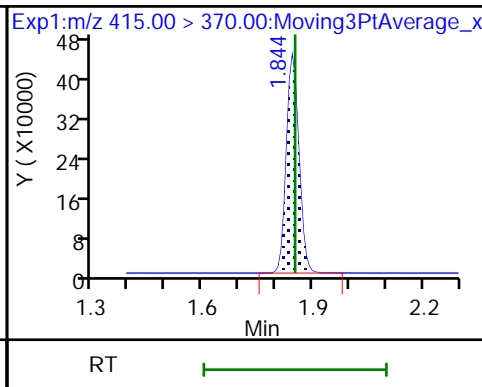
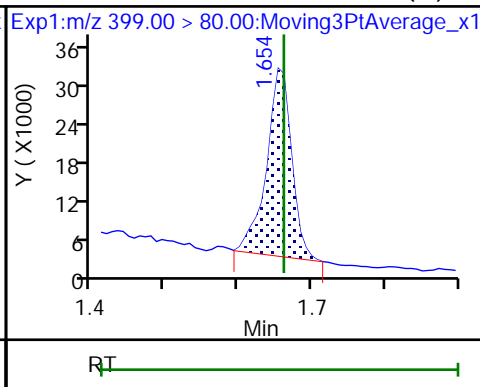
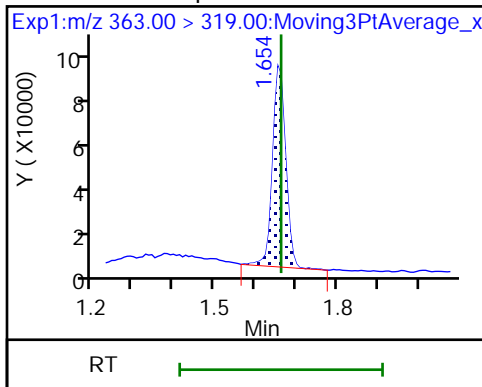
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid (M)

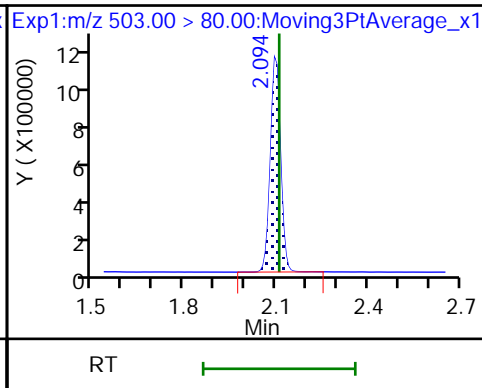
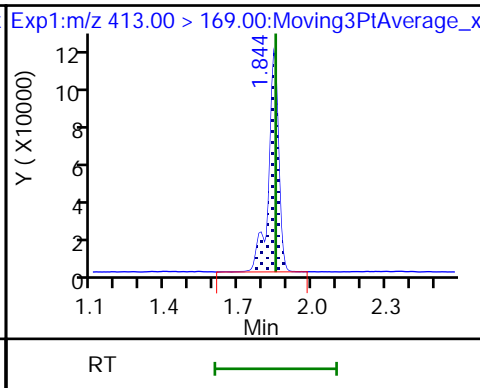
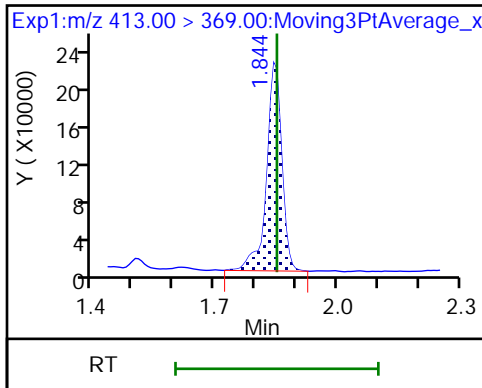
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

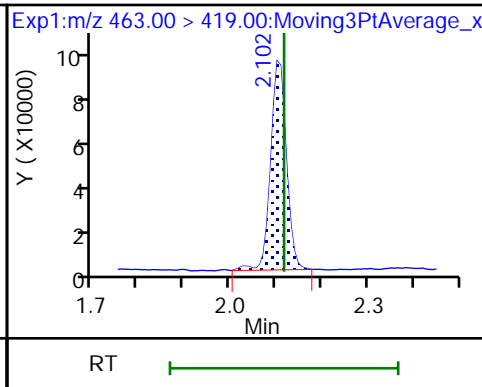
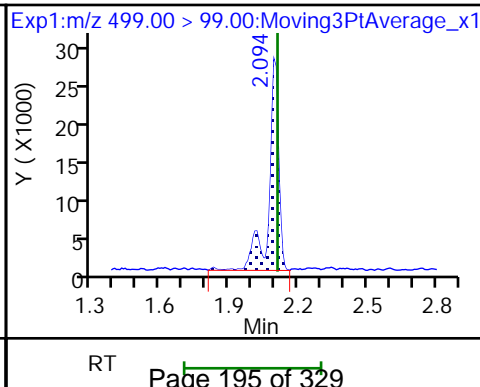
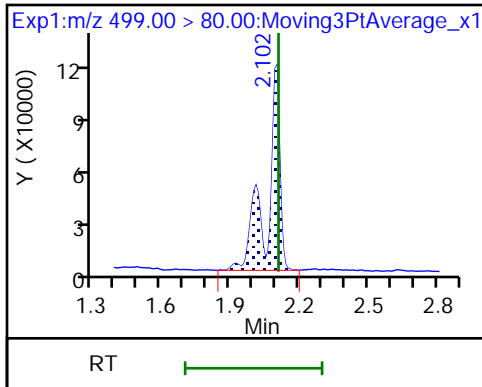
* 7 13C4 PFOS



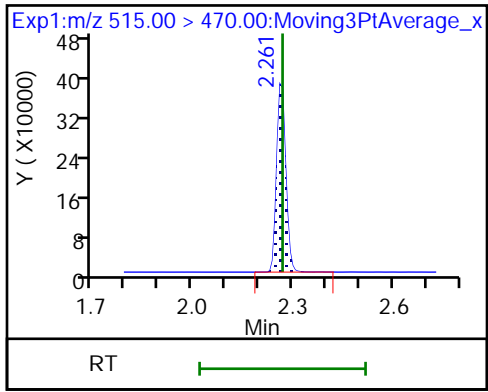
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_032.d
 Lims ID: 320-41889-A-15-A
 Client ID: NAWC-080718-RW-258
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:35:12 ALS Bottle#: 23 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-15-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:01:36

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.20	91.95
\$ 10 13C2 PFDA	10.0	8.67	86.73

TestAmerica Sacramento

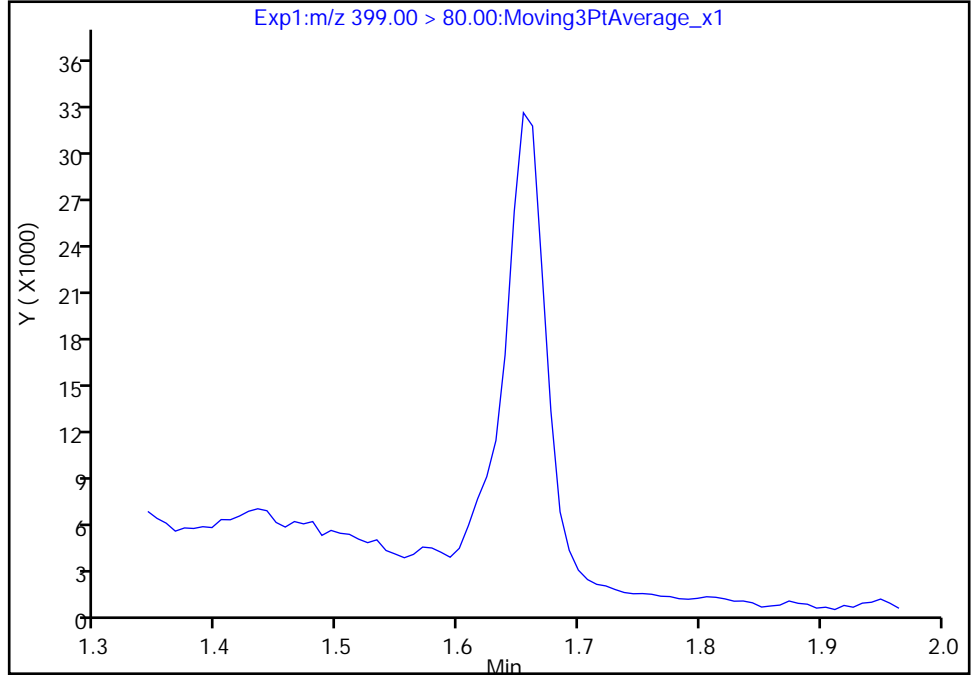
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_032.d
Injection Date: 20-Aug-2018 18:35:12 Instrument ID: A8_N
Lims ID: 320-41889-A-15-A Lab Sample ID: 320-41889-15
Client ID: NAWC-080718-RW-258
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

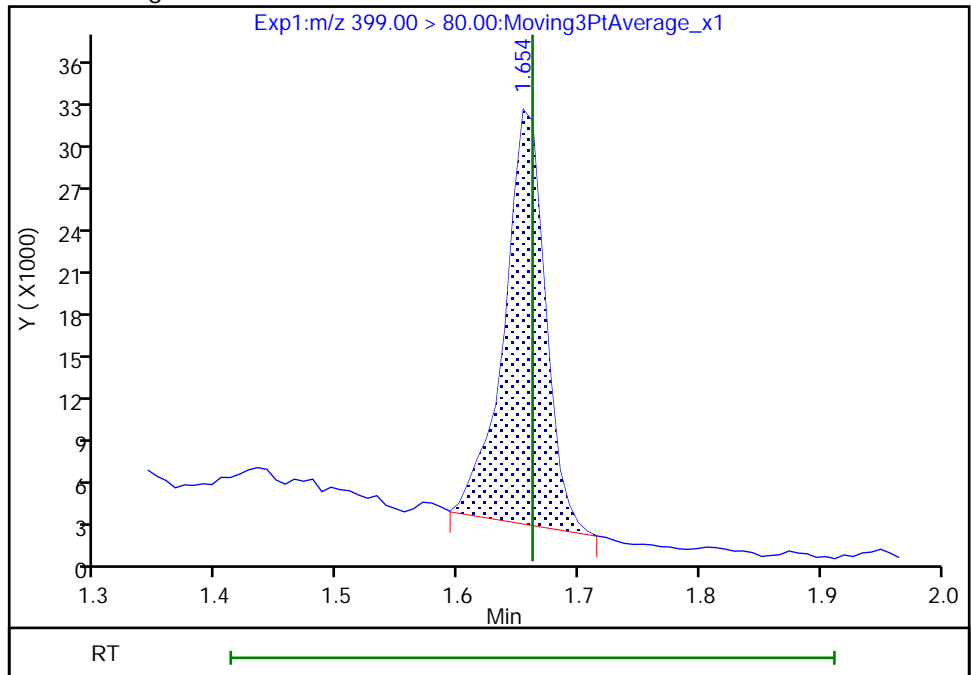
Not Detected
Expected RT: 1.66

Processing Integration Results



Manual Integration Results

RT: 1.65
Area: 68011
Amount: 0.471671
Amount Units: ng/ml



Reviewer: barnettj, 21-Aug-2018 11:01:17
Audit Action: Manually Integrated

Audit Reason: Missed Peak
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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-258 Lab Sample ID: 320-41889-16
 Matrix: Water Lab File ID: 2018.08.20_537A_033.d
 Analysis Method: 537 Date Collected: 08/07/2018 11:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 277(mL) Date Analyzed: 08/20/2018 18:39
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_033.d
 Lims ID: 320-41889-A-16-A
 Client ID: NAWC-080718-FRB-258
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:39:52 ALS Bottle#: 24 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	1001269	8.94	9738	
* 6 13C2-PFOA	415.00 > 370.00	1.844	1.851	-0.007		1077494	10.0	7284	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.109	-0.007		2563616	28.7	5709	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	744313	8.72	4922	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_033.d

Injection Date: 20-Aug-2018 18:39:52

Instrument ID: A8_N

Lims ID: 320-41889-A-16-A

Lab Sample ID: 320-41889-16

Client ID: NAWC-080718-FRB-258

Operator ID: SACINSTLCMS01

ALS Bottle#: 24

Worklist Smp#: 31

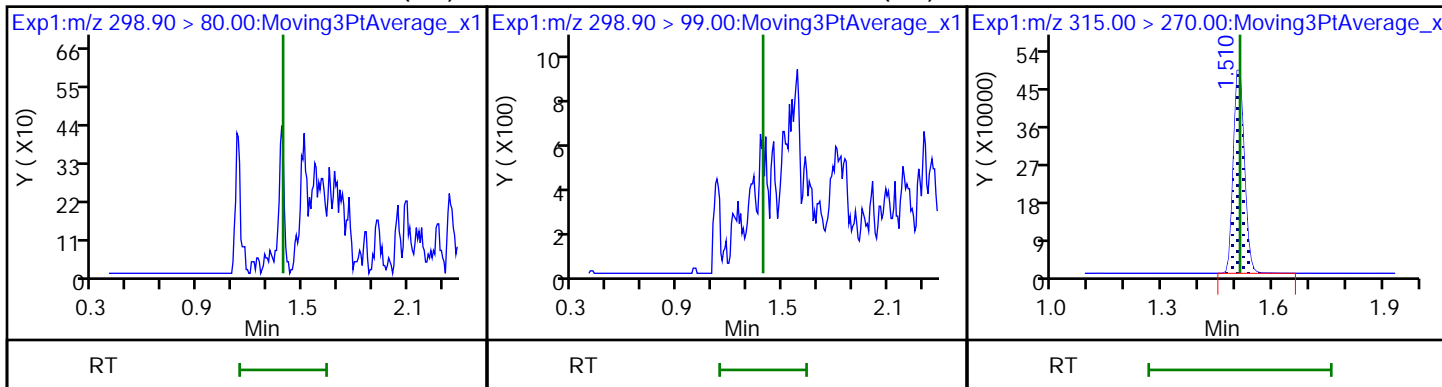
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

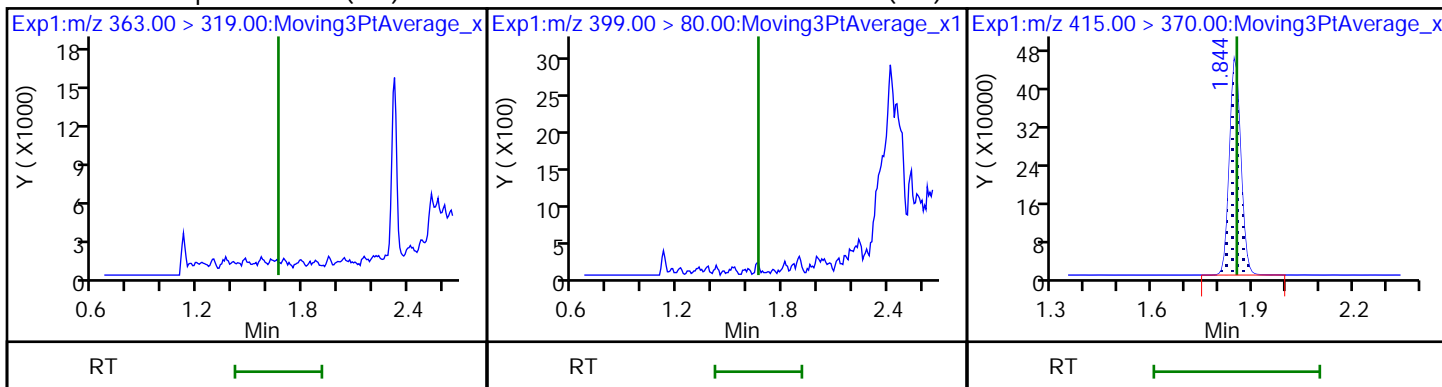
Method: 537_A8_N

Limit Group: LC 537 ICAL

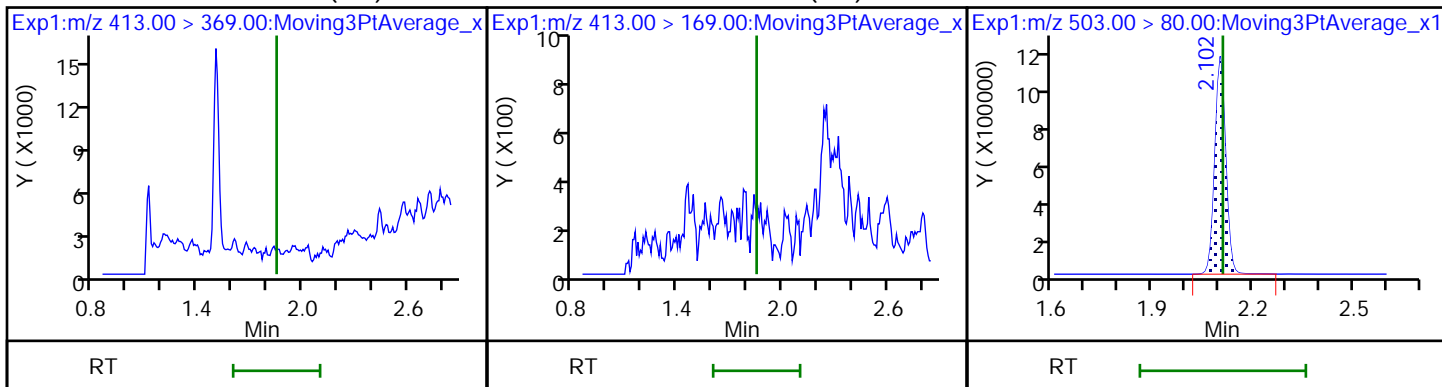
1 Perfluorobutanesulfonic acid (ND) 1 Perfluorobutanesulfonic acid (ND) \$ 2 13C2 PFHxA



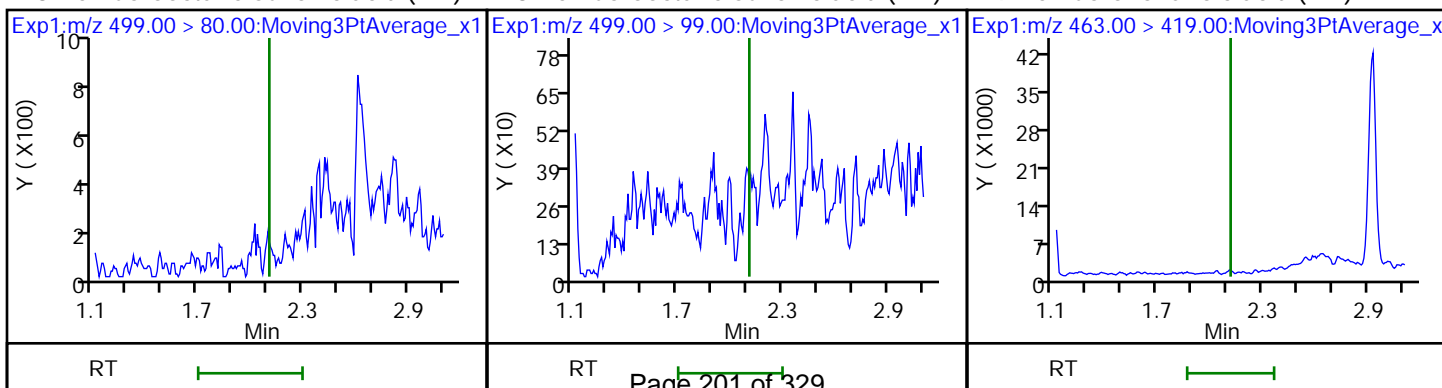
4 Perfluoroheptanoic acid (ND) 3 Perfluorohexanesulfonic acid (ND) * 6 13C2-PFOA



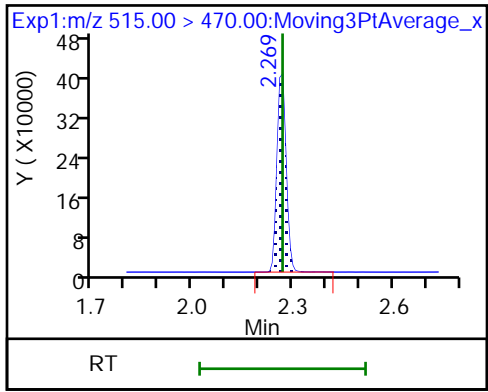
5 Perfluorooctanoic acid (ND) 5 Perfluorooctanoic acid (ND) * 7 13C4 PFOS



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



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_033.d
 Lims ID: 320-41889-A-16-A
 Client ID: NAWC-080718-FRB-258
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:39:52 ALS Bottle#: 24 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-16-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.94	89.40
\$ 10 13C2 PFDA	10.0	8.72	87.21

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-207 Lab Sample ID: 320-41889-17
 Matrix: Water Lab File ID: 2018.08.20_537A_034.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 265.5 (mL) Date Analyzed: 08/20/2018 18:44
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	90		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_034.d
 Lims ID: 320-41889-A-17-A
 Client ID: NAWC-080718-RW-207
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:44:32 ALS Bottle#: 25 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:02:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	1052361	9.42	9494	
* 6 13C2-PFOA	415.00 > 370.00	1.851	1.851	0.0		1074750	10.0	8364	
5 Perfluorooctanoic acid	413.00 > 369.00	1.851	1.851	0.0	1.000	198496	1.70	19.8	
	413.00 > 169.00	1.851	1.851	0.0	1.000	117770	1.69(0.00-0.00)	191	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.109	-0.007		2644977	28.7	4034	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	764276	8.98	4425	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_034.d

Injection Date: 20-Aug-2018 18:44:32

Instrument ID: A8_N

Lims ID: 320-41889-A-17-A

Lab Sample ID: 320-41889-17

Client ID: NAWC-080718-RW-207

Operator ID: SACINSTLCMS01

ALS Bottle#: 25

Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

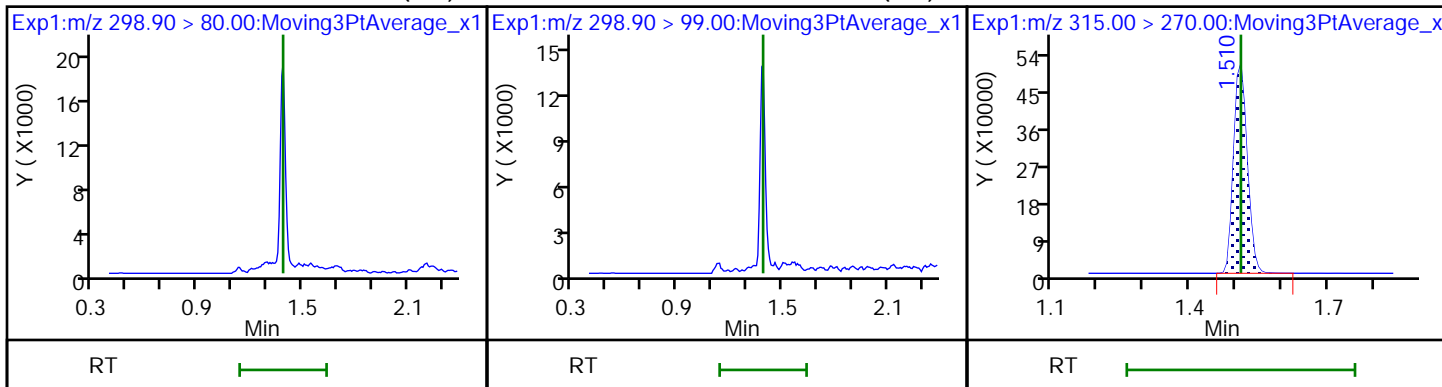
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

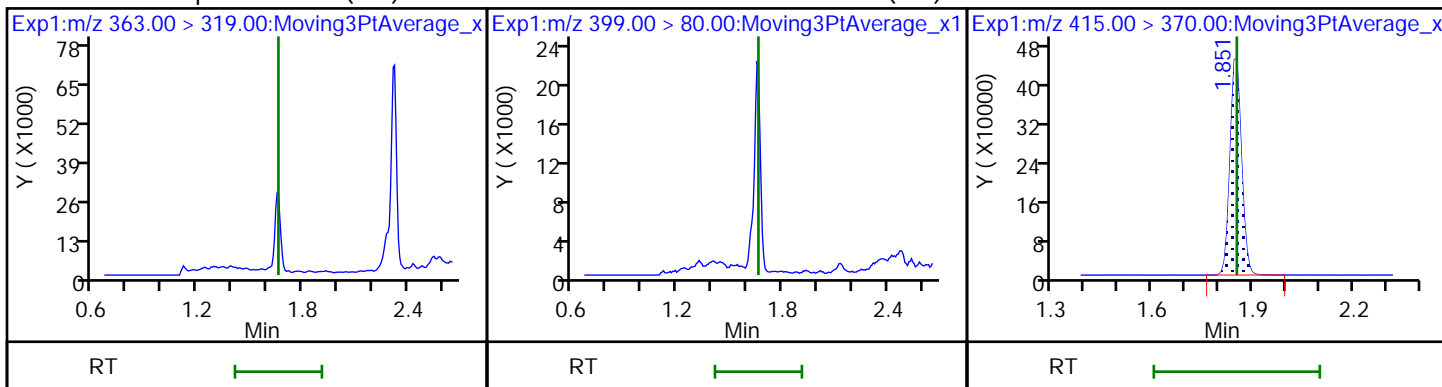
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

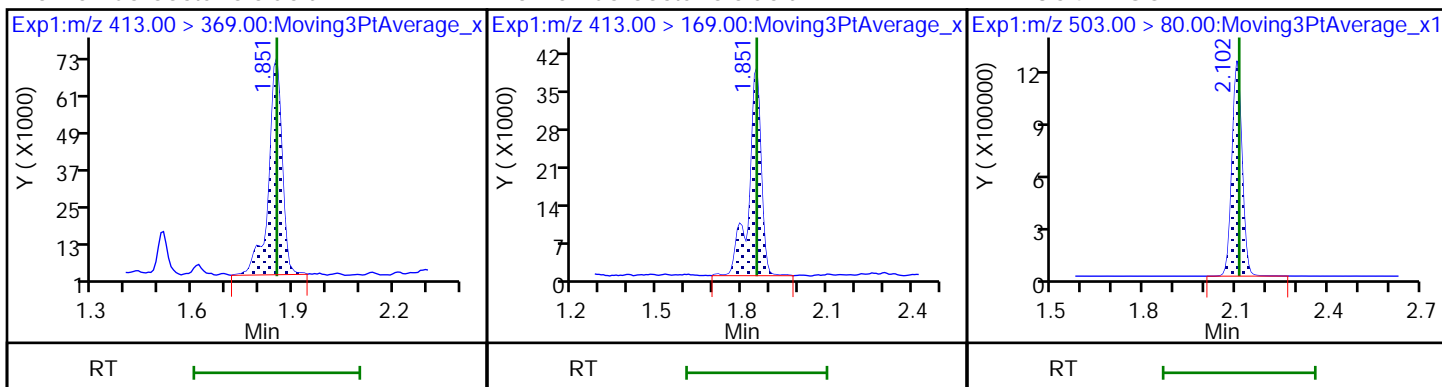
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

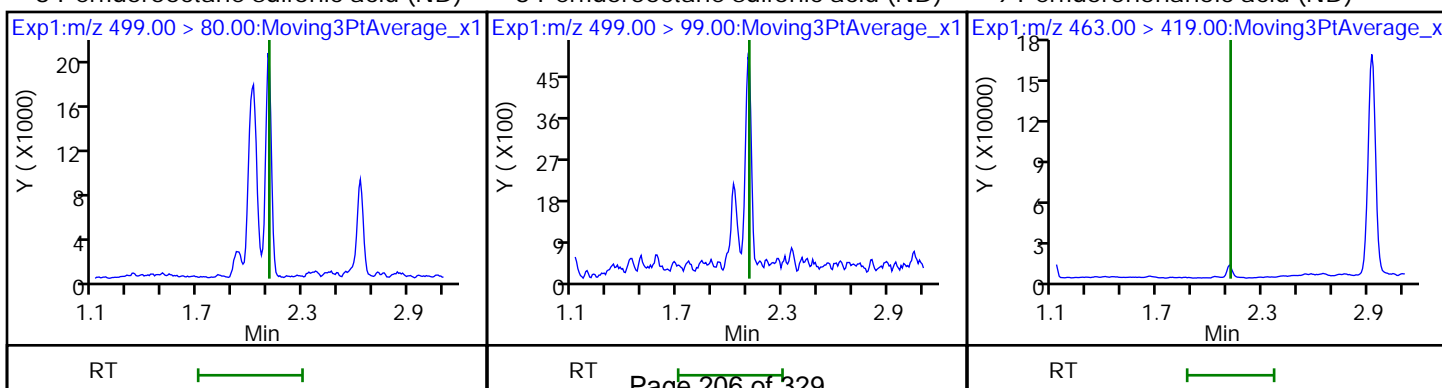
* 7 13C4 PFOS



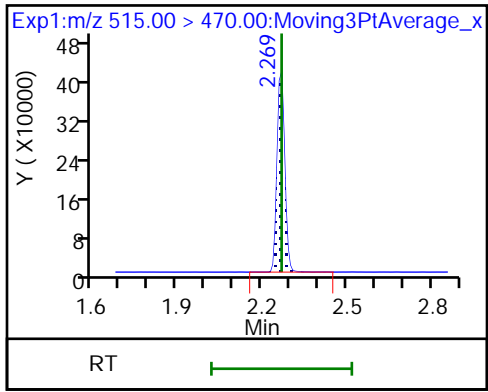
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_034.d
 Lims ID: 320-41889-A-17-A
 Client ID: NAWC-080718-RW-207
 Sample Type: Client
 Inject. Date: 20-Aug-2018 18:44:32 ALS Bottle#: 25 Worklist Smp#: 32
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-17-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:02:03

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.42	94.21
\$ 10 13C2 PFDA	10.0	8.98	89.77

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-207 Lab Sample ID: 320-41889-18
 Matrix: Water Lab File ID: 2018.08.20_537A_039.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.1(mL) Date Analyzed: 08/20/2018 19:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_039.d
 Lims ID: 320-41889-A-18-A
 Client ID: NAWC-080718-FRB-207
 Sample Type: Client
 Inject. Date: 20-Aug-2018 19:07:52 ALS Bottle#: 28 Worklist Smp#: 37
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.502	0.008	1.000	988188	9.04	10458	
* 6 13C2-PFOA	415.00 > 370.00	1.851	1.844	0.007		1051278	10.0	7381	
* 7 13C4 PFOS	503.00 > 80.00	2.102	2.094	0.008		2544130	28.7	4385	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.261	0.007	1.000	734657	8.82	5075	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_039.d

Injection Date: 20-Aug-2018 19:07:52

Instrument ID: A8_N

Lims ID: 320-41889-A-18-A

Lab Sample ID: 320-41889-18

Client ID: NAWC-080718-FRB-207

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 37

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

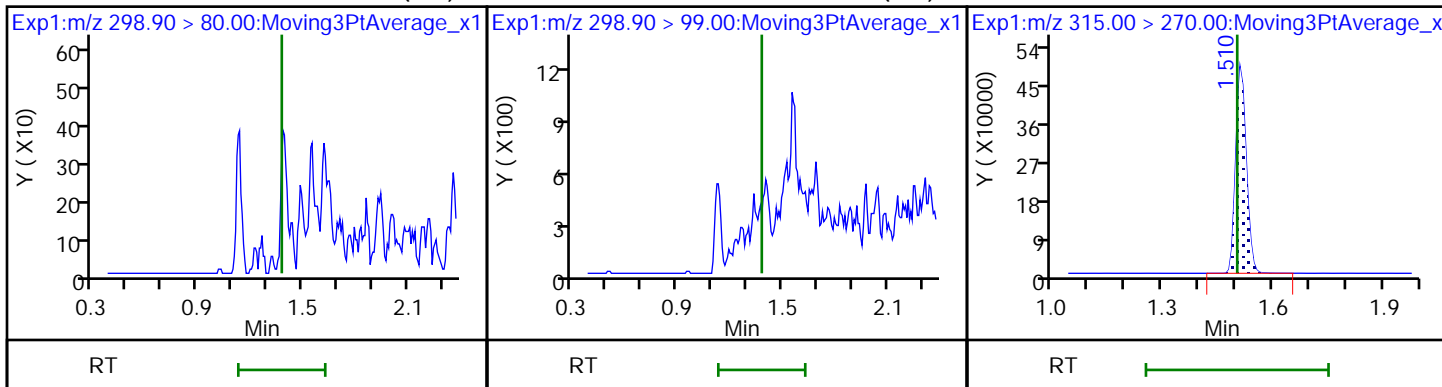
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

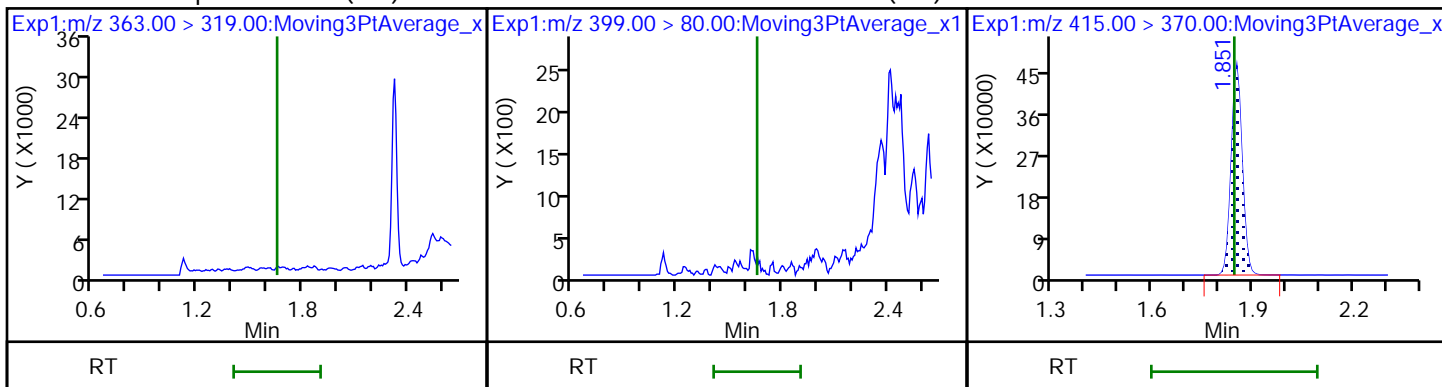
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

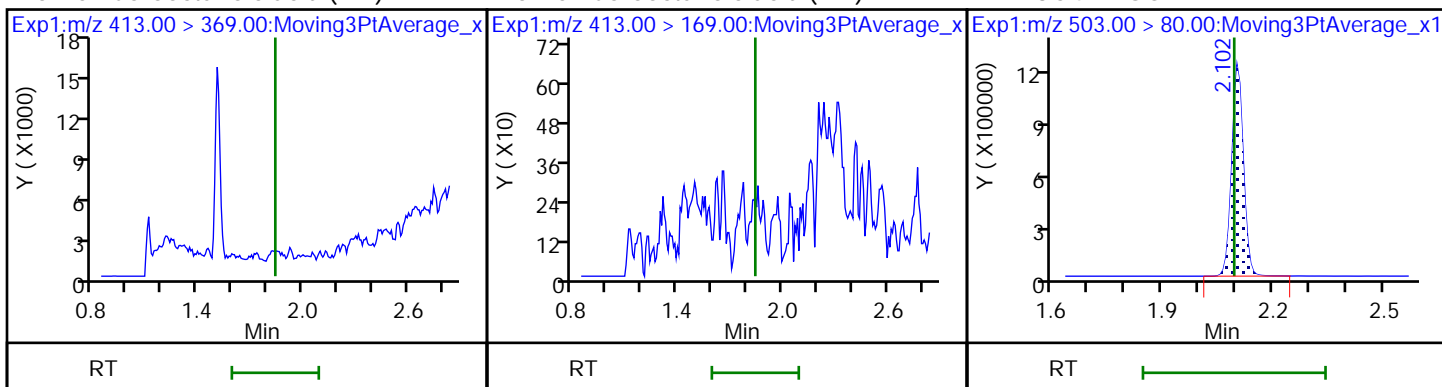
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

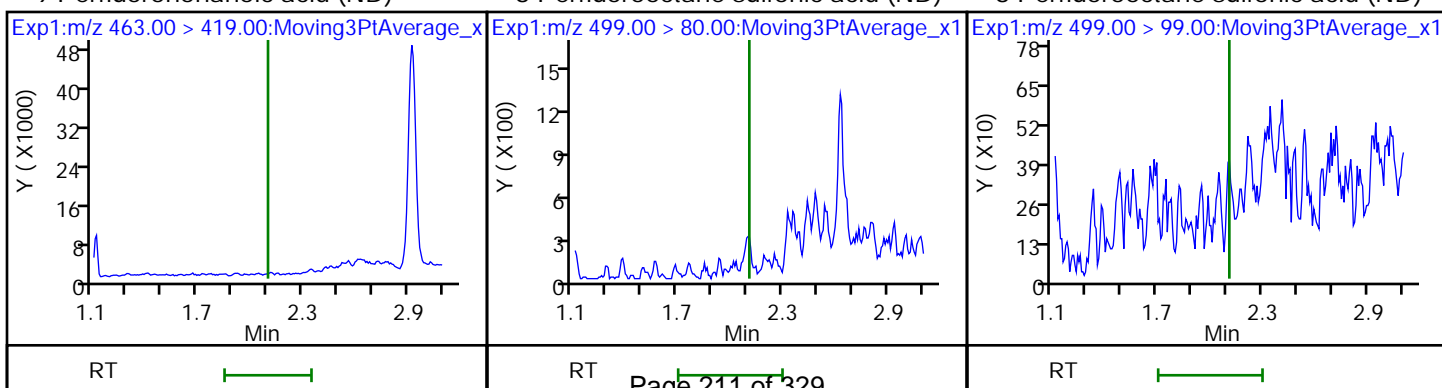
* 7 13C4 PFOS



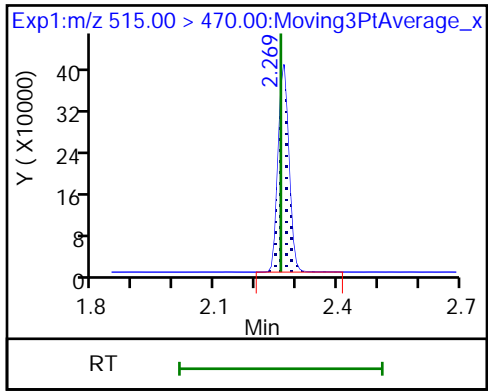
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_039.d
 Lims ID: 320-41889-A-18-A
 Client ID: NAWC-080718-FRB-207
 Sample Type: Client
 Inject. Date: 20-Aug-2018 19:07:52 ALS Bottle#: 28 Worklist Smp#: 37
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-18-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.04	90.44
\$ 10 13C2 PFDA	10.0	8.82	88.22

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-DUP-44 Lab Sample ID: 320-41889-19
 Matrix: Water Lab File ID: 2018.08.20_537A_040.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:00
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 267.7(mL) Date Analyzed: 08/20/2018 19:12
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	37	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	9.4	J	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U M	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.9	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_040.d
 Lims ID: 320-41889-A-19-A
 Client ID: WGNA-080718-DUP-44
 Sample Type: Client
 Inject. Date: 20-Aug-2018 19:12:32 ALS Bottle#: 29 Worklist Smp#: 38
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:03:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.381	0.007	1.000	245090	2.35		135	
298.90 > 99.00	1.388	1.381	0.007	1.000	148881		1.65(0.00-0.00)	216	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.502	0.008	1.000	998546	9.00		9627	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.654	0.008	1.000	209250	1.85		28.6	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.654	0.008	1.000	68578	0.4548		16.2	M
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.844	0.007		1067268	10.0		7864	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.844	0.007	1.000	580045	4.99		50.9	
413.00 > 169.00	1.851	1.844	0.007	1.000	341384		1.70(0.00-0.00)	607	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.094	0.008		2610922	28.7		1404	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.102	0.007	1.000	222015	2.52		13.9	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	460660	4.68		149	
499.00 > 99.00	2.102	2.109	-0.007	1.000	84788		5.43(0.00-0.00)	87.4	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.261	0.007	1.000	735157	8.70		5090	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_040.d

Injection Date: 20-Aug-2018 19:12:32

Instrument ID: A8_N

Lims ID: 320-41889-A-19-A

Lab Sample ID: 320-41889-19

Client ID: WGNA-080718-DUP-44

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 38

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

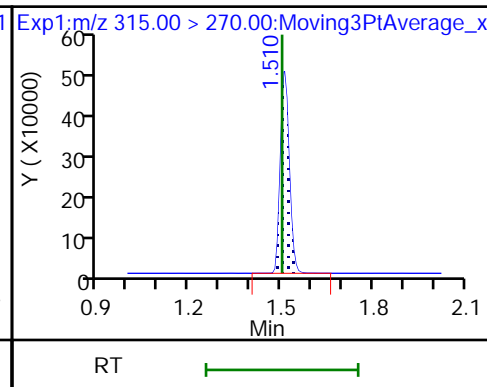
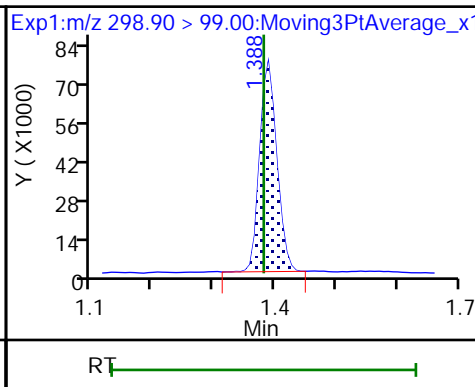
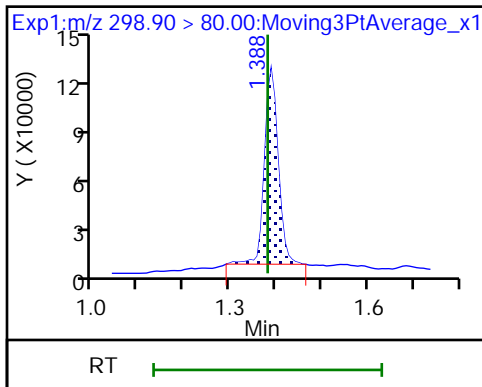
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

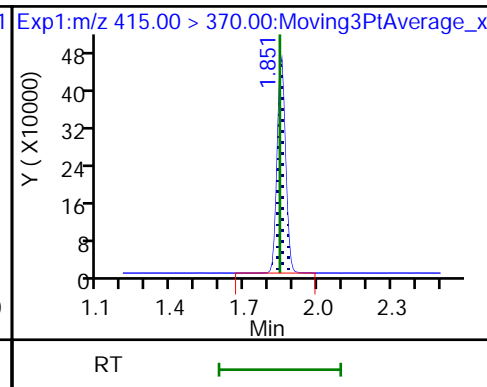
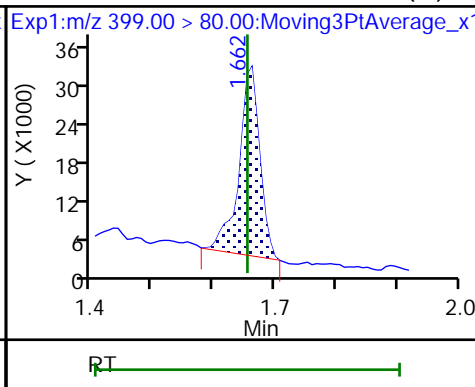
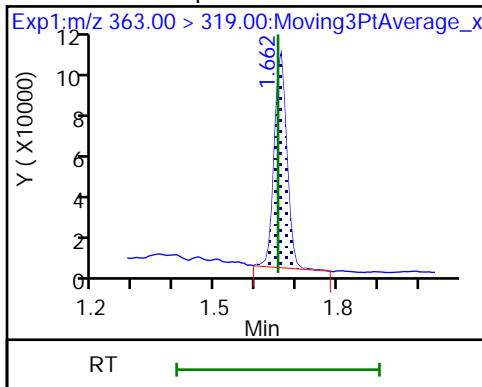
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid (M)

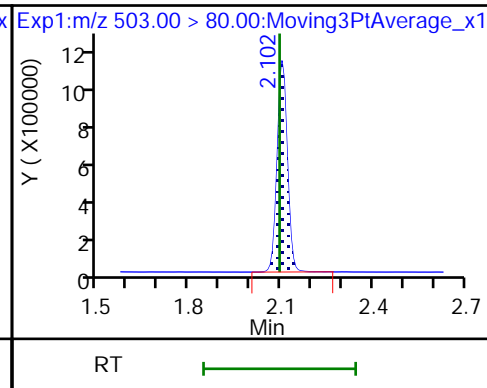
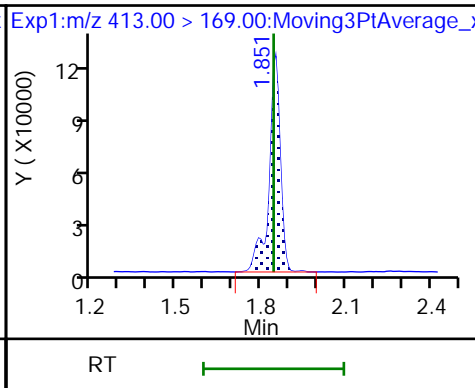
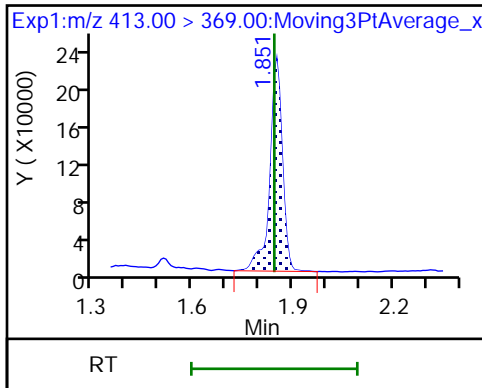
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

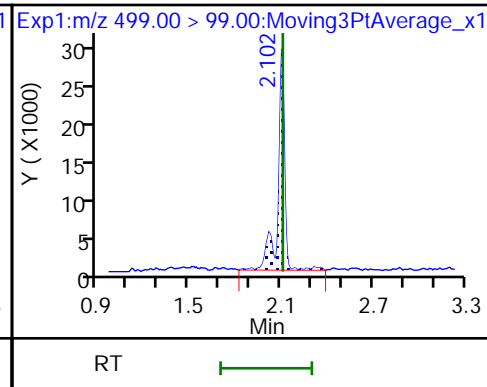
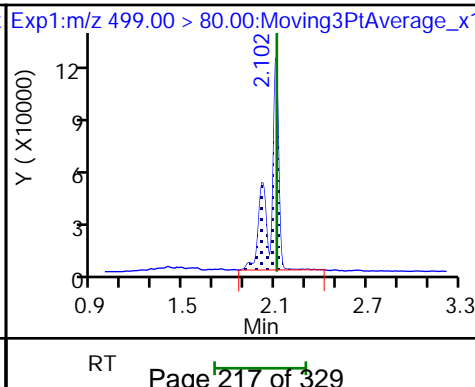
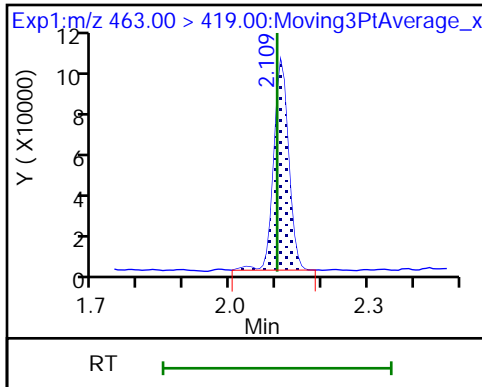
* 7 13C4 PFOS



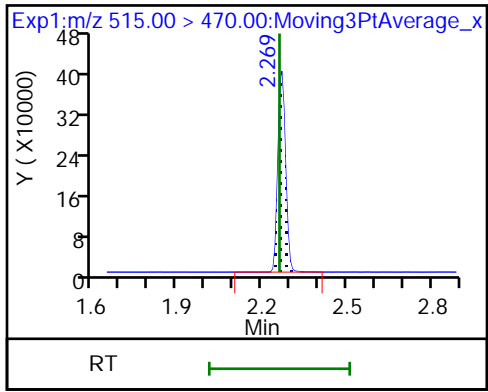
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_040.d
 Lims ID: 320-41889-A-19-A
 Client ID: WGNA-080718-DUP-44
 Sample Type: Client
 Inject. Date: 20-Aug-2018 19:12:32 ALS Bottle#: 29 Worklist Smp#: 38
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-19-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:03:21

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.00	90.01
\$ 10 13C2 PFDA	10.0	8.70	86.96

TestAmerica Sacramento

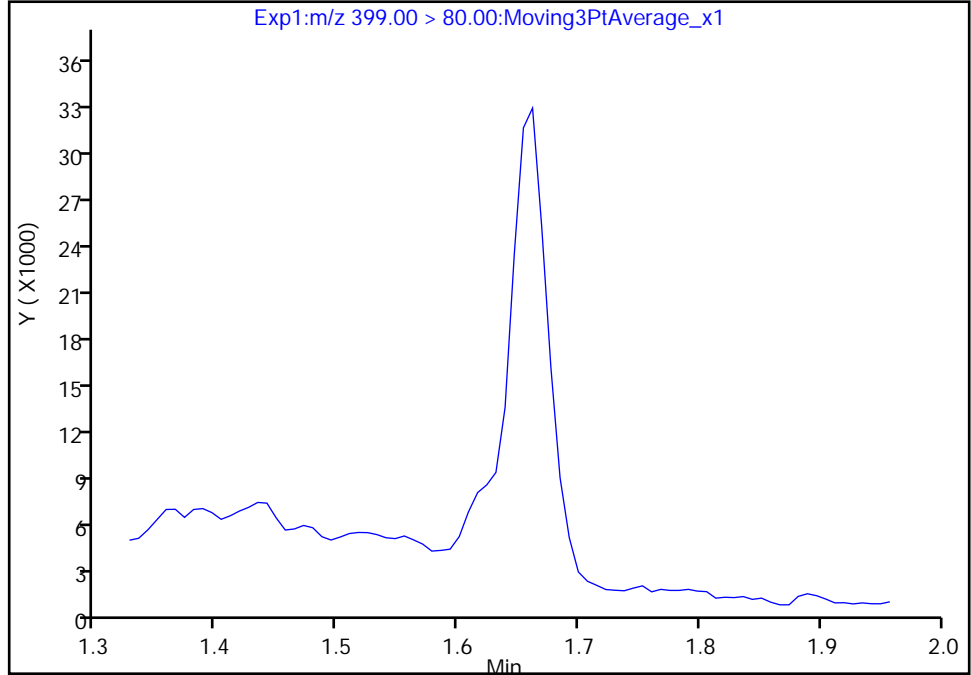
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Injection Date: 20-Aug-2018 19:12:32 Instrument ID: A8_N
Lims ID: 320-41889-A-19-A Lab Sample ID: 320-41889-19
Client ID: WGNA-080718-DUP-44
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 38
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

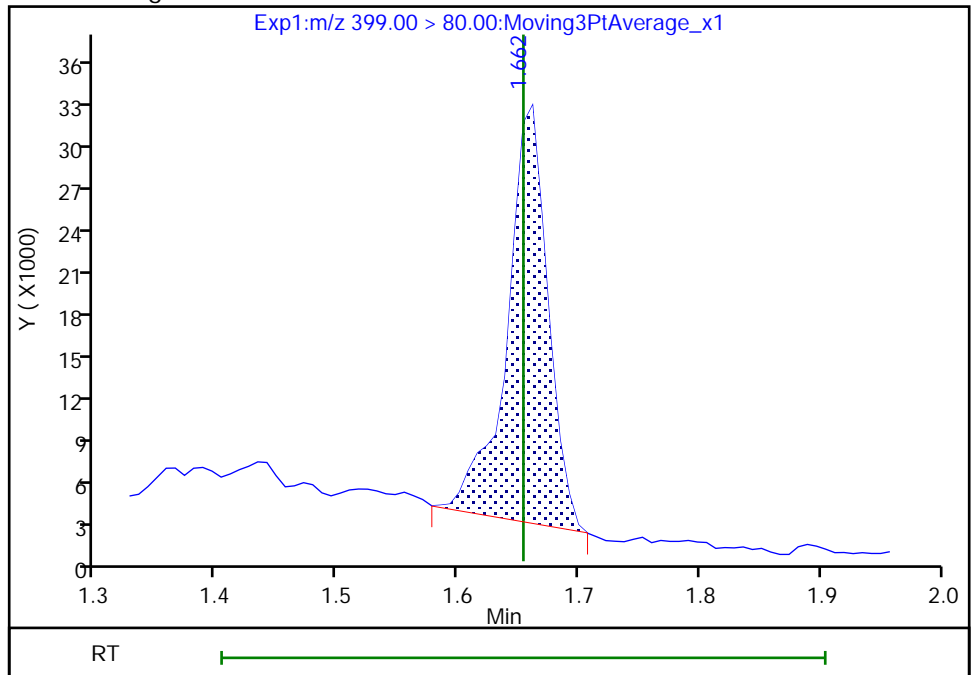
Processing Integration Results

Not Detected
Expected RT: 1.65



Manual Integration Results

RT: 1.66
Area: 68578
Amount: 0.454828
Amount Units: ng/ml



Reviewer: barnettj, 21-Aug-2018 11:03:02
Audit Action: Manually Integrated

Audit Reason: Missed Peak
Page 220 of 329

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

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.2479 0.9705	1.1886	1.2616	1.1091	1.0906	Ave		1.1447			9.6		30.0				
Perfluoroheptanoic acid (PFHpA)	1.0855 1.0407	1.0364	1.0489	1.0876	1.0460	Ave		1.0575			2.2		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.6492 1.6115	1.6167	1.6890	1.6380	1.7330	Ave		1.6562			2.8		30.0				
Perfluorooctanoic acid (PFOA)	1.0954 1.0842	1.0529	1.0915	1.1075	1.1058	Ave		1.0895			1.8		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.0830 1.0982	1.0386	1.0683	1.0853	1.1084	Ave		1.0803			2.3		30.0				
Perfluorononanoic acid (PFNA)	0.8630 0.8350	0.7990	0.7881	0.8431	0.8177	Ave		0.8243			3.4		30.0				
13C2 PFHxA	1.0723 1.0545	1.0111	1.0024	1.0515	1.0447	Ave		1.0394			2.6		30.0				
13C2 PFDA	0.7972 0.7976	0.7443	0.7670	0.8351	0.8115	Ave		0.7921			4.1		30.0				

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	998954 15136483	2070355	4549188	9386038	11785636	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	106948 1986691	233189	488515	1105731	1440874	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	440547 8441814	945775	2045536	4655795	6289862	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	222587 4216218	482587	1035552	2293687	3102767	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	380845 7518443	794113	1690983	4031609	5257770	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	175370 3246932	366204	747749	1746006	2294540	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1100508 1035478	1053216	960623	1099800	987004	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	818198 783206	775306	735076	873467	766710	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1 Analy Batch No.: 240166

SDG No.: _____

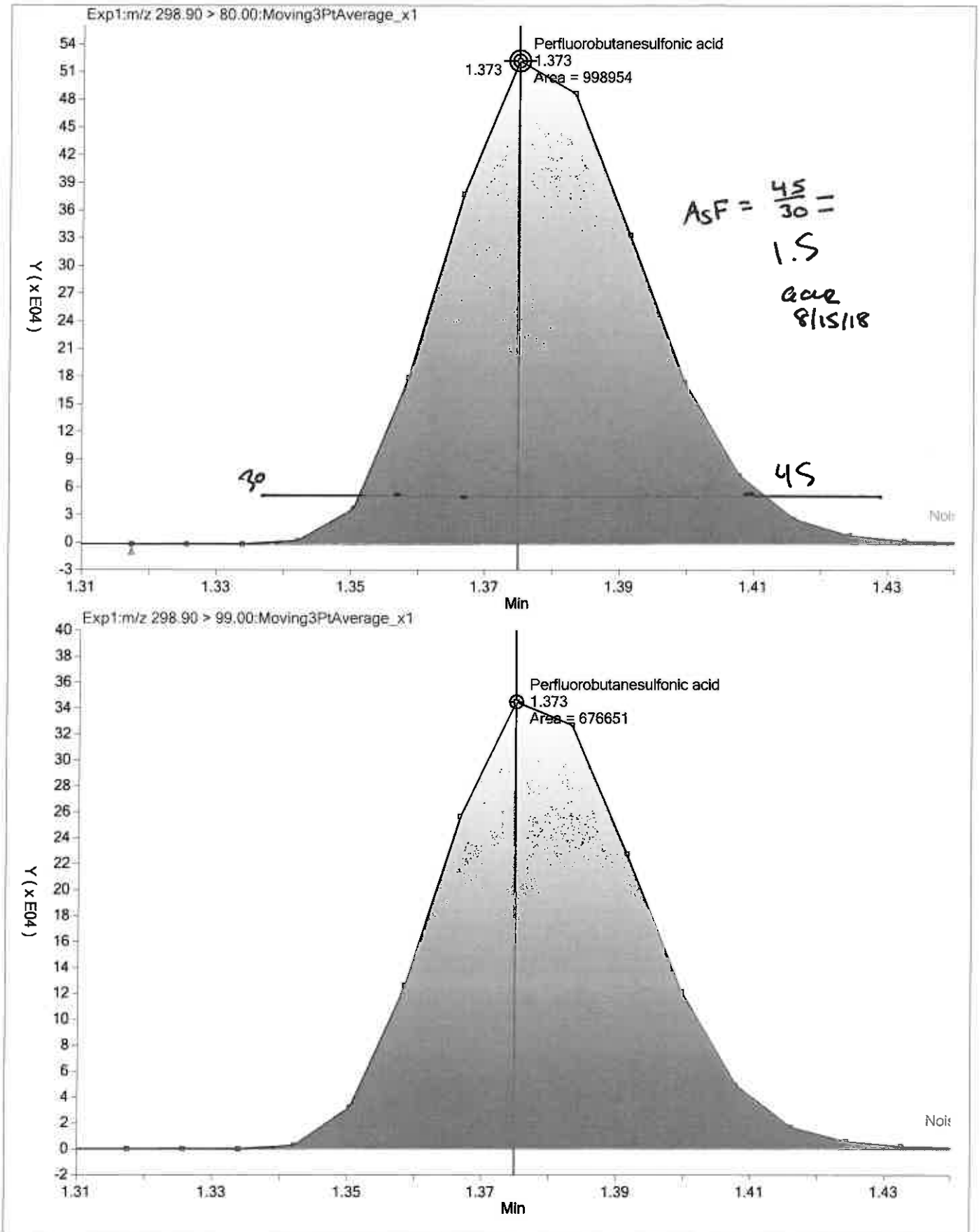
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

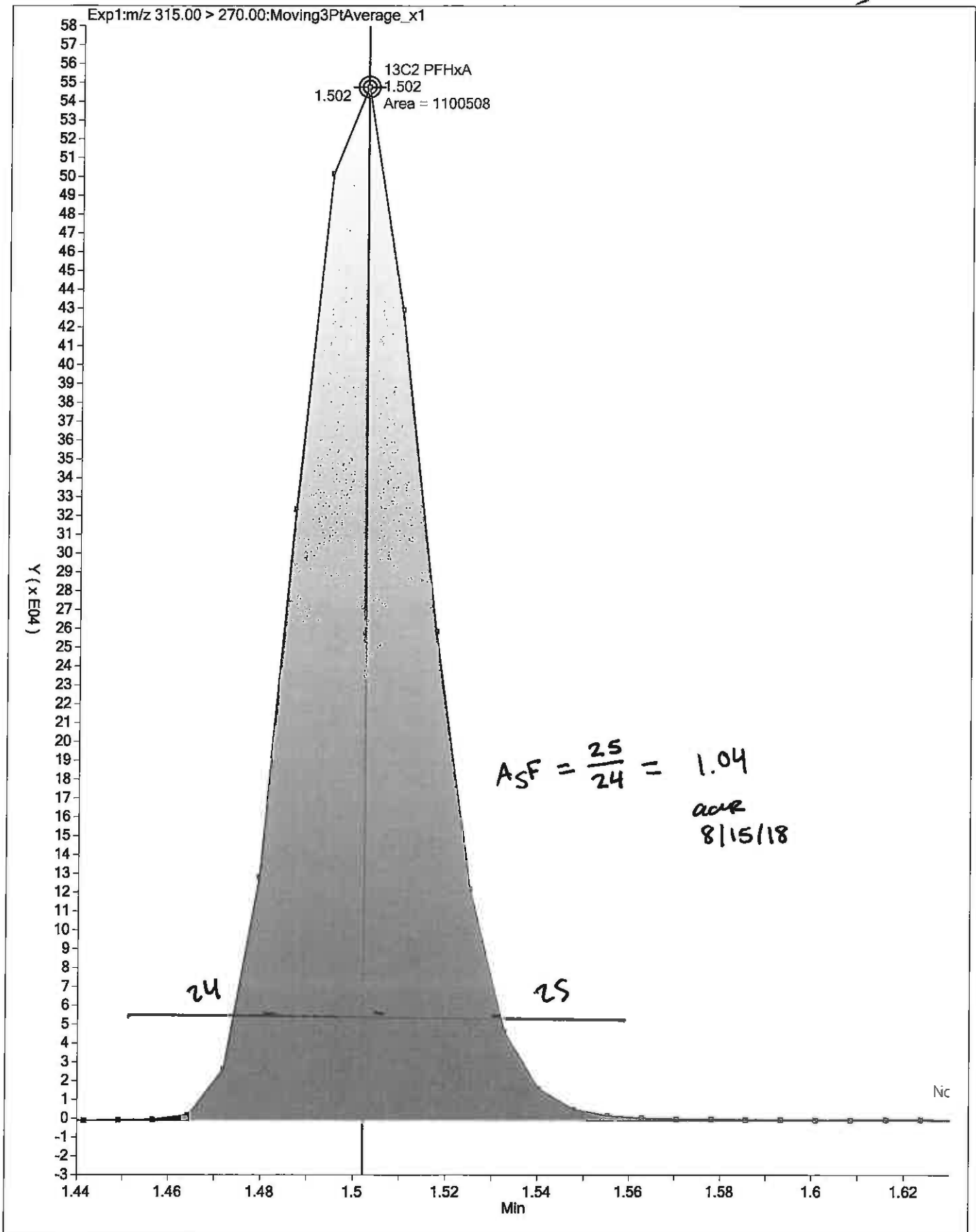
Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	9.0	3.8	10.2	-3.1	-4.7	-15.2	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	2.6	-2.0	-0.8	2.8	-1.1	-1.6	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.4	-2.4	2.0	-1.1	4.6	-2.7	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	0.5	-3.4	0.2	1.7	1.5	-0.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	0.2	-3.9	-1.1	0.5	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.7	-3.1	-4.4	2.3	-0.8	1.3	50	30	30	30	30	30
13C2 PFHxA	3.2	-2.7	-3.6	1.2	0.5	1.4	30	30	30	30	30	30
13C2 PFDA	0.6	-6.0	-3.2	5.4	2.4	0.7	30	30	30	30	30	30





TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 15AUG2018_537_ICAL Worklist Num: 62769
 Instrument: A8_N Method: 537_A8_N
 Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b
 Limit Group: LC 537 ICAL
 Analysis Type: SemiVOA
 Inj Volume: 2.00 Inj Vol Units: ul

Lims Batch: 240166
 CCV IS Mode: Select Ical Level, Cal Level: 3
 Non-Cal IS Mode: Last Ccal Sample

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

Lab ID	Inj Date	\$ 2	\$ 10	* 6 13C2-PFOA	* 7 13C4 PFOS
# 1 RB	15-Aug-2018 18:16:30			1167019 1.78	2601656 2.01
				1133890 97.2	2646770 101.7
# 2 IC L1	15-Aug-2018 18:21:09	1.50	2.27	1026304> 100.0*	2551191> 100.0*
		103.20	100.60		
# 3 IC L2	15-Aug-2018 18:25:50	1.50	2.28	1041660> 101.5*	2496049> 97.8*
		97.28	93.96		
# 4 IC L3	15-Aug-2018 18:30:31	1.51	2.27	958352> 93.4*	2296598> 90.0*
		96.91	97.60		
# 5 IC L4	15-Aug-2018 18:35:11	1.50	2.28	1045953> 101.9*	2694948> 105.6*
		101.20	105.40		
# 6 IC L5	15-Aug-2018 18:39:51	1.51	2.27	944777> 92.1*	2294155> 89.9*
		100.50	102.40		
# 7 IC L6	15-Aug-2018 18:44:32	1.50	2.27	981996> 95.7*	2483425> 97.3*
		101.40	100.70		
				958352 1.85	2296598 2.11
# 8 RB	15-Aug-2018 18:49:12			1059425 110.5	2535393 110.4
				1045953 1.85	2694948 2.11
# 9 CCVL	15-Aug-2018 18:53:52	1.50	2.27	1006603 96.2	2388436 88.6
		96.45	96.68		
				1006603 1.84	2388436 2.10
# 10 ICB	15-Aug-2018 18:58:33			1042675 103.6	2354282 98.6
				1045953 1.85	2694948 2.11
# 11 ICV	15-Aug-2018 19:03:12	1.50	2.26	1022273 97.7	2551643 94.7
		98.30	100.40		

13C2 PFOA

$$RPD = \frac{1045953 - 944777}{\left(\frac{1045953 + 944777}{2}\right)} \times 100 = 10.2\%$$

13C4 PFOS

$$RPD = \frac{2694948 - 2294155}{\left(\frac{2694948 + 2294155}{2}\right)} \times 100 = 16.1\%$$

acc
8/16/18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 15-Aug-2018 18:21:09 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:49 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.373	1.381	-0.008	1.000	998954	9.81		2568	
298.90 > 99.00	1.373	1.381	-0.008	1.000	676651		1.48(0.00-0.00)	998	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1100508	10.3		9954	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	106948	0.9854		20.4	M
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	440547	2.99		282	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	222587	1.99		30.5	
413.00 > 169.00	1.851	1.850	0.001	1.000	121100		1.84(0.00-0.00)	269	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1026304	10.0		6456	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2551191	28.7		5861	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	380845	3.96		606	
499.00 > 99.00	2.109	2.109	0.0	1.000	83364		4.57(0.00-0.00)	134	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	175370	2.07		29.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	818198	10.1		6270	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L1_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d

Injection Date: 15-Aug-2018 18:21:09

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

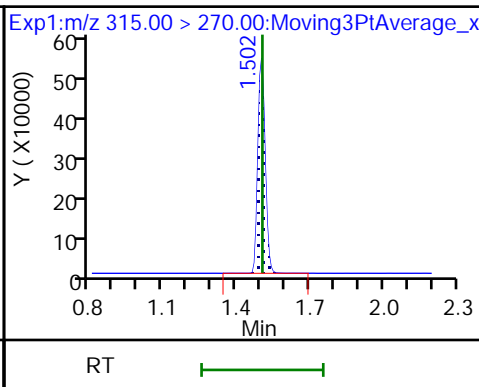
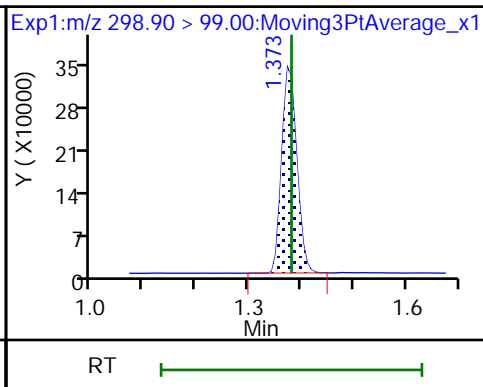
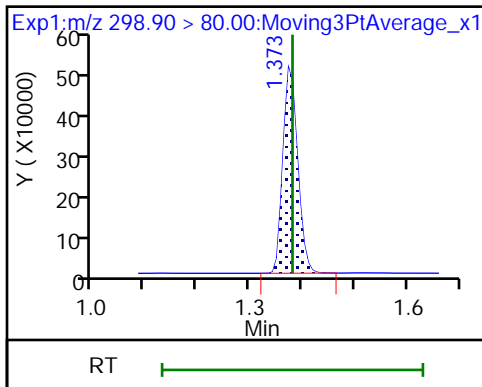
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

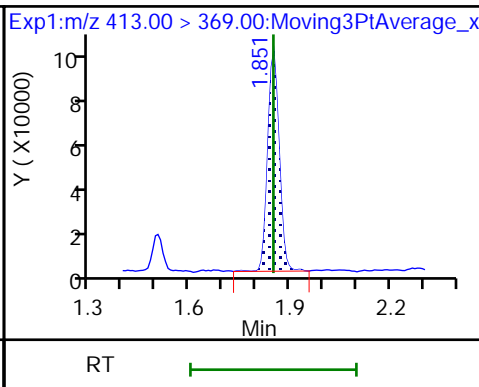
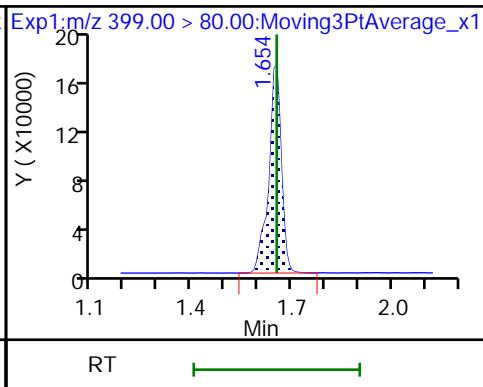
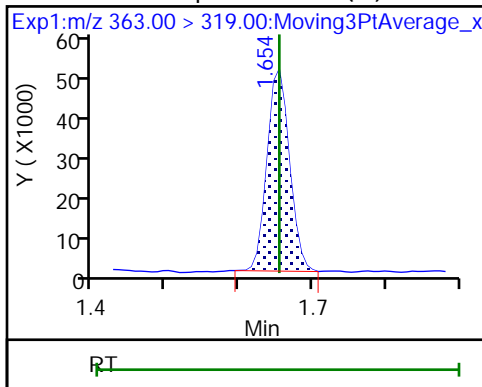
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid

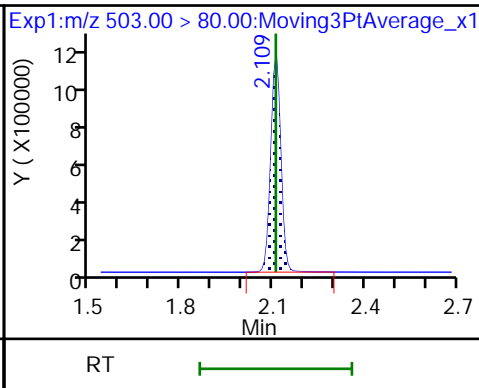
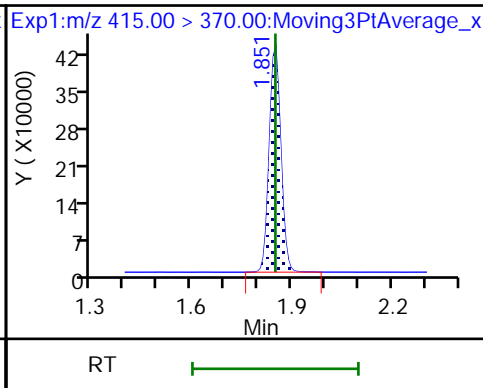
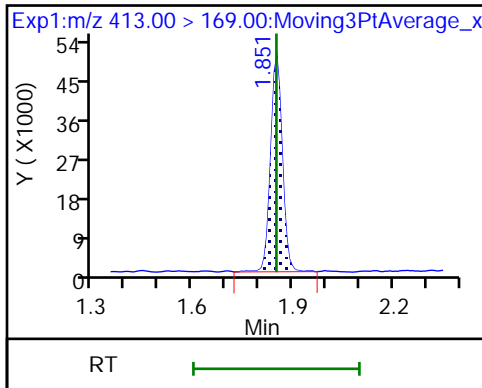
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

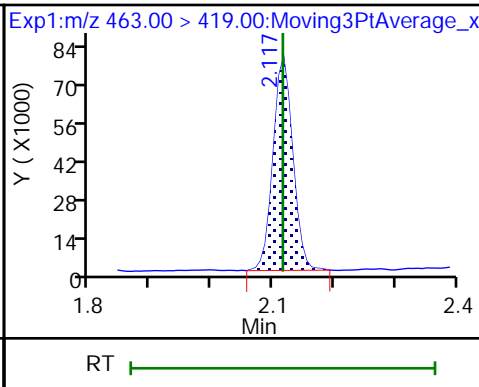
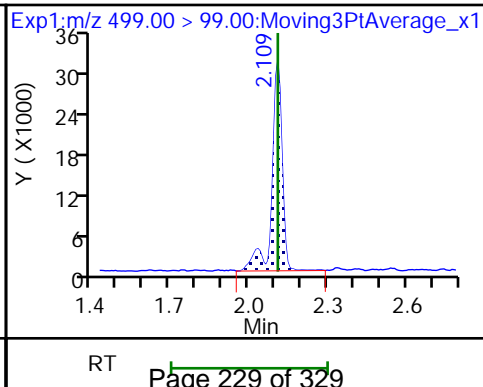
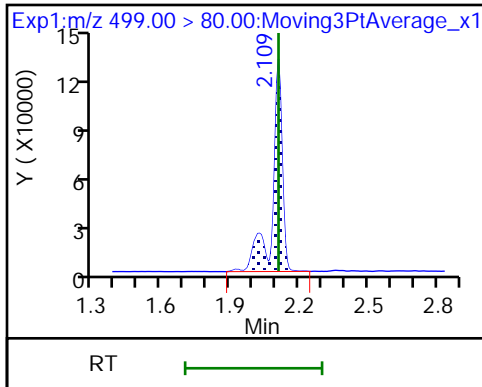
* 7 13C4 PFOS



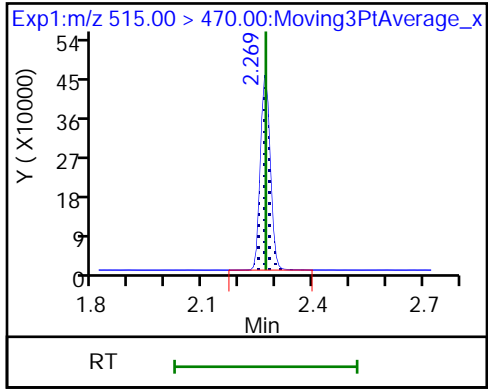
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

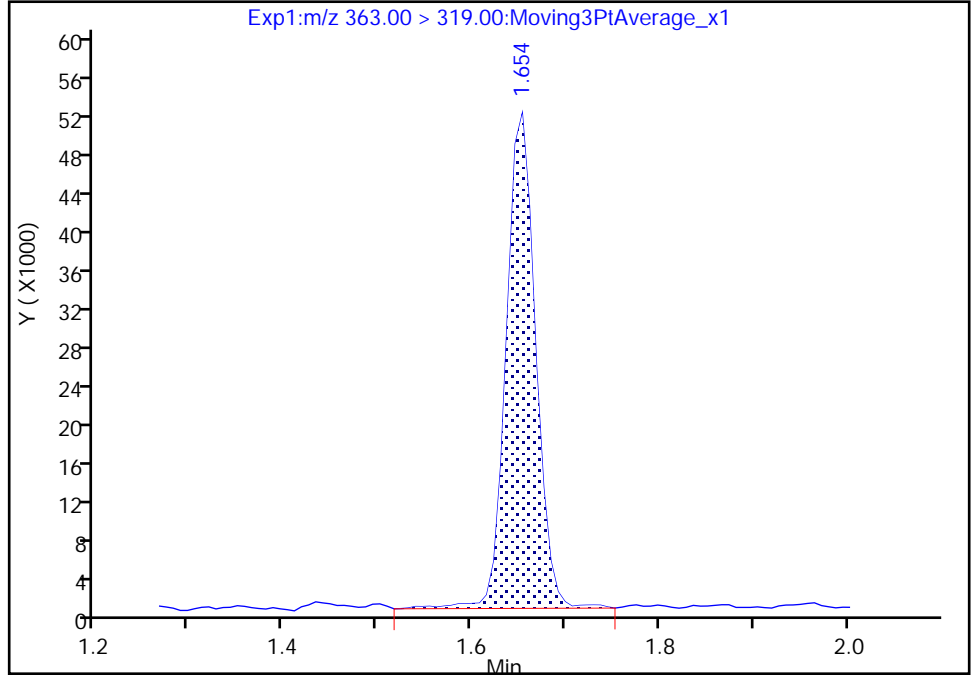
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_003.d
Injection Date: 15-Aug-2018 18:21:09 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

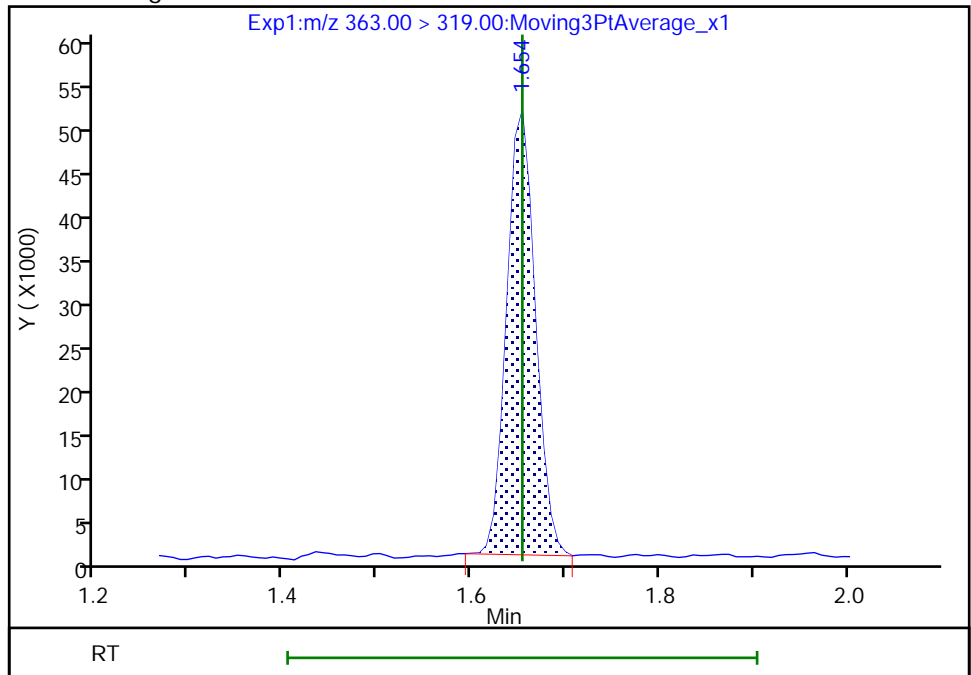
RT: 1.65
Area: 110830
Amount: 1.021059
Amount Units: ng/ml

Processing Integration Results



RT: 1.65
Area: 106948
Amount: 0.985398
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 15-Aug-2018 18:53:50
Audit Action: Manually Integrated

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_004.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 15-Aug-2018 18:25:50 ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:51 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2070355	20.8		4725	
298.90 > 99.00	1.381	1.381	0.0	1.000	1435059		1.44(0.00-0.00)	2152	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1053216	9.73		8501	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	233189	2.12		44.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	945775	6.56		643	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	482587	4.25		66.7	
413.00 > 169.00	1.851	1.850	0.001	1.000	253282		1.91(0.00-0.00)	550	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1041660	10.0		6420	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2496049	28.7		4617	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	794113	8.45		1241	
499.00 > 99.00	2.109	2.109	0.0	1.000	177724		4.47(0.00-0.00)	300	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	366204	4.26		60.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.271	0.005	1.000	775306	9.40		5522	

Reagents:

LC537-L2_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_004.d

Injection Date: 15-Aug-2018 18:25:50

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

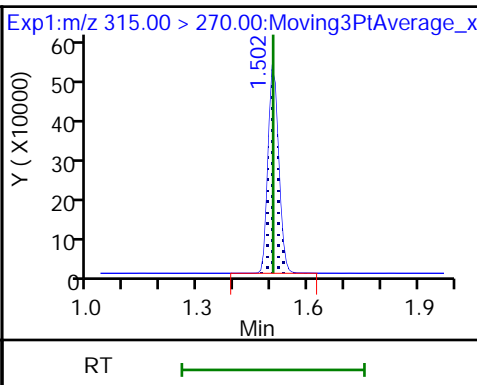
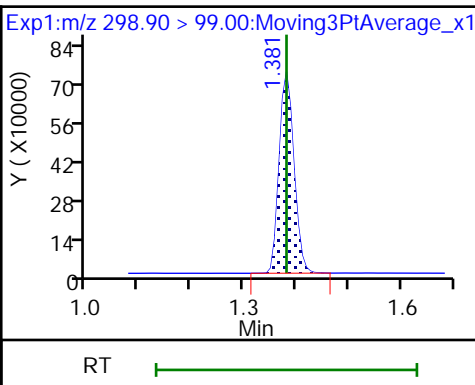
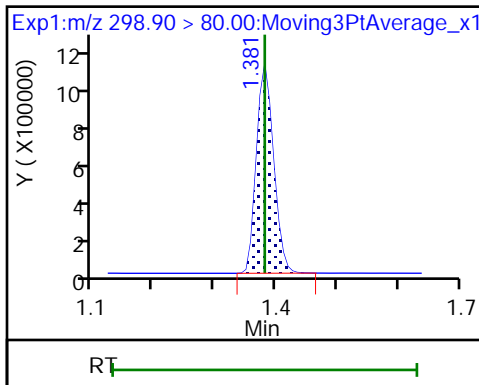
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

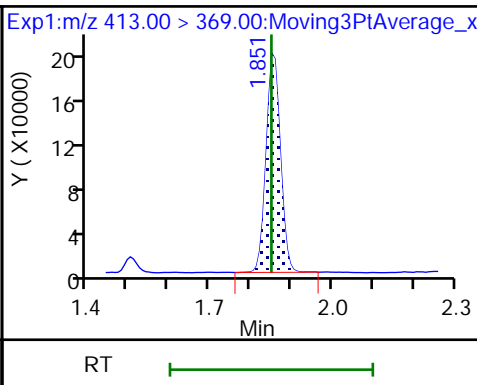
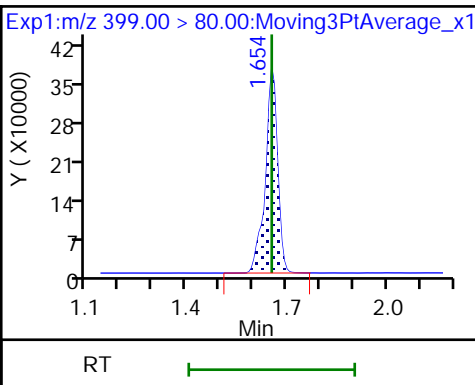
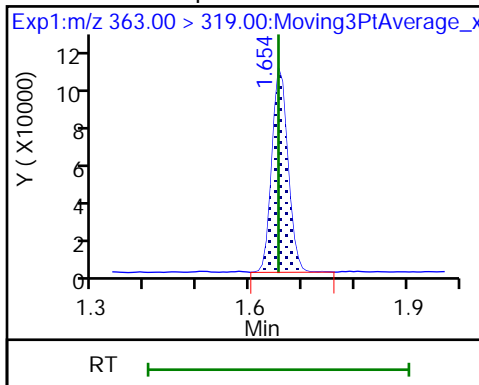
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

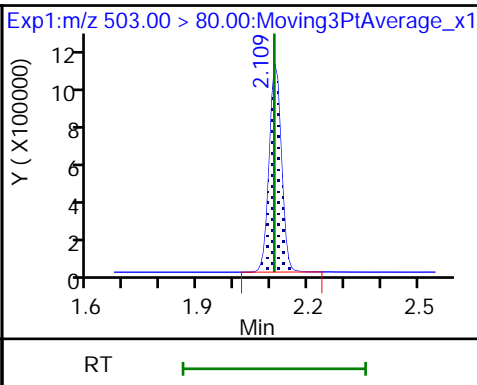
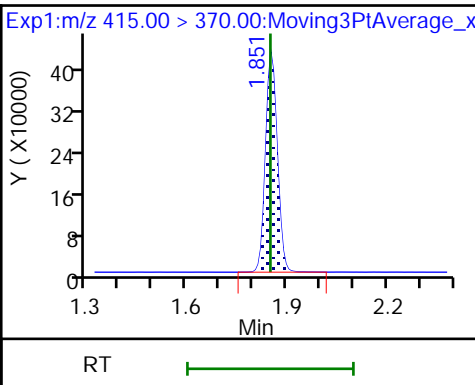
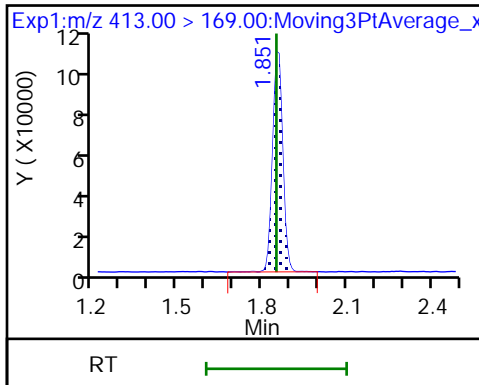
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

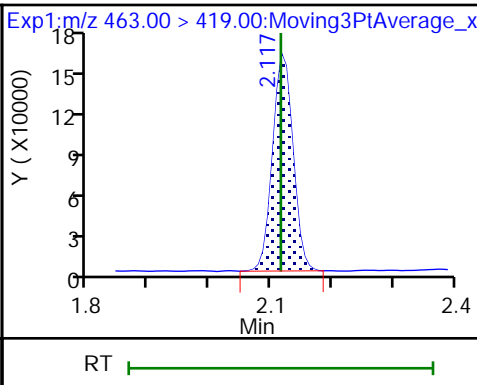
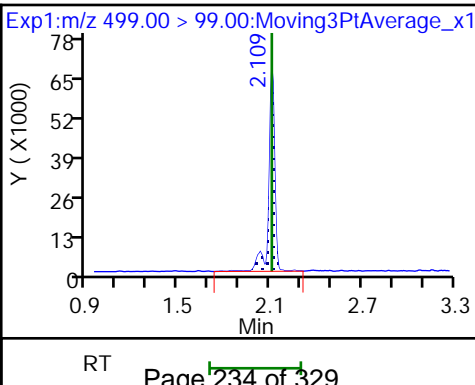
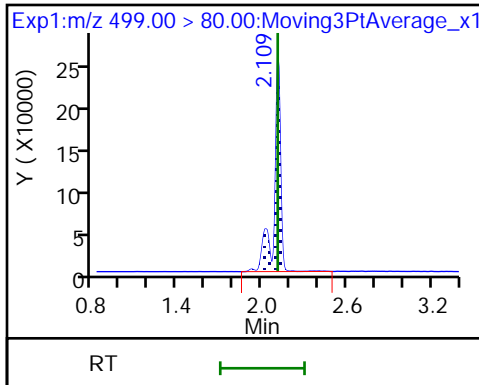
* 7 13C4 PFOS



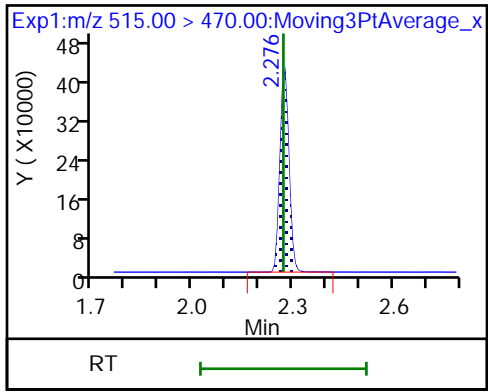
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_005.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 15-Aug-2018 18:30:31 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:52 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:54:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	4549188	49.6		9553	
298.90 > 99.00	1.381	1.381	0.0	1.000	3023433		1.50(0.00-0.00)	4386	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	960623	9.64		8278	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	488515	4.82		90.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	2045536	15.4		1357	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	1035552	9.92		136	
413.00 > 169.00	1.851	1.850	0.001	1.000	542050		1.91(0.00-0.00)	1191	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		958352	10.0		6793	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2296598	28.7		5075	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1690983	19.5		2539	
499.00 > 99.00	2.109	2.109	0.0	1.000	384764		4.39(0.00-0.00)	662	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	747749	9.47		118	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	735076	9.68		5283	

Reagents:

LC537-L3_00025

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_005.d

Injection Date: 15-Aug-2018 18:30:31

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

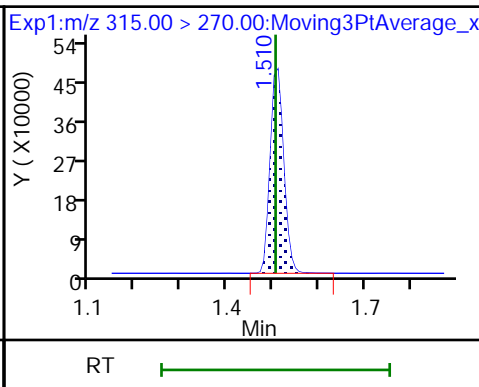
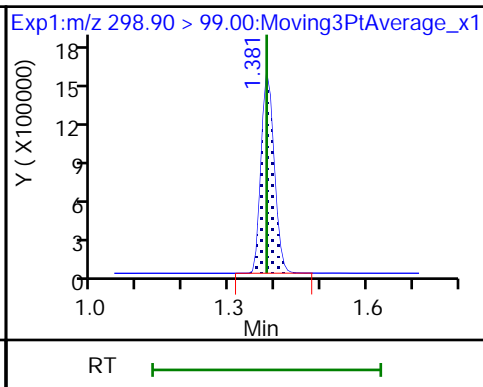
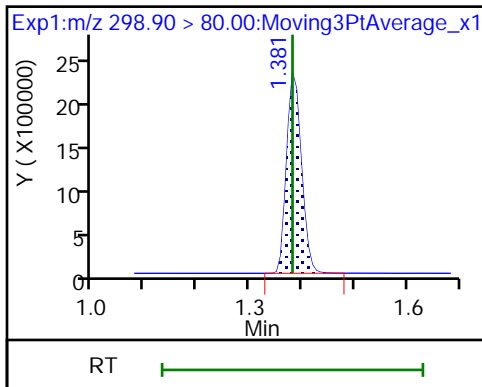
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

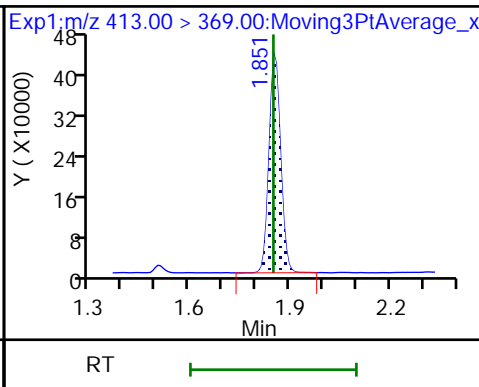
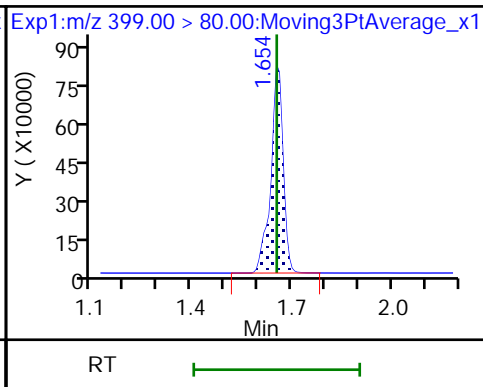
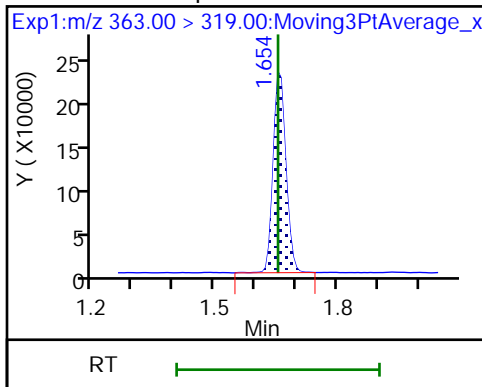
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

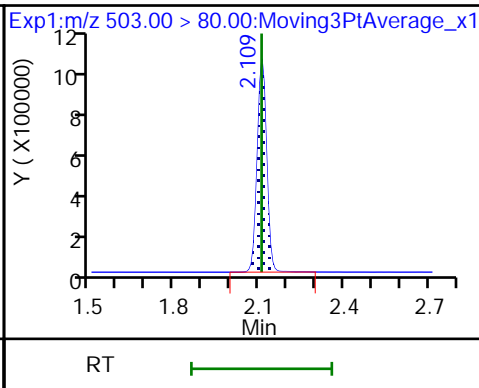
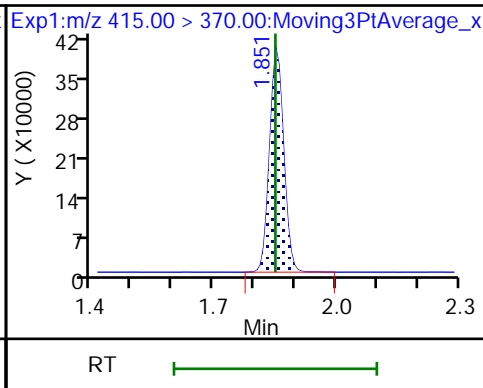
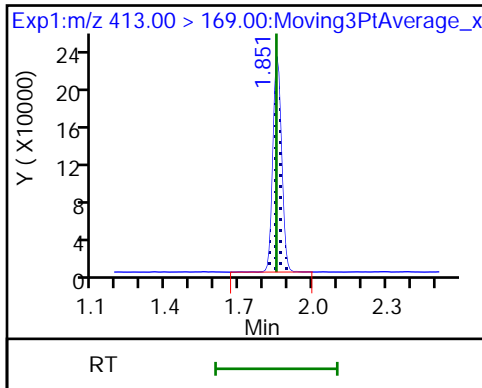
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

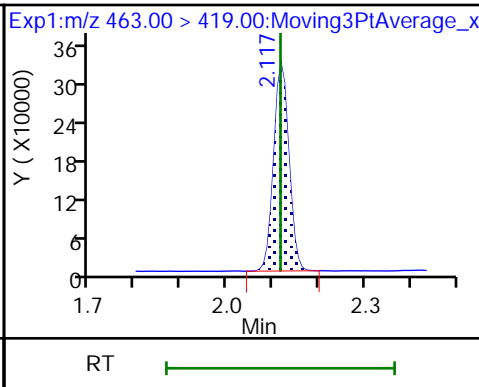
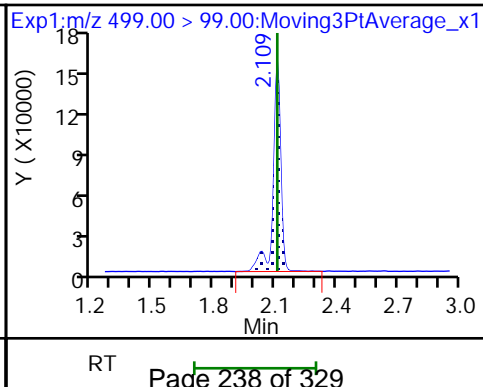
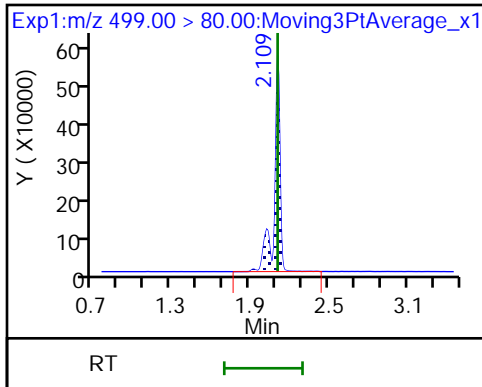
* 7 13C4 PFOS



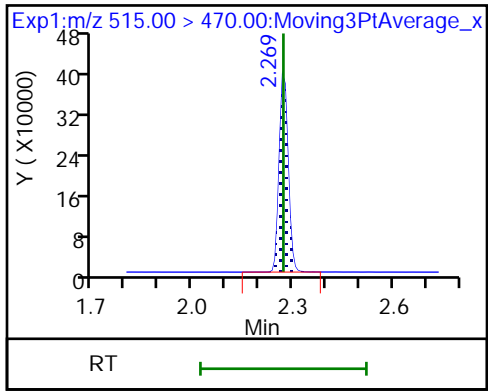
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_006.d
 Lims ID: IC L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 15-Aug-2018 18:35:11 ALS Bottle#: 4 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:53 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 16-Aug-2018 08:51:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	9386038	87.3		13589	
298.90 > 99.00	1.381	1.381	0.0	1.000	6689135		1.40(0.00-0.00)	8057	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1099800	10.1		8908	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1105731	10.0		214	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	4655795	29.9		2833	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	2293687	20.1		314	
413.00 > 169.00	1.851	1.850	0.001	1.000	1177353		1.95(0.00-0.00)	2593	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		1045953	10.0		8611	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2694948	28.7		5789	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	4031609	39.7		5452	
499.00 > 99.00	2.109	2.109	0.0	1.000	879709		4.58(0.00-0.00)	1346	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	1746006	20.3		261	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.276	2.271	0.005	1.000	873467	10.5		5675	

Reagents:

LC537-L4_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_006.d

Injection Date: 15-Aug-2018 18:35:11

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

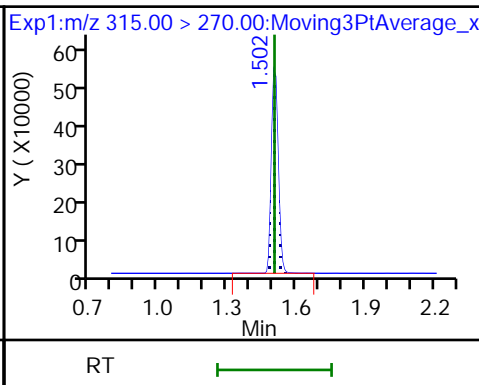
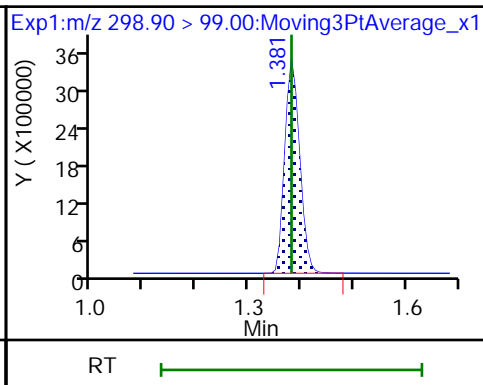
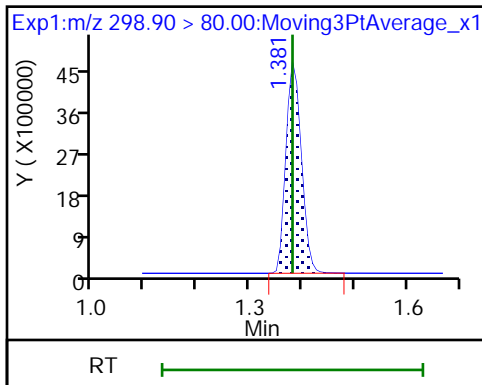
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

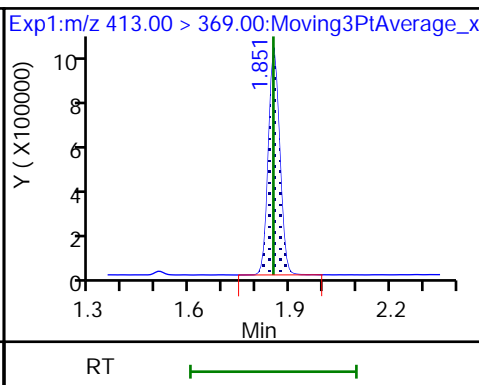
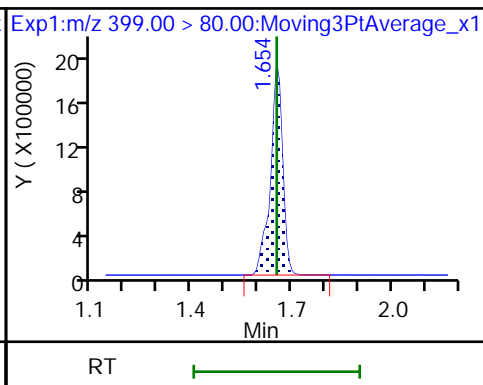
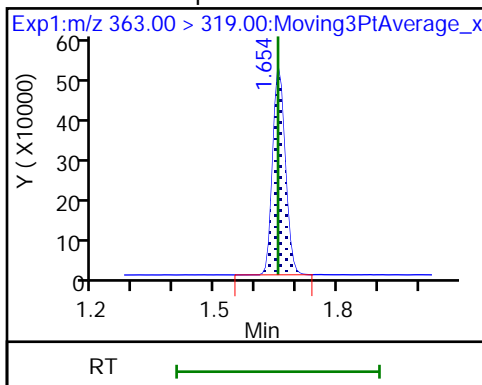
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

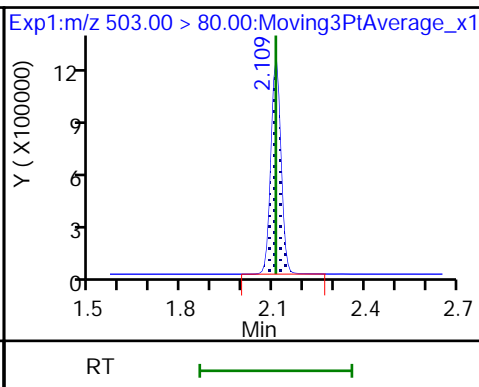
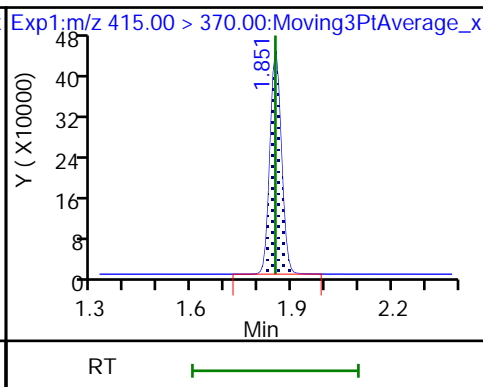
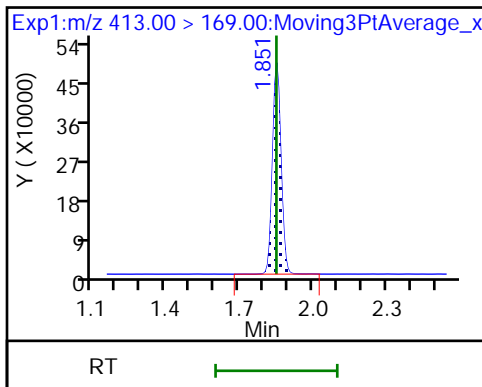
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

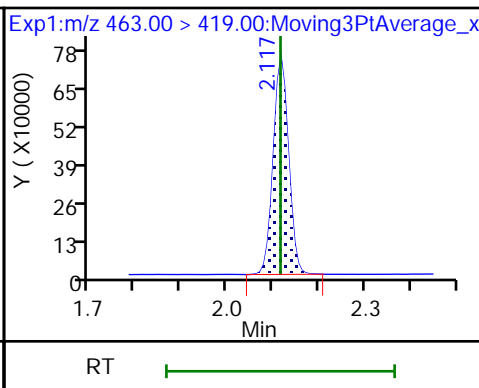
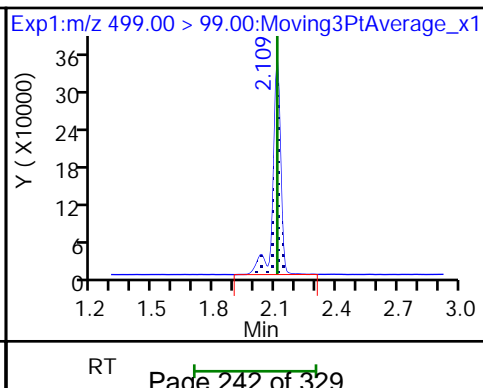
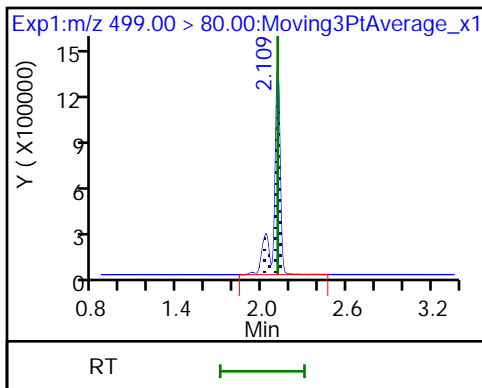
* 7 13C4 PFOS



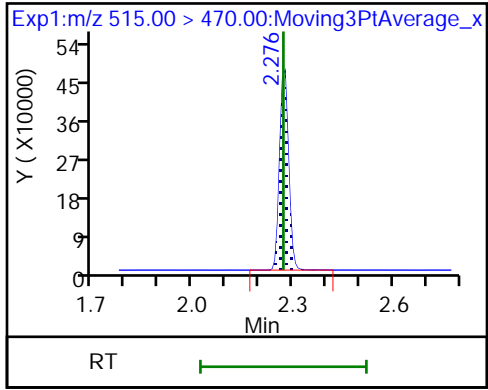
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_007.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 15-Aug-2018 18:39:51 ALS Bottle#: 5 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:48 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:55:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.381	0.007	1.000	11785636	128.7		14701	
298.90 > 99.00	1.388	1.381	0.007	1.000	8762661		1.34(0.00-0.00)	9668	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.505	0.005	1.000	987004	10.1		9370	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	6289862	47.5		3399	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1440874	14.4		257	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.850	0.001		944777	10.0		7532	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.850	0.001	1.000	3102767	30.1		420	
413.00 > 169.00	1.851	1.850	0.001	1.000	1613623		1.92(0.00-0.00)	3725	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.108	0.001		2294155	28.7		5009	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5257770	60.8		6360	
499.00 > 99.00	2.109	2.109	0.0	1.000	1128903		4.66(0.00-0.00)	1721	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.116	0.001	1.000	2294540	29.5		331	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	766710	10.2		5627	

Reagents:

LC537-L5_00026

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_007.d

Injection Date: 15-Aug-2018 18:39:51

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

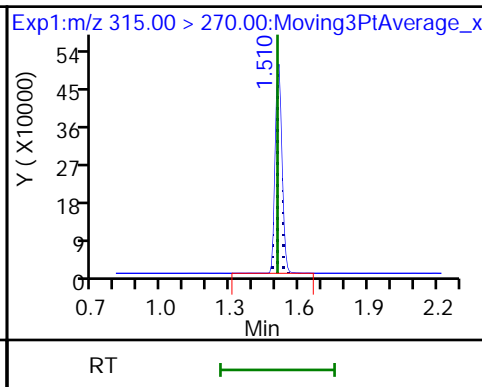
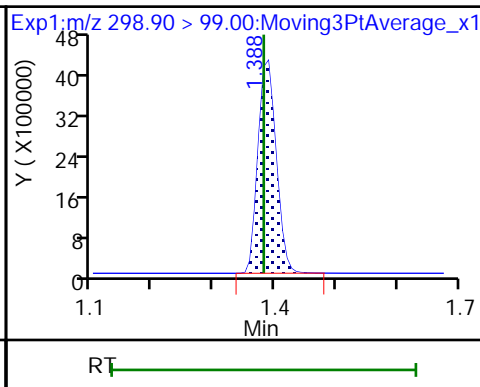
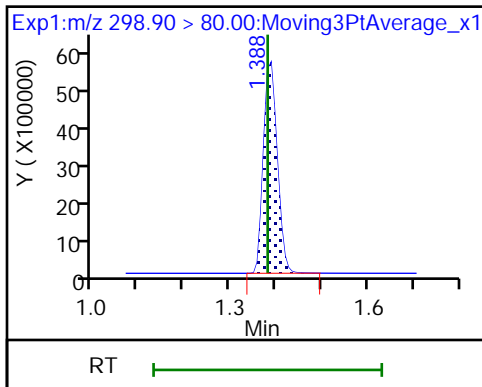
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

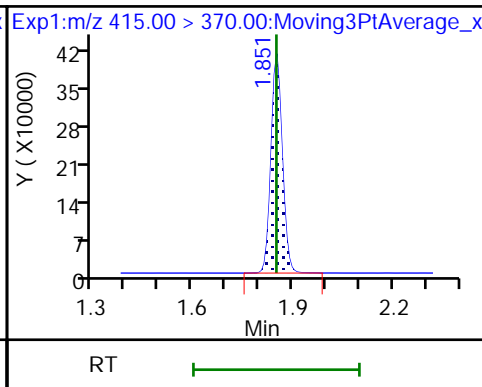
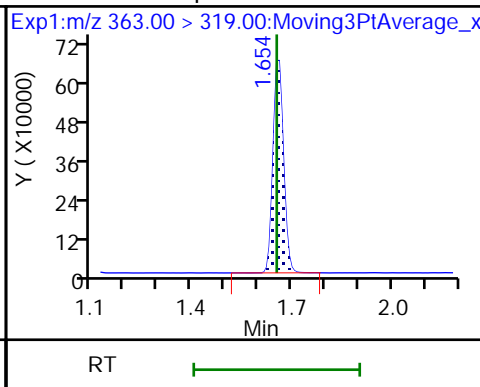
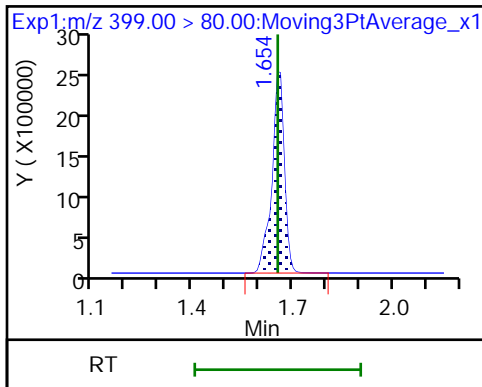
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

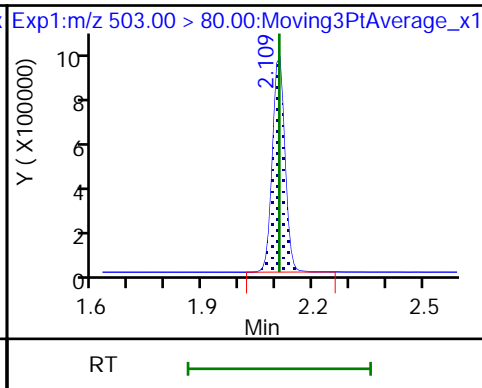
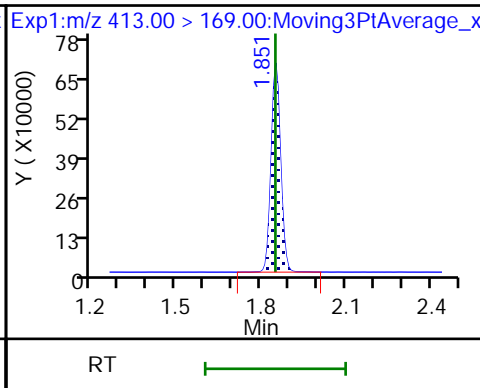
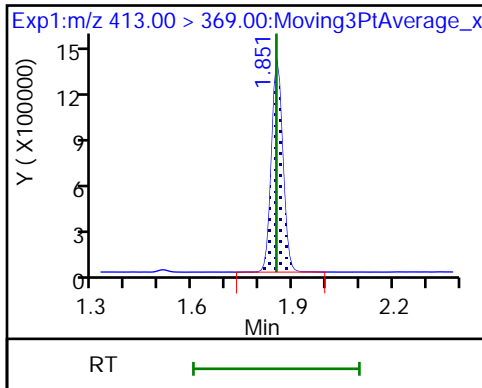
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

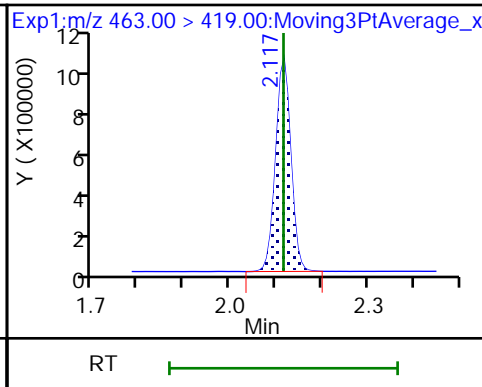
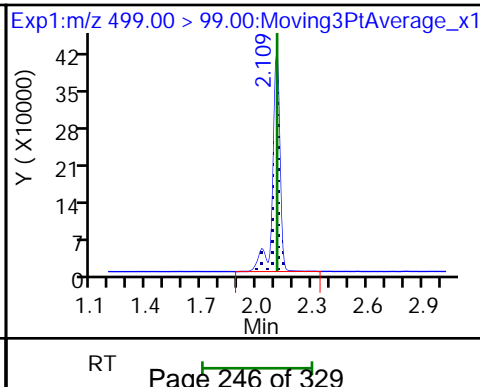
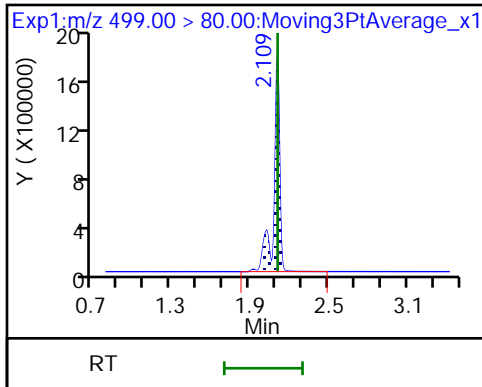
* 7 13C4 PFOS



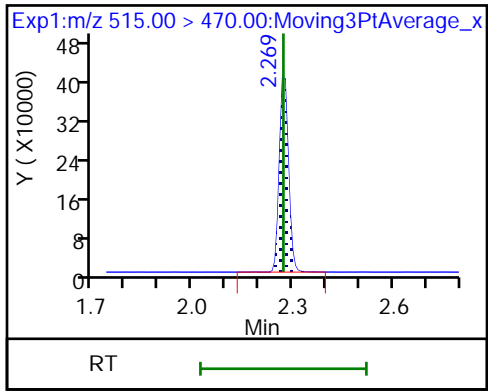
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 15-Aug-2018 18:44:32 ALS Bottle#: 6 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6_537
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:51:54 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 18:55:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	15136483	152.7		15082	
298.90 > 99.00	1.381	1.381	0.0	1.000	11077712		1.37(0.00-0.00)	11444	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1035478	10.1		10037	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1986691	19.1		353	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	8441814	58.9		4544	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	4216218	39.4		560	
413.00 > 169.00	1.844	1.850	-0.006	1.000	2187034		1.93(0.00-0.00)	4711	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		981996	10.0		8690	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2483425	28.7		5512	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	7518443	80.4		8718	
499.00 > 99.00	2.102	2.109	-0.007	1.000	1595089		4.71(0.00-0.00)	2315	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	3246932	40.1		449	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	783206	10.1		6018	

Reagents:

LC537-L6_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Injection Date: 15-Aug-2018 18:44:32

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

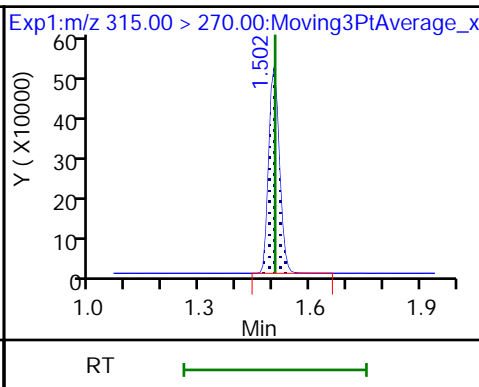
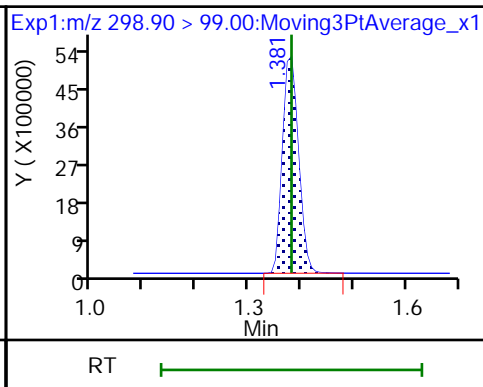
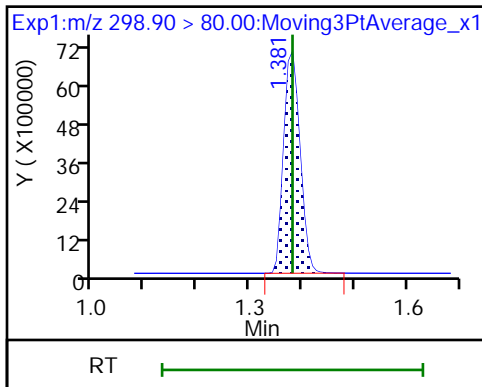
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

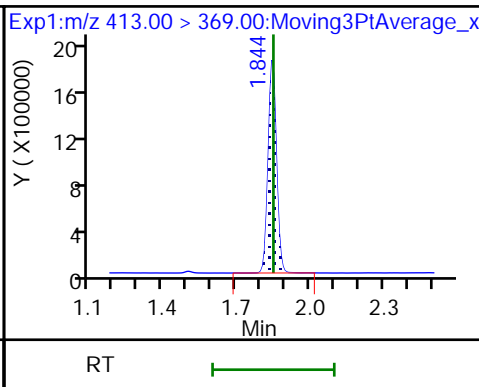
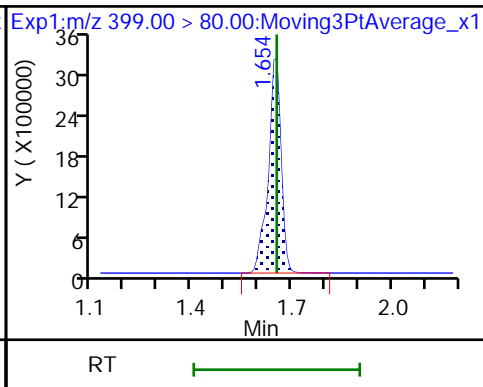
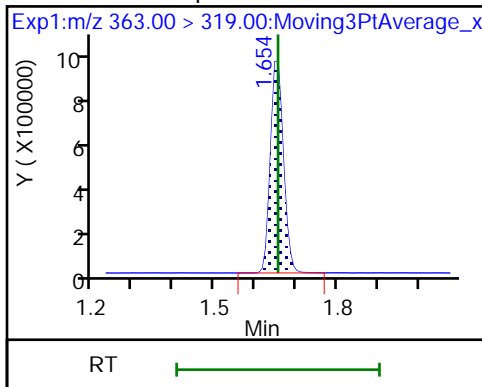
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

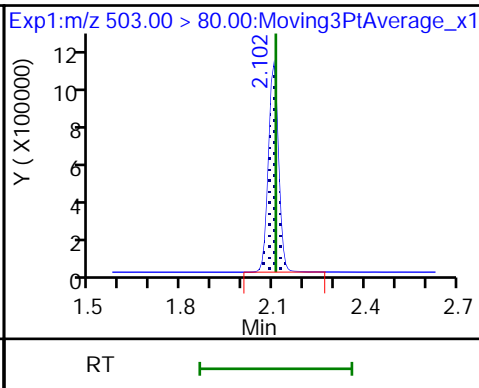
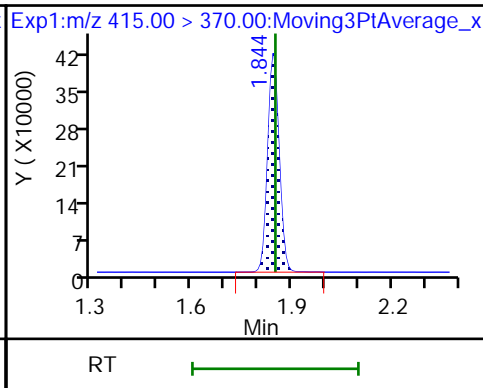
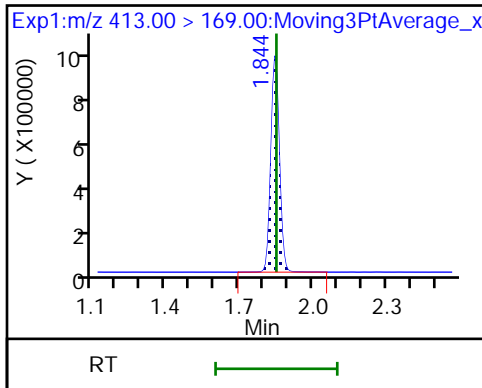
5 Perfluorooctanoic acid



5 Perfluorooctanoic acid

* 6 13C2-PFOA

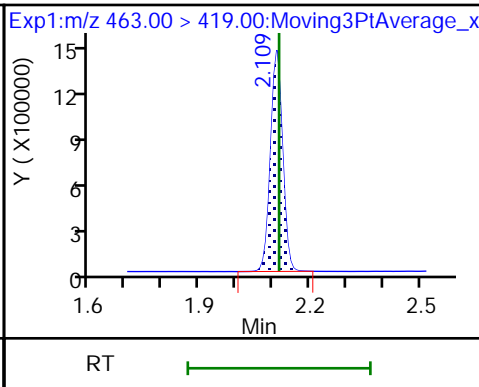
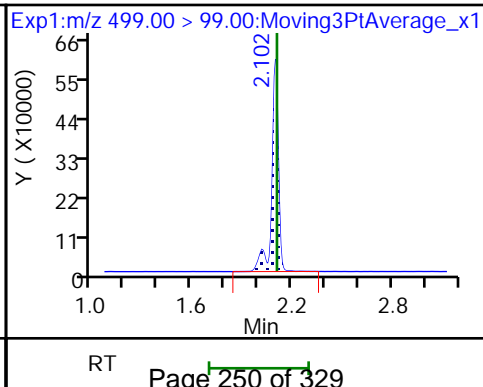
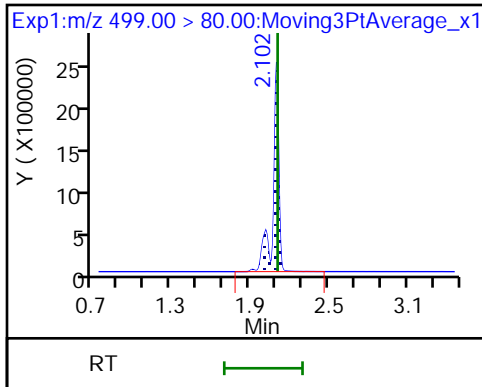
* 7 13C4 PFOS



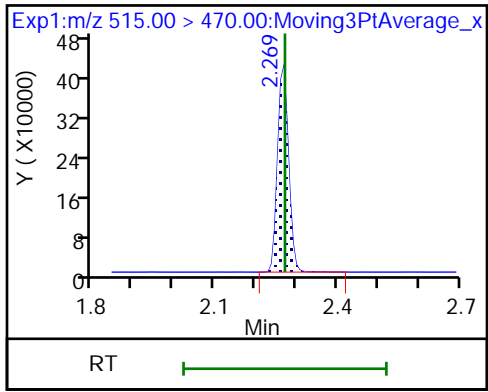
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



Calibration

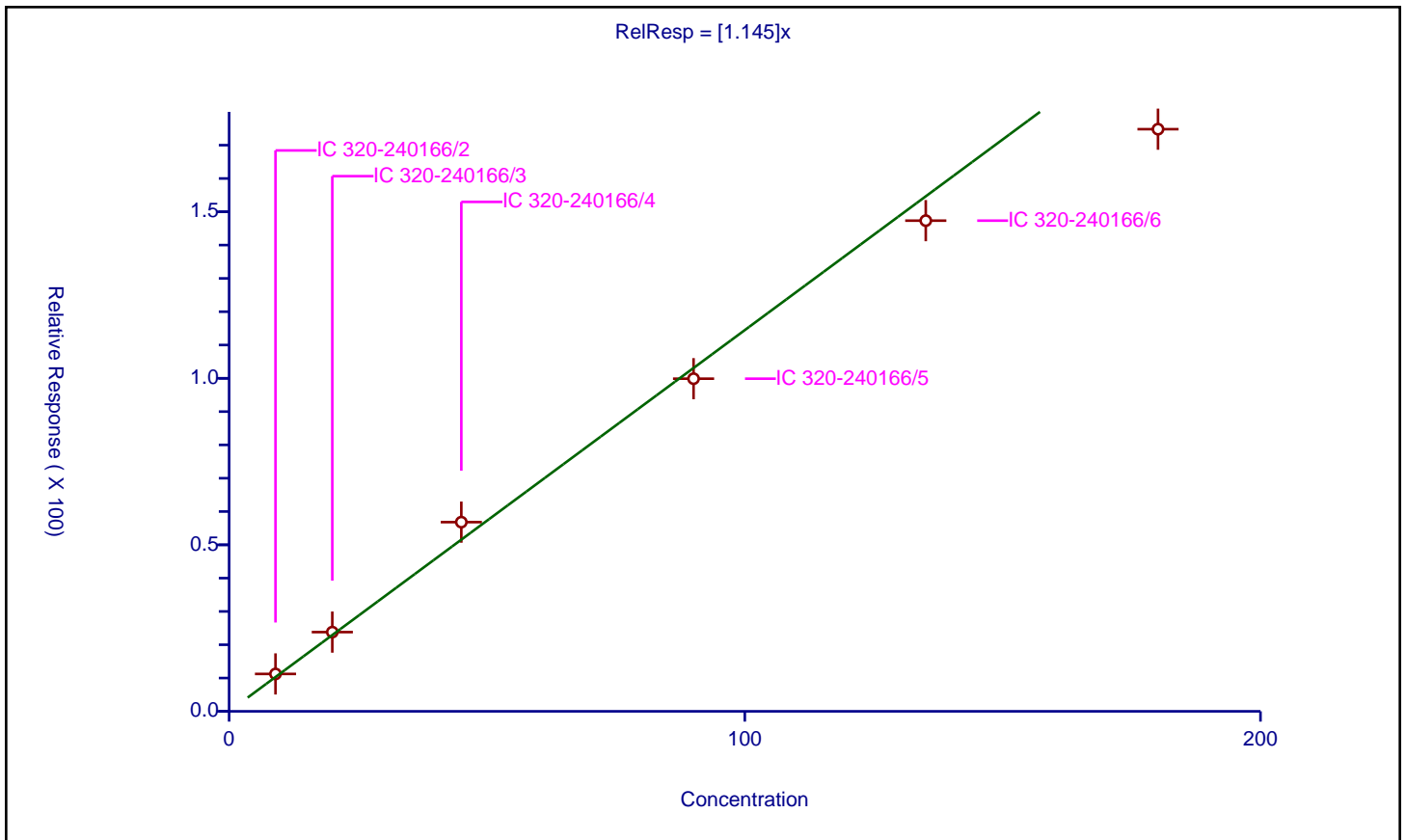
/ Perfluorobutanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.145

Error Coefficients	
Standard Error:	9820000
Relative Standard Error:	9.6
Correlation Coefficient:	0.987
Coefficient of Determination (Adjusted):	0.984

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	8.99912	11.230049	28.68	2551191.0	1.247905	Y
2	IC 320-240166/3	20.01376	23.788708	28.68	2496049.0	1.188618	Y
3	IC 320-240166/4	45.03096	56.810426	28.68	2296598.0	1.261586	Y
4	IC 320-240166/5	90.06192	99.887482	28.68	2694948.0	1.109098	Y
5	IC 320-240166/6	135.09288	147.336183	28.68	2294155.0	1.090629	Y
6	IC 320-240166/7	180.12384	174.804688	28.68	2483425.0	0.970469	Y



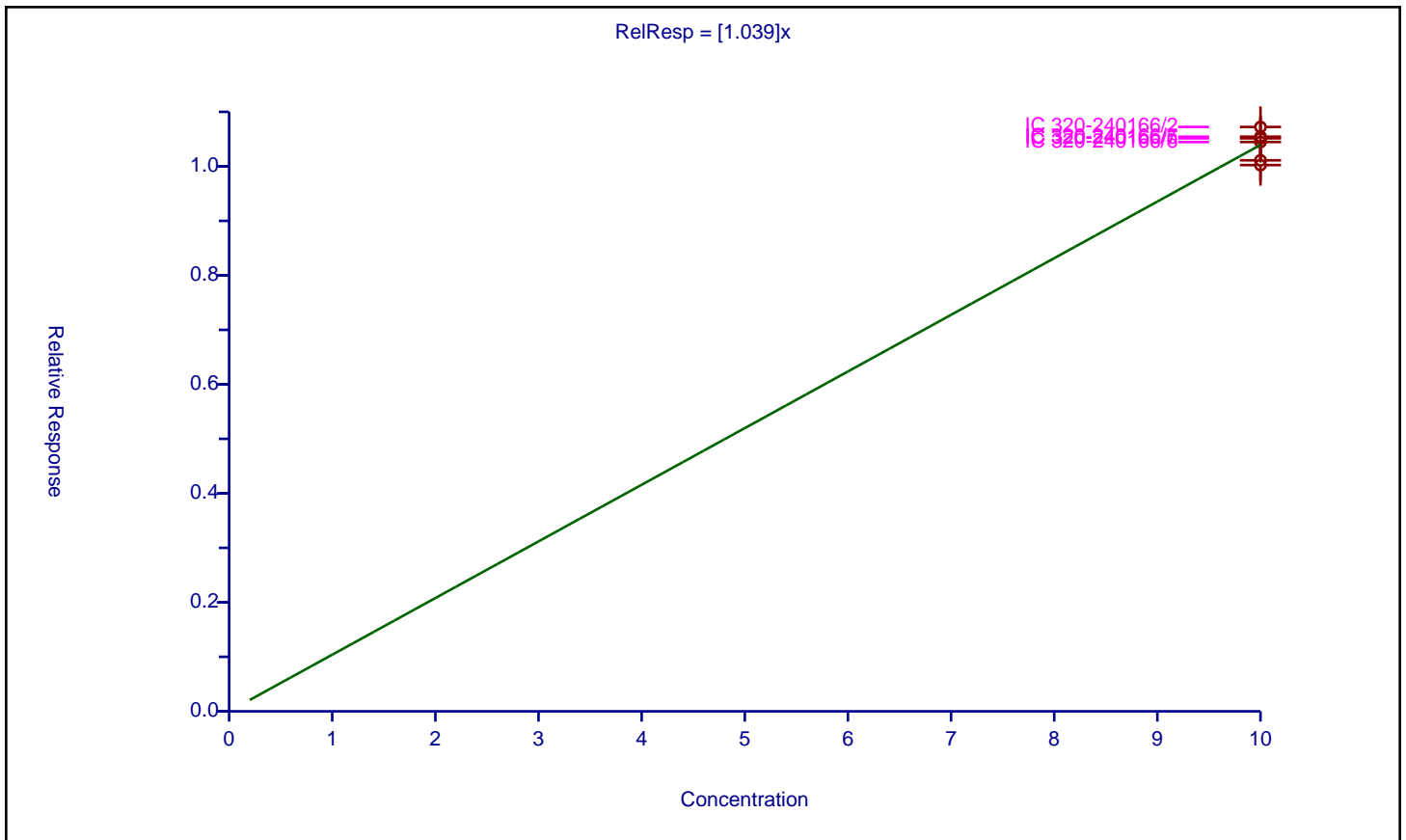
Calibration

/ 13C2 PFHxA

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: ISTD
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.039
Error Coefficients	
Standard Error:	1140000
Relative Standard Error:	2.6
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0.000000000000000111

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	10.0	10.723022	10.0	1026304.0	1.072302	Y
2	IC 320-240166/3	10.0	10.110938	10.0	1041660.0	1.011094	Y
3	IC 320-240166/4	10.0	10.023697	10.0	958352.0	1.00237	Y
4	IC 320-240166/5	10.0	10.514813	10.0	1045953.0	1.051481	Y
5	IC 320-240166/6	10.0	10.446952	10.0	944777.0	1.044695	Y
6	IC 320-240166/7	10.0	10.544625	10.0	981996.0	1.054463	Y



Calibration

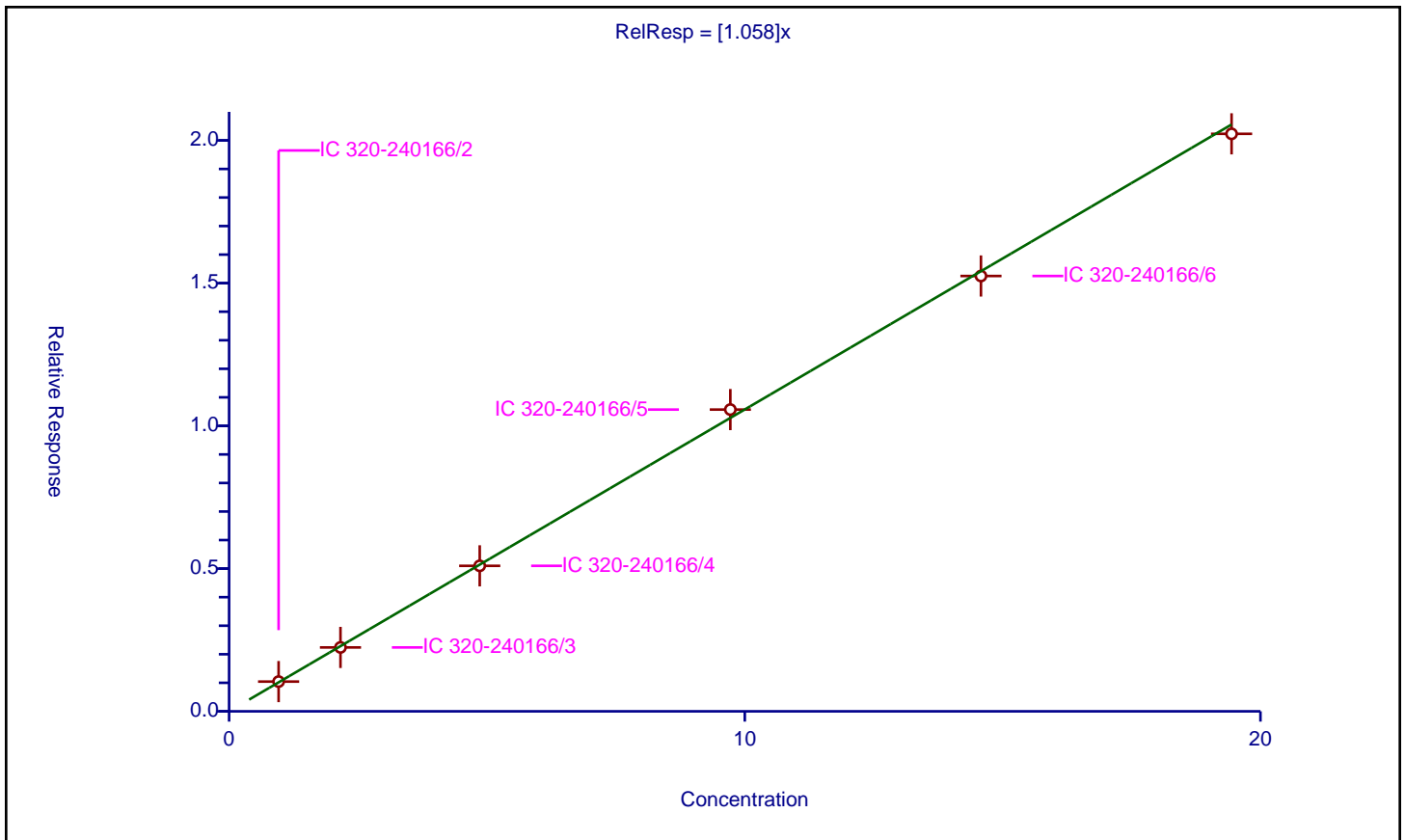
/ Perfluoroheptanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.058

Error Coefficients	
Standard Error:	1230000
Relative Standard Error:	2.2
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	0.96	1.042069	10.0	1026304.0	1.085489	Y
2	IC 320-240166/3	2.16	2.238629	10.0	1041660.0	1.036402	Y
3	IC 320-240166/4	4.86	5.097449	10.0	958352.0	1.048858	Y
4	IC 320-240166/5	9.72	10.571517	10.0	1045953.0	1.087605	Y
5	IC 320-240166/6	14.58	15.250943	10.0	944777.0	1.046018	Y
6	IC 320-240166/7	19.44	20.231152	10.0	981996.0	1.040697	Y



Calibration

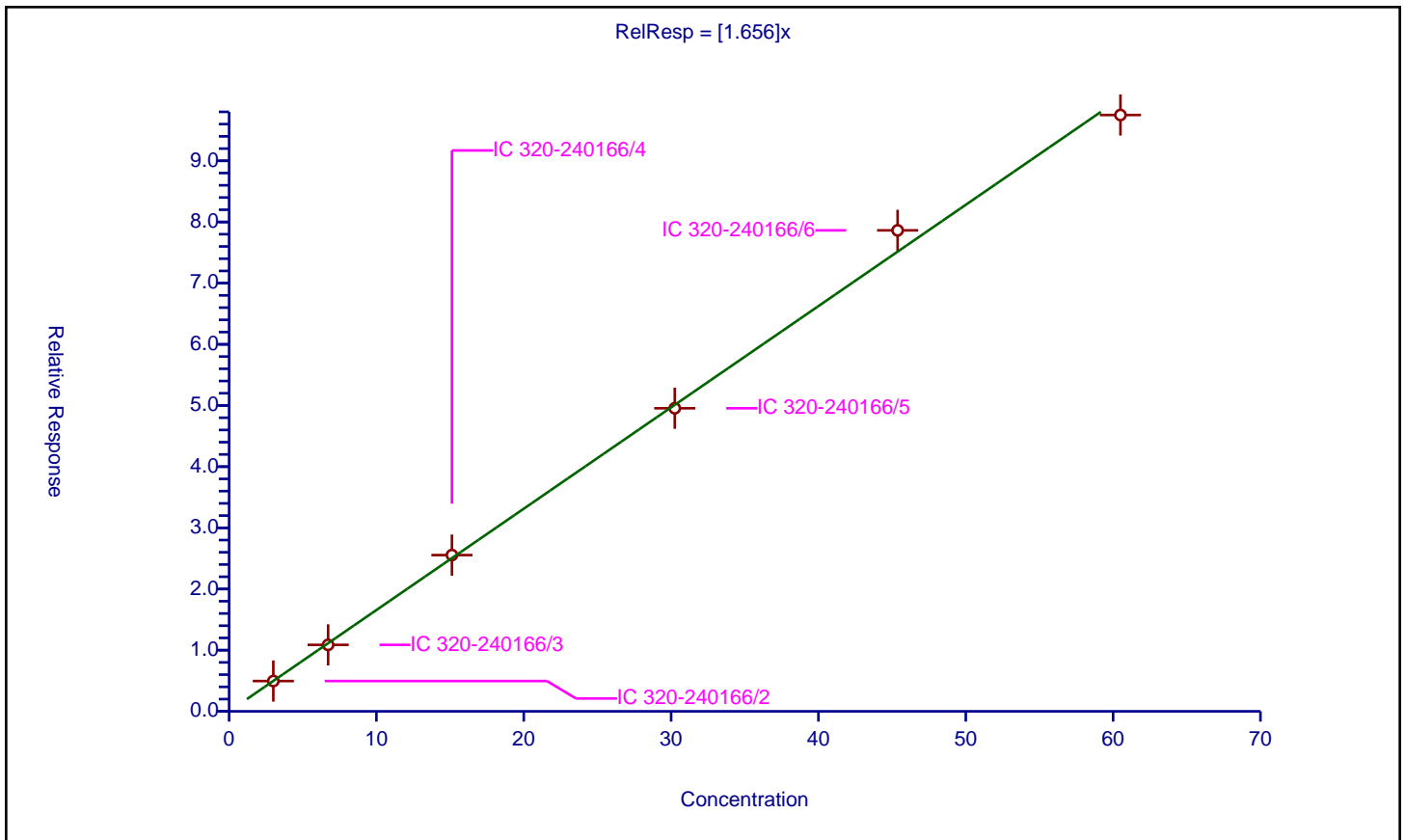
/ Perfluorohexanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.656

Error Coefficients	
Standard Error:	5250000
Relative Standard Error:	2.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	3.003	4.952545	28.68	2551191.0	1.649199	Y
2	IC 320-240166/3	6.721867	10.867105	28.68	2496049.0	1.61668	Y
3	IC 320-240166/4	15.1242	25.544729	28.68	2296598.0	1.688997	Y
4	IC 320-240166/5	30.2484	49.547598	28.68	2694948.0	1.638024	Y
5	IC 320-240166/6	45.3726	78.631671	28.68	2294155.0	1.733021	Y
6	IC 320-240166/7	60.4968	97.490855	28.68	2483425.0	1.611504	Y



Calibration

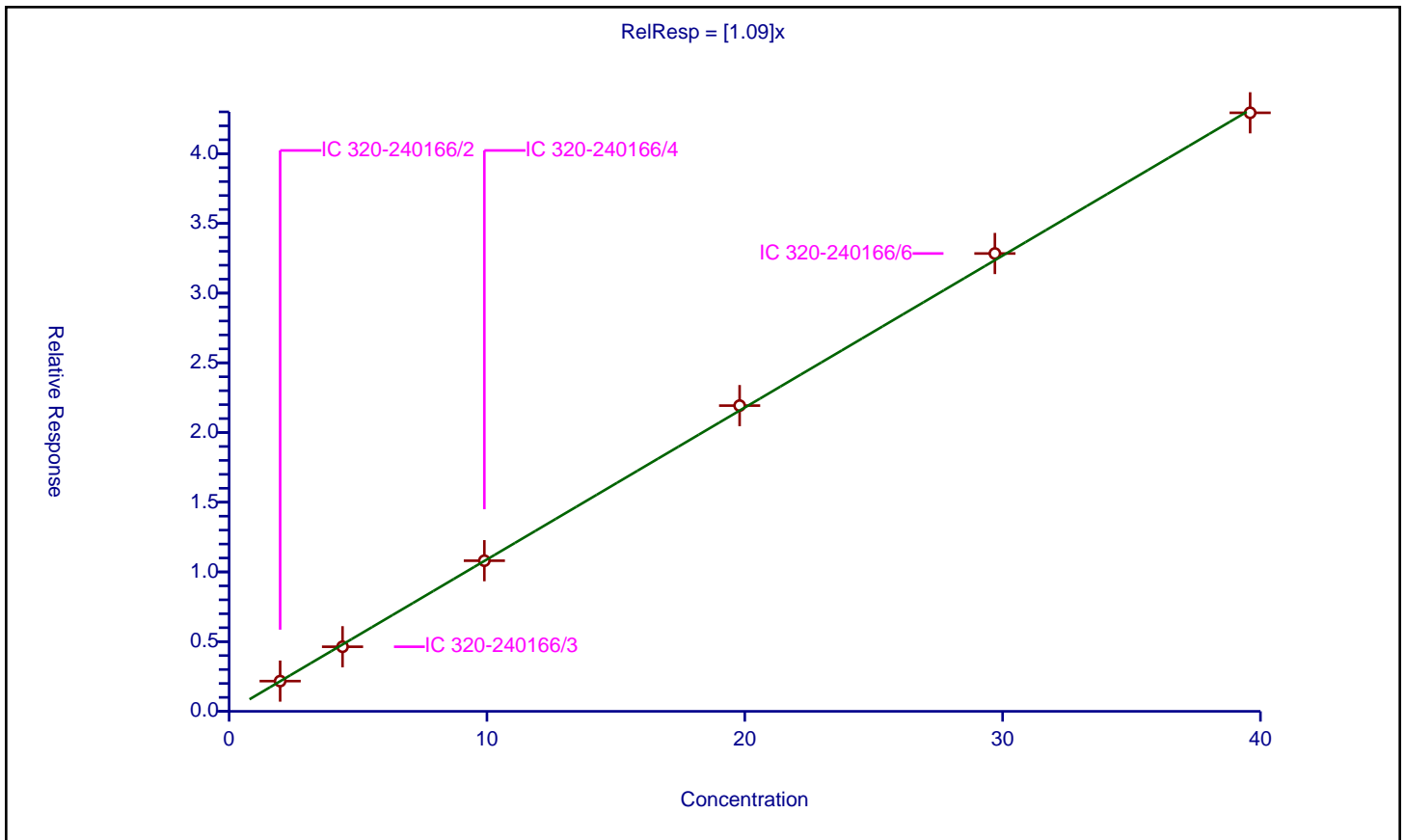
/ Perfluorooctanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.09

Error Coefficients	
Standard Error:	2610000
Relative Standard Error:	1.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	1.98	2.168821	10.0	1026304.0	1.095364	Y
2	IC 320-240166/3	4.4	4.632865	10.0	1041660.0	1.052924	Y
3	IC 320-240166/4	9.9	10.80555	10.0	958352.0	1.09147	Y
4	IC 320-240166/5	19.8	21.929159	10.0	1045953.0	1.107533	Y
5	IC 320-240166/6	29.7	32.841263	10.0	944777.0	1.105766	Y
6	IC 320-240166/7	39.6	42.935185	10.0	981996.0	1.084222	Y



Calibration

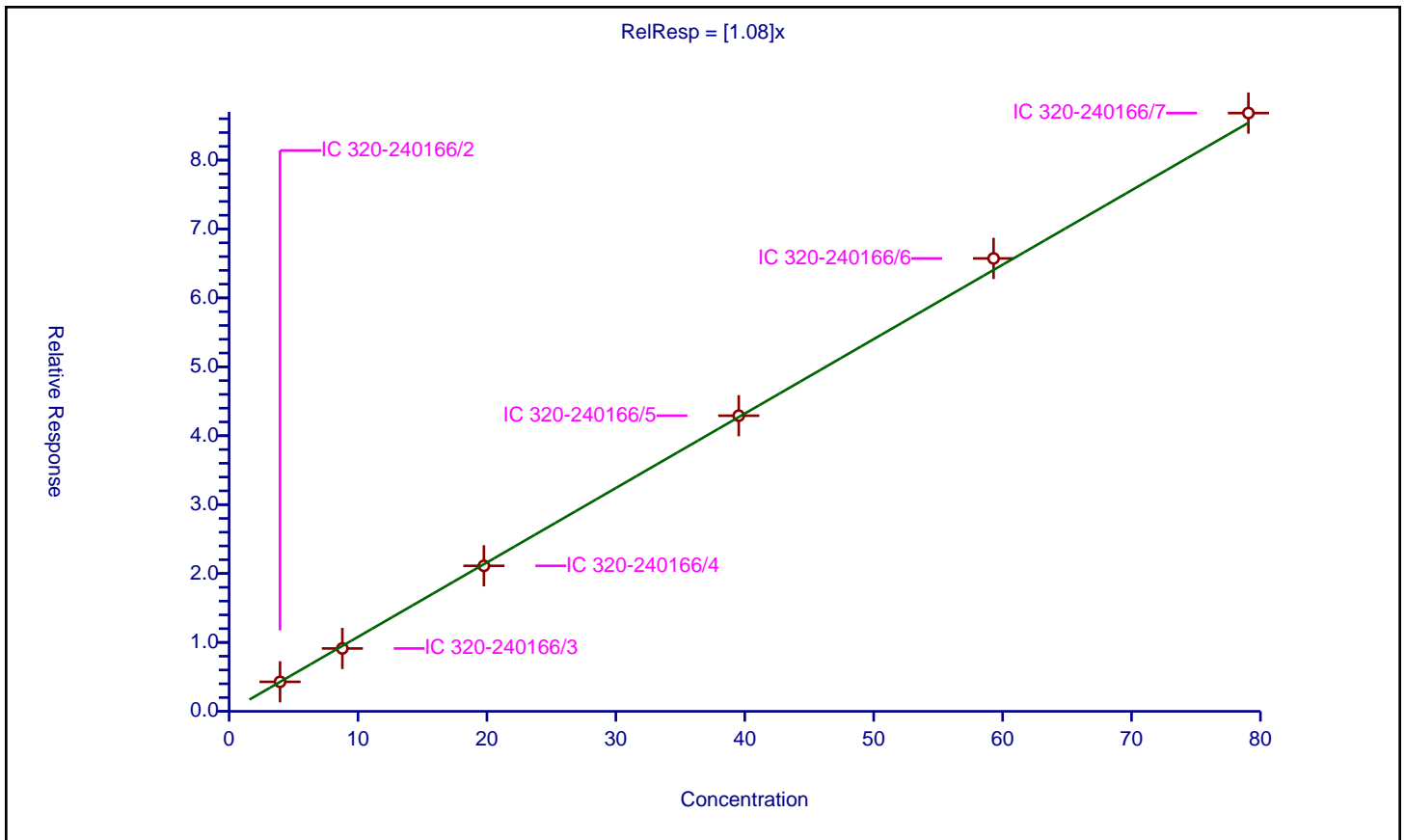
/ Perfluorooctane sulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.08

Error Coefficients	
Standard Error:	4560000
Relative Standard Error:	2.3
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	3.95328	4.281386	28.68	2551191.0	1.082996	Y
2	IC 320-240166/3	8.785067	9.124485	28.68	2496049.0	1.038636	Y
3	IC 320-240166/4	19.7664	21.117058	28.68	2296598.0	1.068331	Y
4	IC 320-240166/5	39.5328	42.904927	28.68	2694948.0	1.085299	Y
5	IC 320-240166/6	59.2992	65.729144	28.68	2294155.0	1.108432	Y
6	IC 320-240166/7	79.0656	86.827243	28.68	2483425.0	1.098167	Y



Calibration

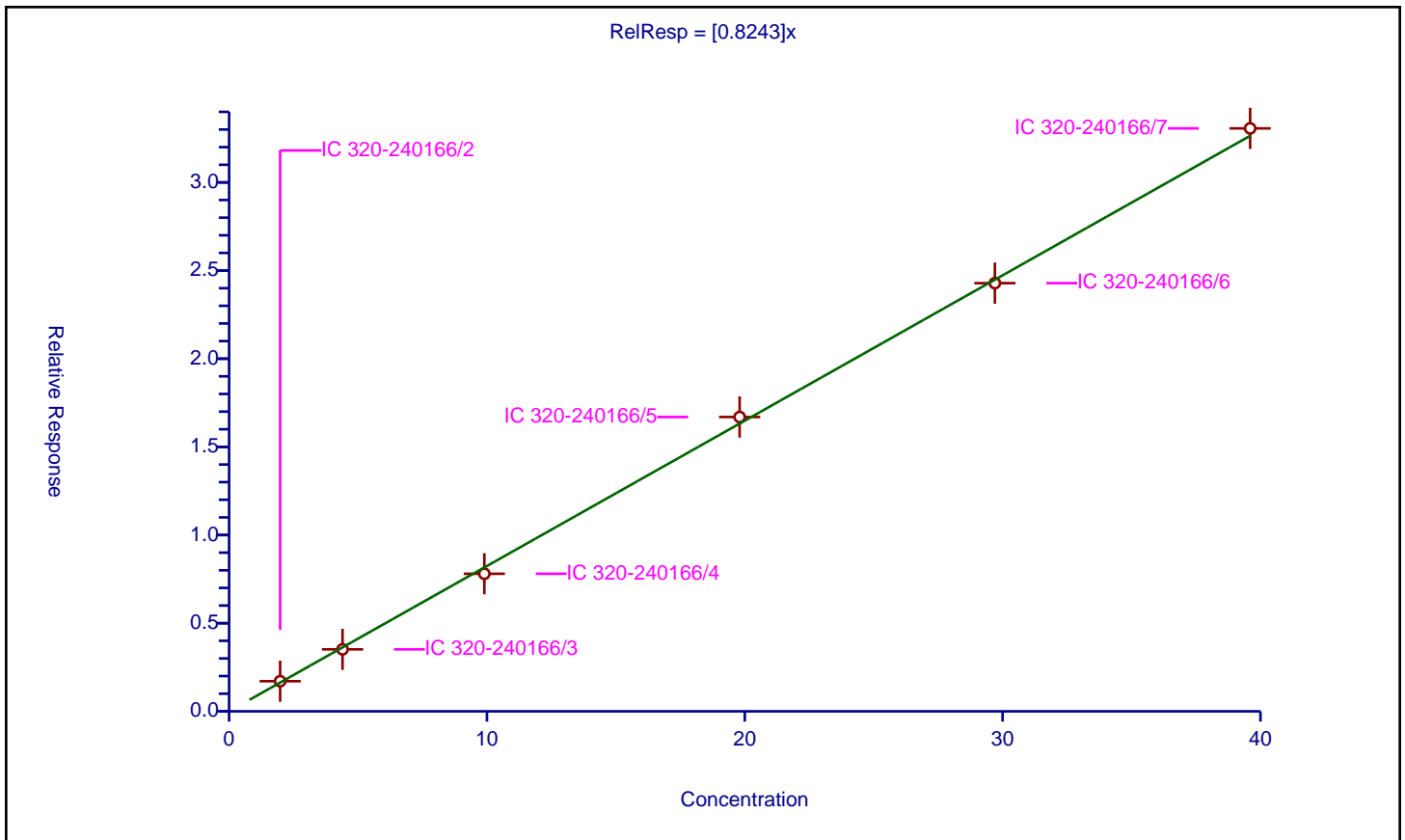
/ Perfluorononanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: ISTD
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.8243

Error Coefficients	
Standard Error:	1980000
Relative Standard Error:	3.4
Correlation Coefficient:	0.995
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	1.98	1.708753	10.0	1026304.0	0.863007	Y
2	IC 320-240166/3	4.4	3.515581	10.0	1041660.0	0.798996	Y
3	IC 320-240166/4	9.9	7.802446	10.0	958352.0	0.788126	Y
4	IC 320-240166/5	19.8	16.692968	10.0	1045953.0	0.843079	Y
5	IC 320-240166/6	29.7	24.286578	10.0	944777.0	0.81773	Y
6	IC 320-240166/7	39.6	33.064615	10.0	981996.0	0.834965	Y



Calibration

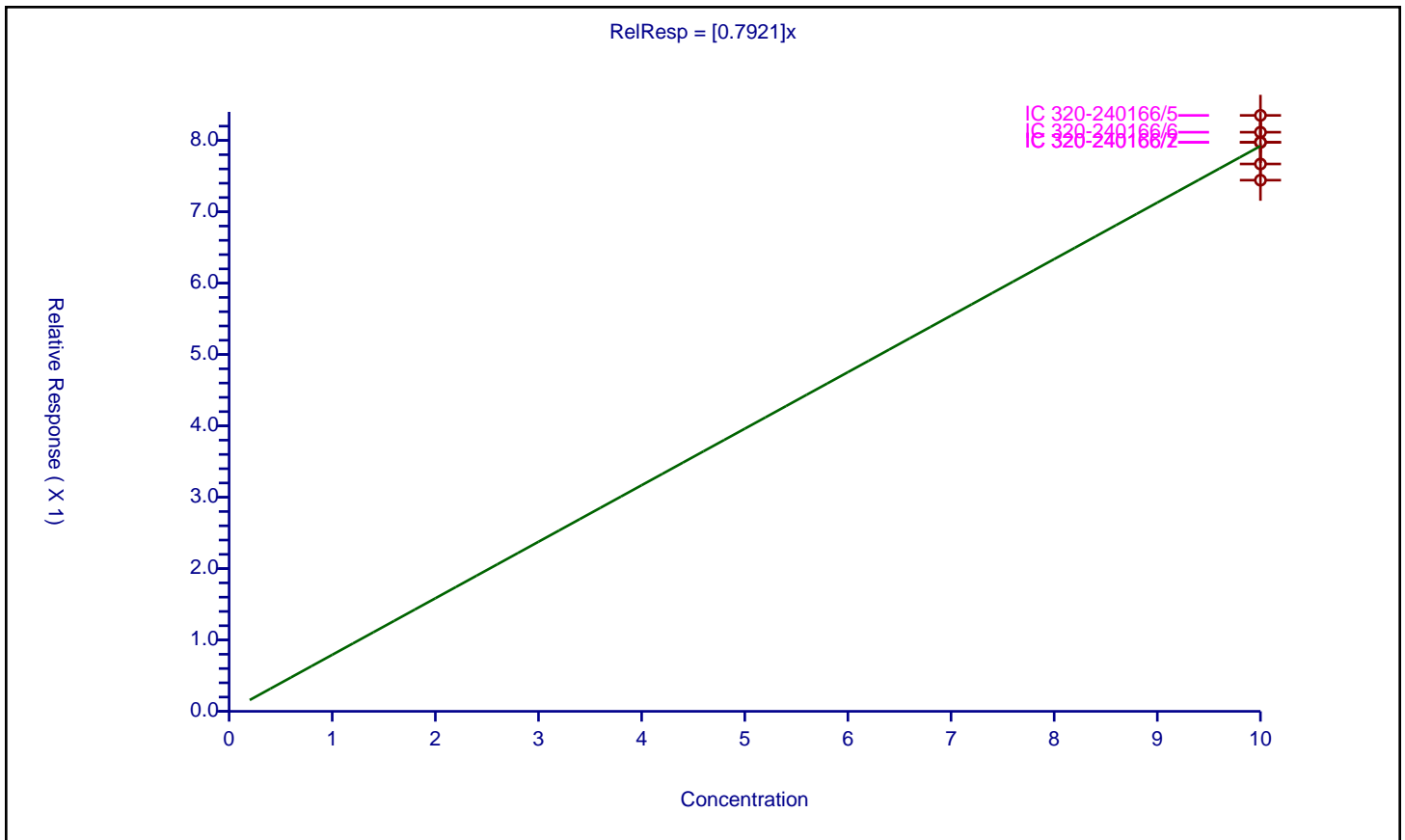
/ 13C2 PFDA

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: ISTD
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.7921

Error Coefficients	
Standard Error:	869000
Relative Standard Error:	4.1
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-240166/2	10.0	7.972277	10.0	1026304.0	0.797228	Y
2	IC 320-240166/3	10.0	7.442985	10.0	1041660.0	0.744299	Y
3	IC 320-240166/4	10.0	7.670209	10.0	958352.0	0.767021	Y
4	IC 320-240166/5	10.0	8.35092	10.0	1045953.0	0.835092	Y
5	IC 320-240166/6	10.0	8.115248	10.0	944777.0	0.811525	Y
6	IC 320-240166/7	10.0	7.975654	10.0	981996.0	0.797565	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240166/9 Calibration Date: 08/15/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.167		20.4	20.0	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.033		2.11	2.16	-2.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.611		6.54	6.72	-2.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.020		4.12	4.40	-6.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.039		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8023		4.28	4.40	-2.7	50.0
13C2 PFHxA	Ave	1.039	1.002		9.64	10.0	-3.6	30.0
13C2 PFDA	Ave	0.7921	0.7658		9.67	10.0	-3.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_010.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 15-Aug-2018 18:53:52 ALS Bottle#: 2 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:40:39 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 19:08:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	1945320	20.4		4245	
298.90 > 99.00	1.381	1.381	0.0	1.000	1331599		1.46(0.00-0.00)	1955	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1009111	9.64		8281	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	901941	6.54		565	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	224502	2.11		42.5	M
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		1006603	10.0		8231	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	451556	4.12		60.4	
413.00 > 169.00	1.844	1.850	-0.006	1.000	246955		1.83(0.00-0.00)	568	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2388436	28.7		5214	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	760165	8.45		1715	
499.00 > 99.00	2.102	2.109	-0.007	1.000	165858		4.58(0.00-0.00)	275	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	355358	4.28		52.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.271	-0.003	1.000	770892	9.67		5141	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00022

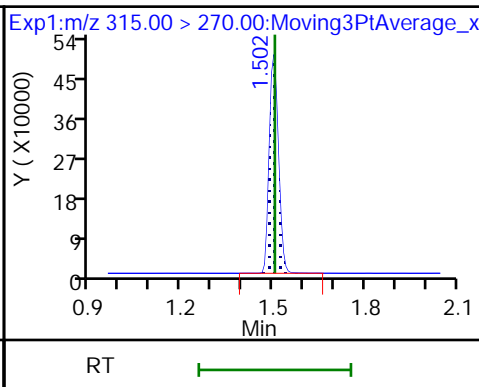
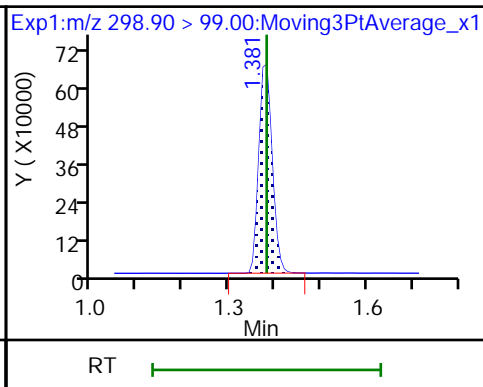
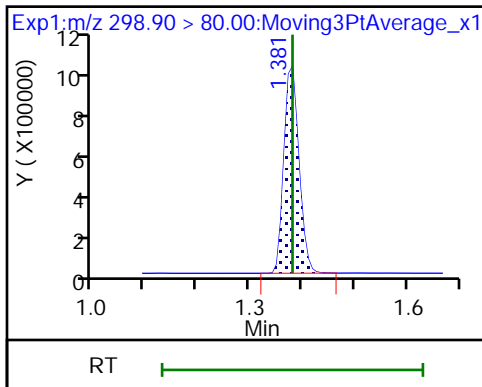
Amount Added: 1.00

Units: mL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

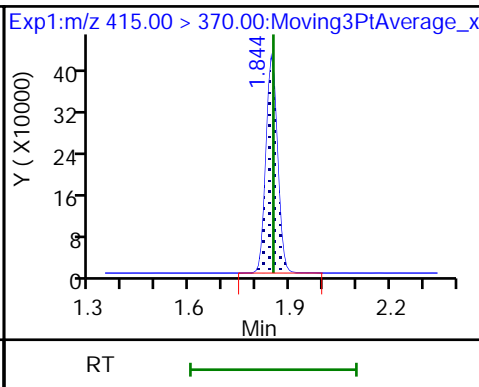
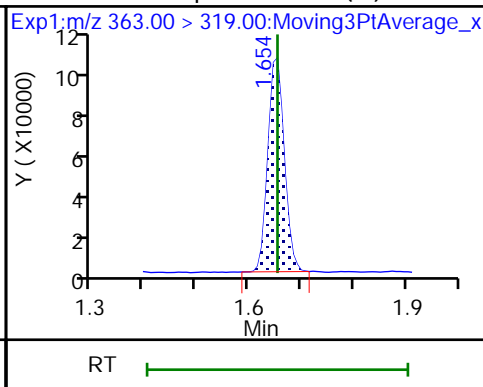
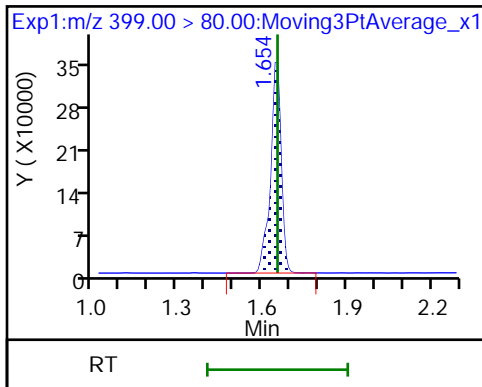
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid (M)

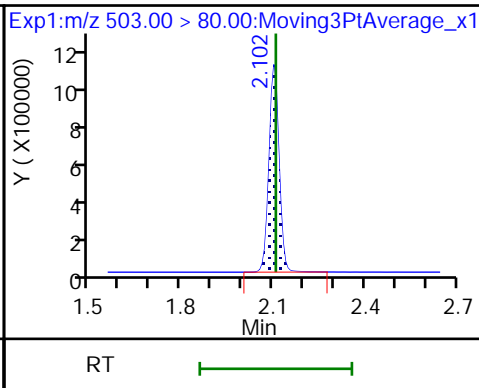
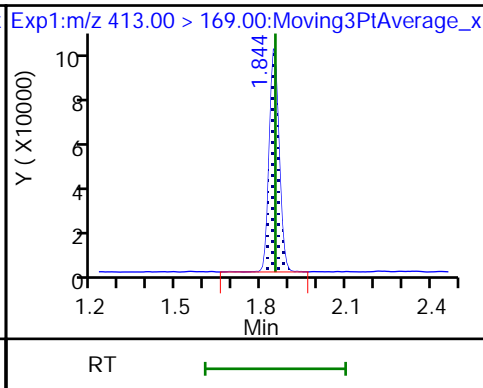
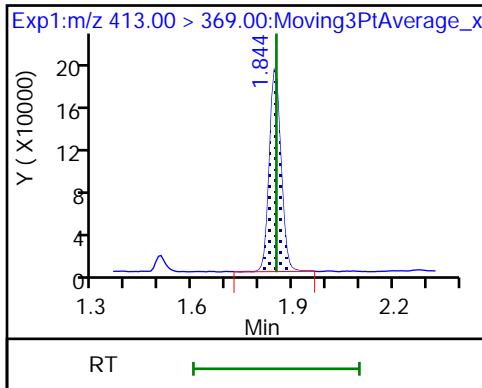
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

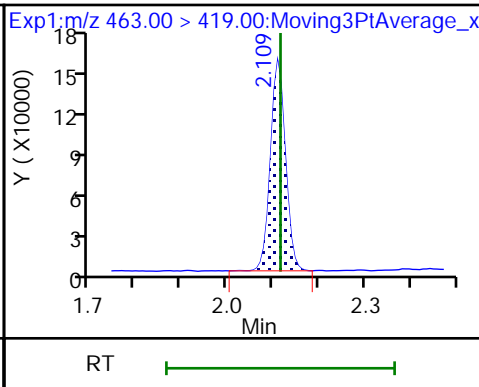
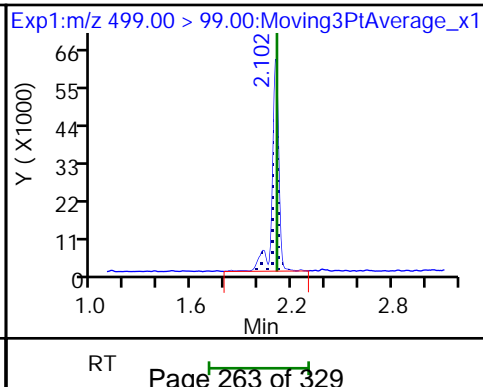
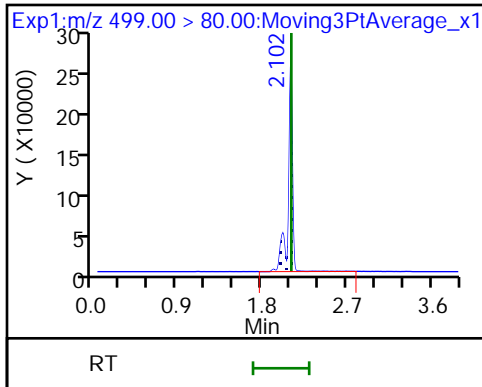
* 7 13C4 PFOS



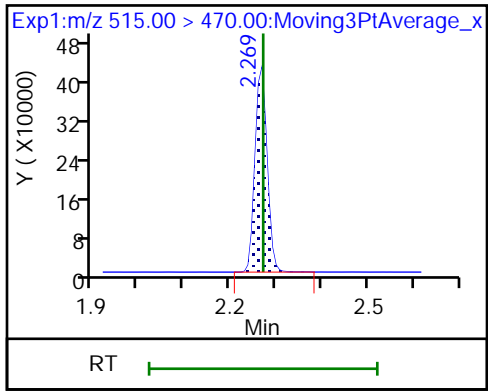
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

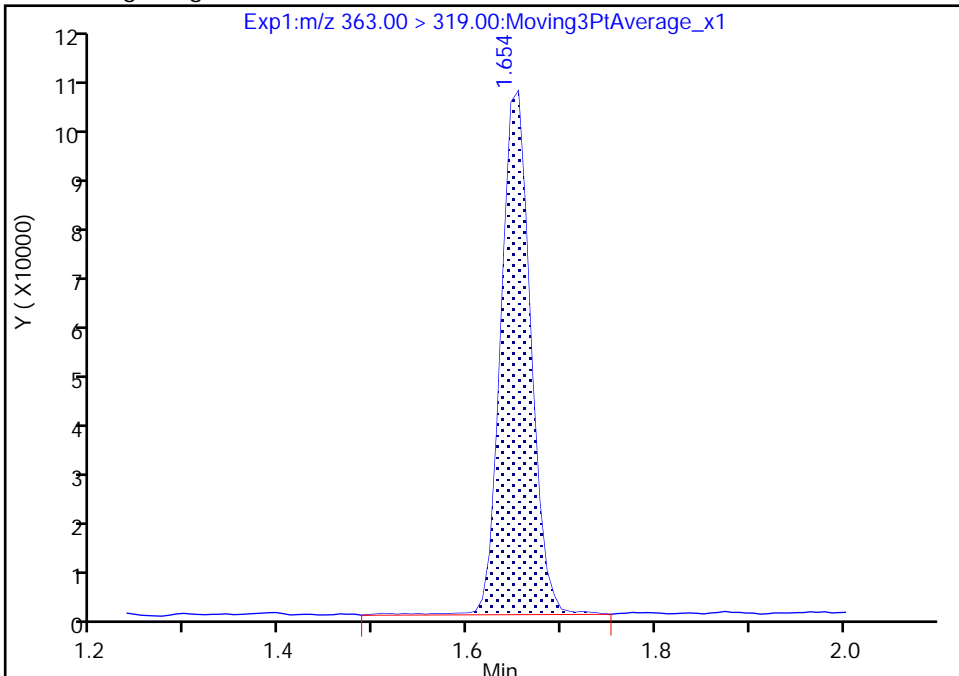
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Injection Date: 15-Aug-2018 18:53:52 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL
Column: Detector EXP1

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

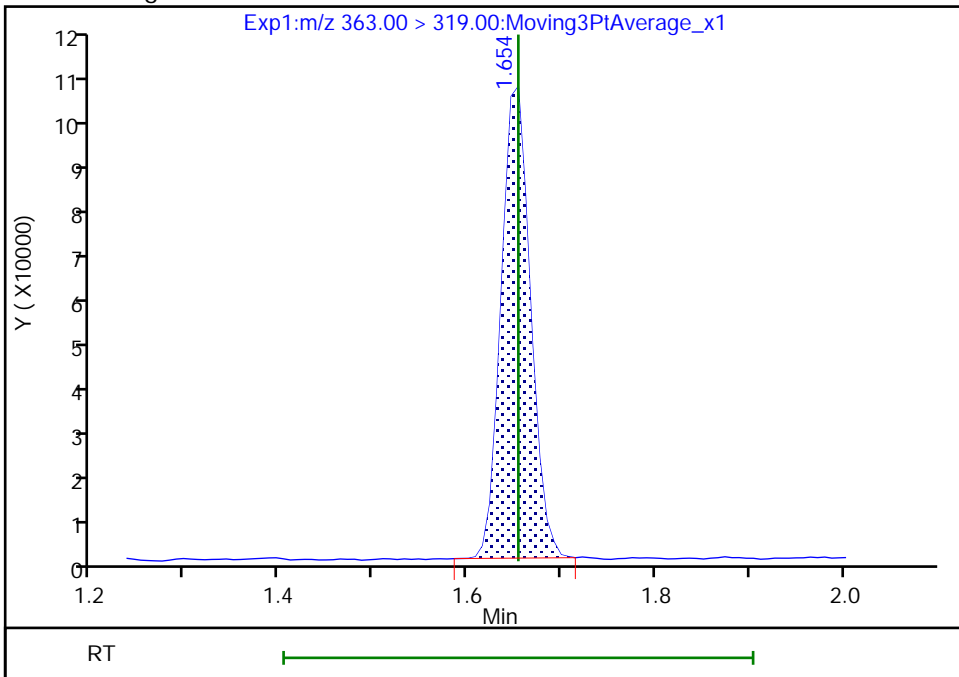
RT: 1.65
Area: 229068
Amount: 2.151895
Amount Units: ng/ml

Processing Integration Results



RT: 1.65
Area: 224502
Amount: 2.109002
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 15-Aug-2018 19:08:41
Audit Action: Manually Integrated

Audit Reason: Baseline
Page 265 of 329

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: ICV 320-240166/11 Calibration Date: 08/15/2018 19:03
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.005		87.9	100	-12.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9536		9.02	10.0	-9.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.530		18.6	20.2	-7.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	0.8802		16.3	20.2	-19.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	0.9603		17.9	20.2	-11.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7757		19.0	20.2	-5.9	30.0
13C2 PFHxA	Ave	1.039	1.022		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7921	0.7952		10.0	10.0	0.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_012.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 15-Aug-2018 19:03:12 ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Aug-2018 08:40:40 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK001

First Level Reviewer: roycea Date: 15-Aug-2018 19:11:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	8951923	87.9		13197	
298.90 > 99.00	1.373	1.381	-0.008	0.995	6353811		1.41(0.00-0.00)	8112	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.505	-0.003	1.000	1044443	9.83		9288	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.646	1.654	-0.008	1.000	2744582	18.6		1806	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.646	1.654	-0.008	1.000	974881	9.02		176	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.850	-0.006		1022273	10.0		7889	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.850	-0.006	1.000	1814661	16.3		244	
413.00 > 169.00	1.844	1.850	-0.006	1.000	963434		1.88(0.00-0.00)	2245	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.108	-0.006		2551643	28.7		5068	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1723342	17.9		2659	
499.00 > 99.00	2.102	2.109	-0.007	1.000	346840		4.97(0.00-0.00)	526	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.116	-0.007	1.000	1598983	19.0		227	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.271	-0.010	1.000	812885	10.0		5447	

Reagents:

LC537-ICV_00032

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_012.d

Injection Date: 15-Aug-2018 19:03:12

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

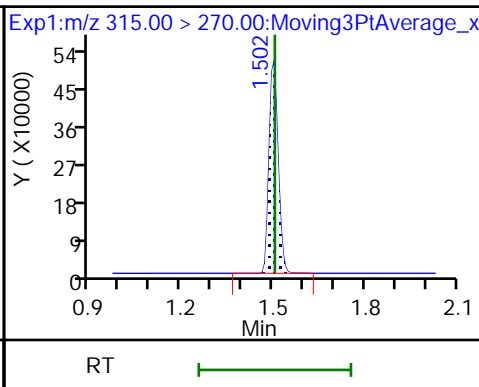
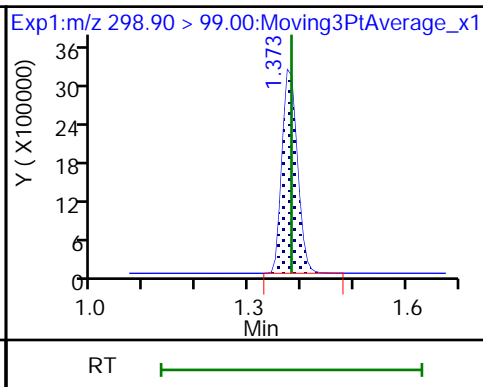
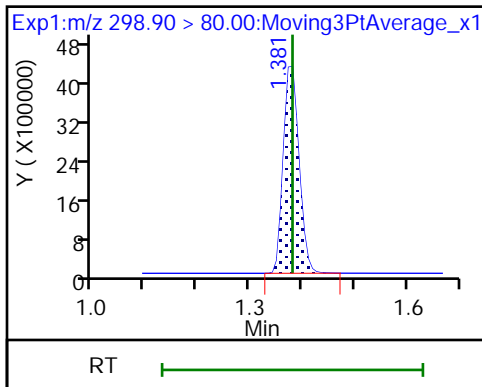
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

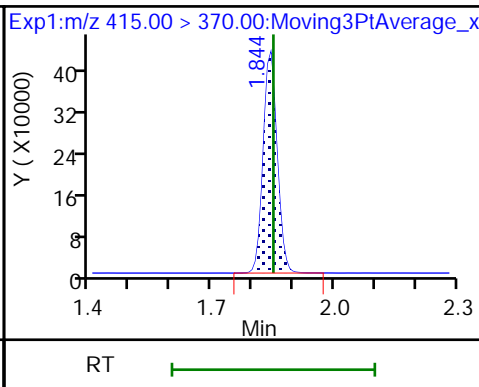
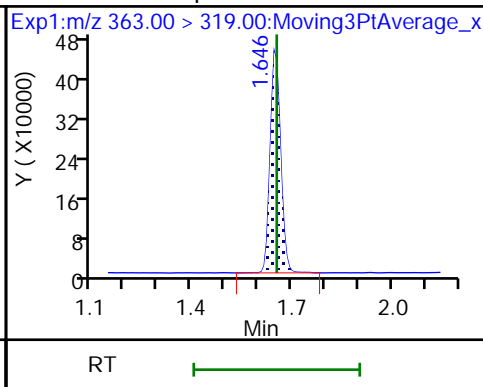
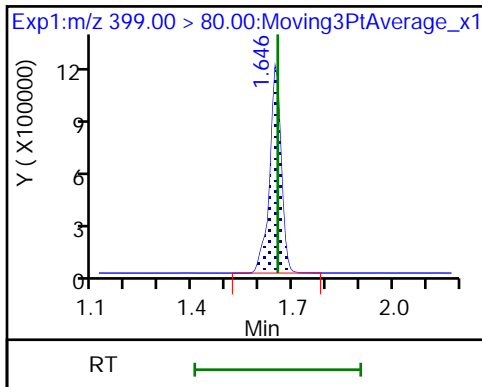
\$ 2 13C2 PFHxA



3 Perfluorohexanesulfonic acid

4 Perfluoroheptanoic acid

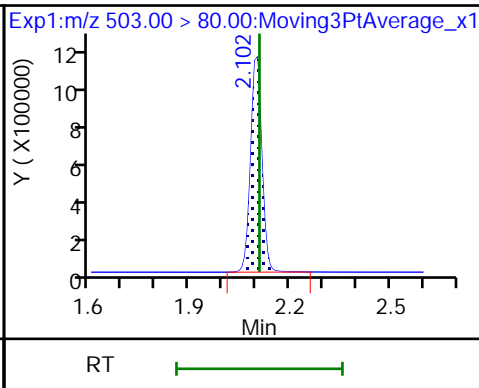
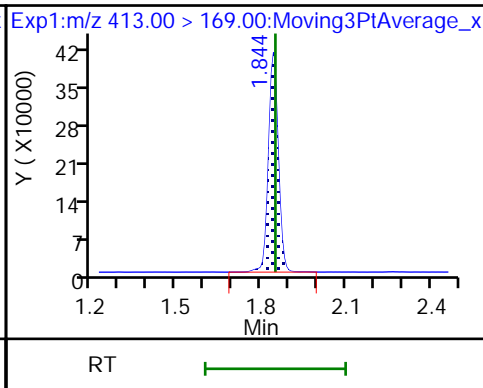
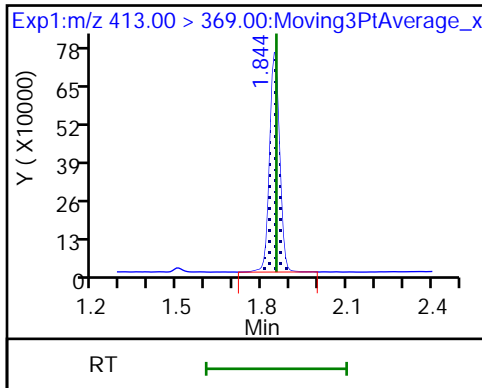
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

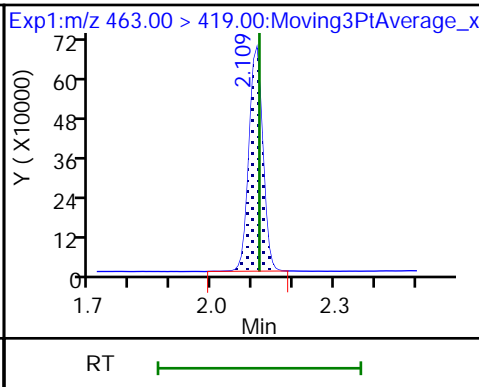
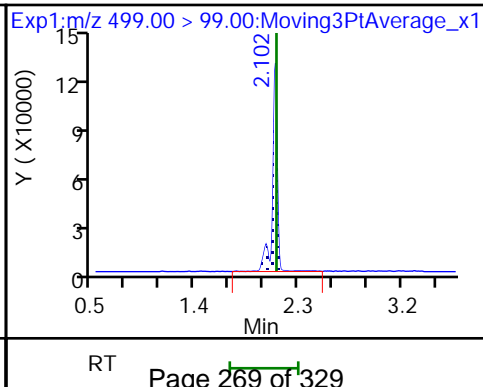
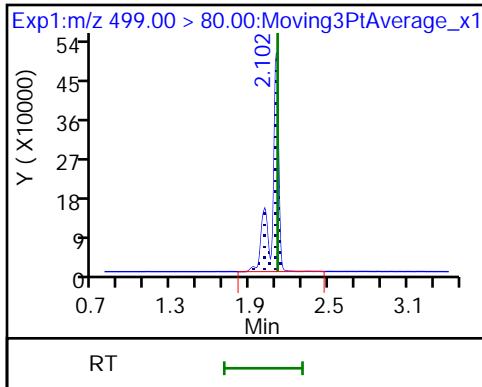
* 7 13C4 PFOS



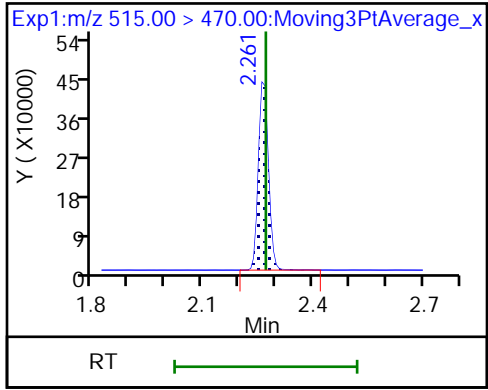
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240968/1 Calibration Date: 08/20/2018 16:19
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.194		20.9	20.0	4.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9846		2.01	2.16	-6.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.592		6.46	6.72	-3.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.015		4.10	4.40	-6.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.035		8.42	8.79	-4.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7441		3.97	4.40	-9.7	50.0
13C2 PFHxA	Ave	1.039	0.9672		9.31	10.0	-6.9	30.0
13C2 PFDA	Ave	0.7921	0.7090		8.95	10.0	-10.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_003.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 20-Aug-2018 16:19:37 ALS Bottle#: 2 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 10:01:01 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2090256	20.9		6375	
298.90 > 99.00	1.381	1.381	0.0	1.000	1473779		1.42(0.00-0.00)	2246	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.502	0.008	1.000	1045461	9.31		8820	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.654	0.008	1.000	229893	2.01		49.1	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.654	0.008	1.000	935799	6.46		649	
* 6 13C2-PFOA									
415.00 > 370.00	1.859	1.844	0.015		1080920	10.0		8541	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.859	1.844	0.015	1.000	482683	4.10		60.2	
413.00 > 169.00	1.859	1.844	0.015	1.000	264630		1.82(0.00-0.00)	518	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.094	0.015		2508240	28.7		5202	
9 Perfluorononanoic acid									
463.00 > 419.00	2.124	2.102	0.022	1.000	353896	3.97		54.3	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.117	2.109	0.008	1.000	795391	8.42		1527	
499.00 > 99.00	2.109	2.109	0.0	0.996	172131		4.62(0.00-0.00)	251	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.261	0.007	1.000	766318	8.95		5120	

Reagents:

LC537-L2_00022 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_003.d

Injection Date: 20-Aug-2018 16:19:37

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

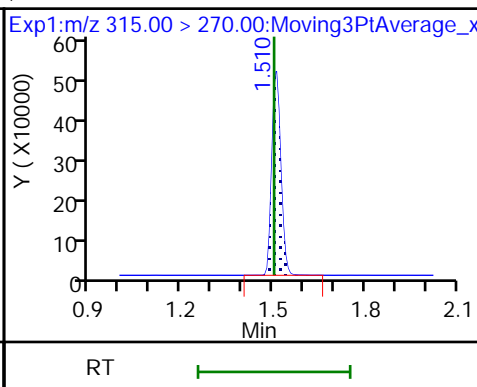
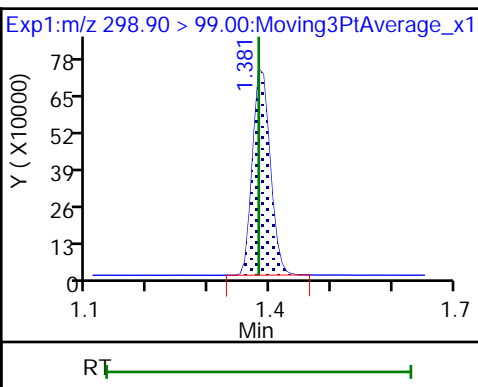
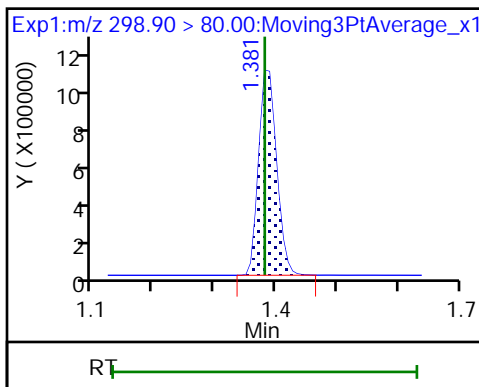
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

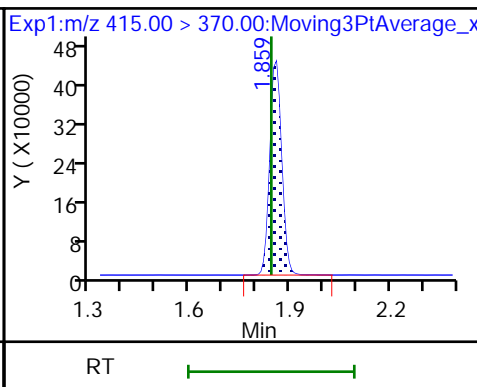
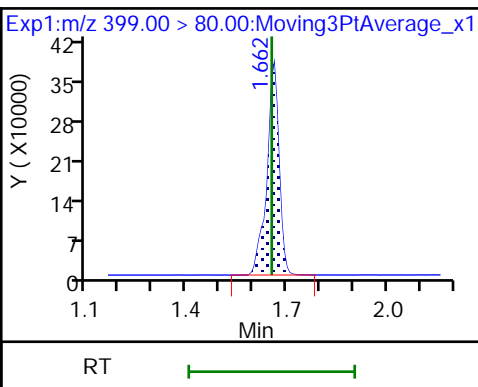
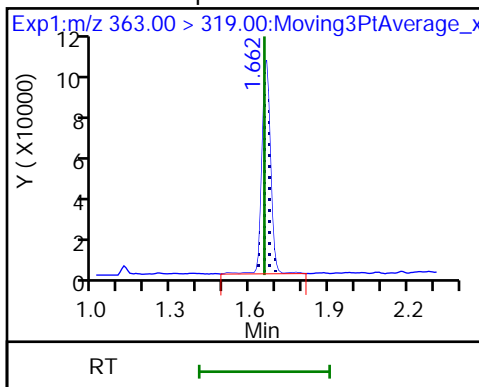
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

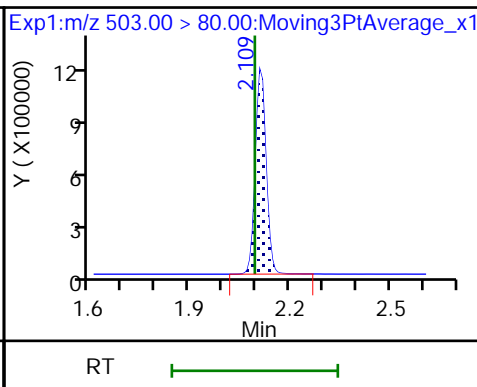
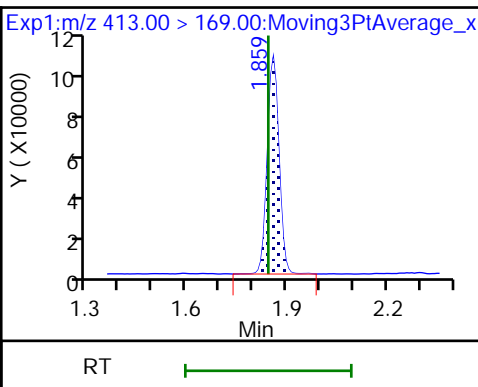
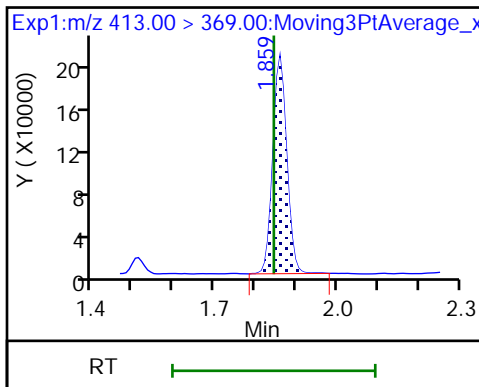
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

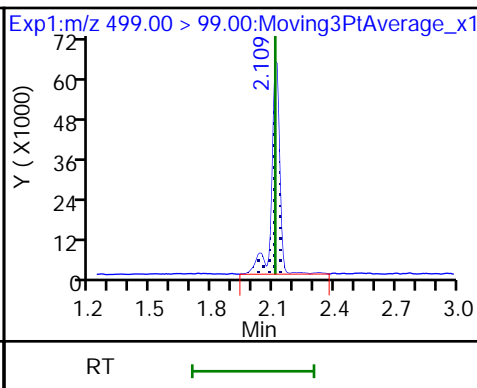
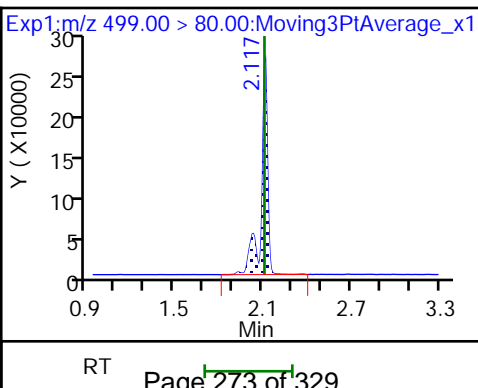
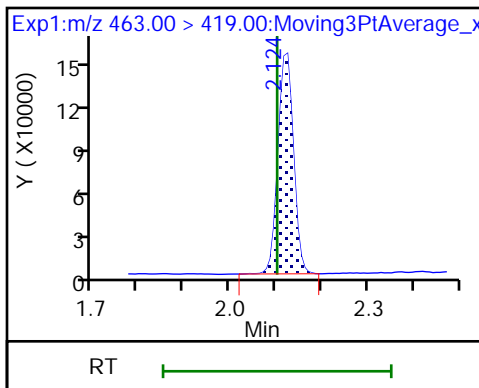
* 7 13C4 PFOS



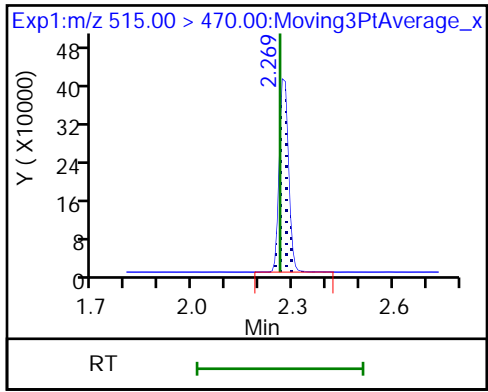
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240970/10 Calibration Date: 08/20/2018 17:01
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.065		126	135	-7.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.042		14.4	14.6	-1.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.682		46.1	45.4	1.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.089		29.7	29.7	-0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.067		58.6	59.3	-1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8058		29.0	29.7	-2.3	30.0
13C2 PFHxA	Ave	1.039	1.071		10.3	10.0	3.0	30.0
13C2 PFDA	Ave	0.7921	0.7778		9.82	10.0	-1.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_012.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Aug-2018 17:01:41 ALS Bottle#: 5 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 10:01:20 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	12648030	125.7		17497	
298.90 > 99.00	1.388	1.388	0.0	1.000	9329261		1.36(0.00-0.00)	10462	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	1067810	10.3		10579	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.662	0.0	1.000	1514439	14.4		347	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.662	0.0	1.000	6710504	46.1		3744	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		997051	10.0		8513	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	3223392	29.7		397	
413.00 > 169.00	1.851	1.851	0.0	1.000	1724644		1.87(0.00-0.00)	3350	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2521958	28.7		5859	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	5565225	58.6		7570	
499.00 > 99.00	2.109	2.109	0.0	1.000	1218417		4.57(0.00-0.00)	1610	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	2386022	29.0		333	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	775460	9.82		4914	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_012.d

Injection Date: 20-Aug-2018 17:01:41

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

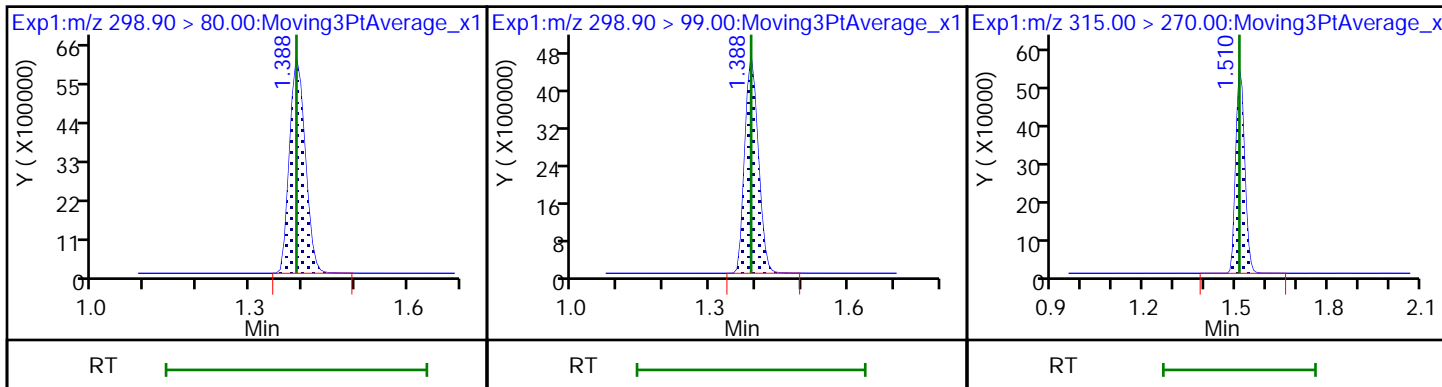
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

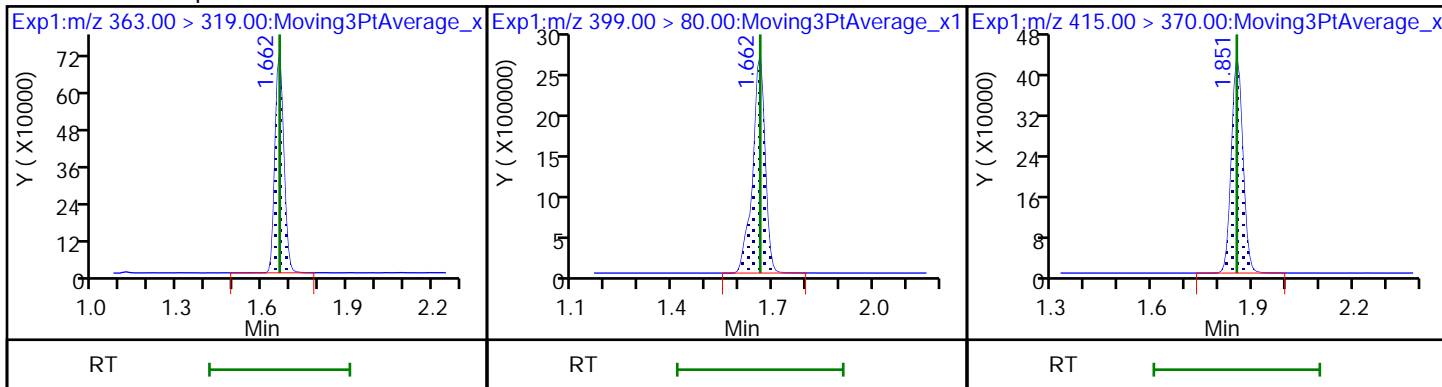
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

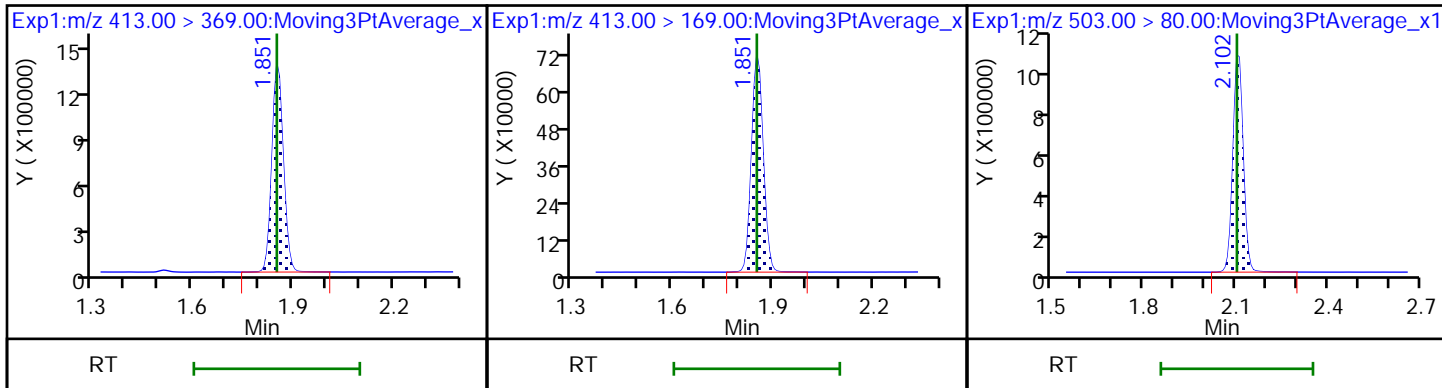
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

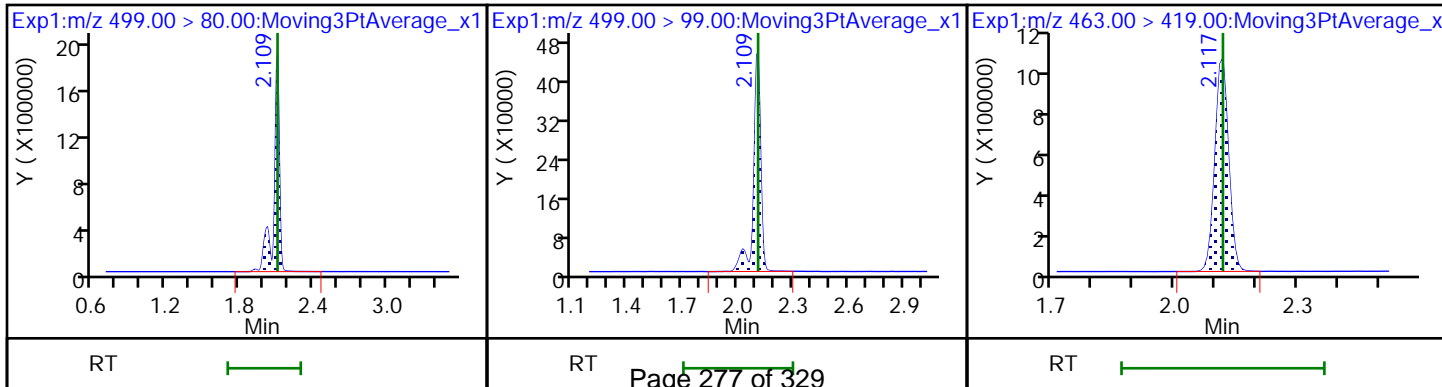
* 7 13C4 PFOS



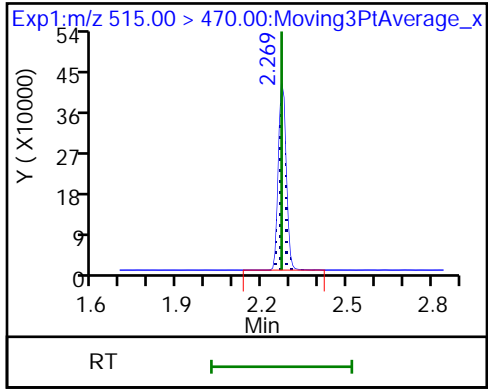
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240970/22 Calibration Date: 08/20/2018 17:57
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.220		48.0	45.0	6.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.057		4.86	4.86	-0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.667		15.2	15.1	0.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.067		9.70	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.060		19.4	19.8	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7989		9.59	9.90	-3.1	30.0
13C2 PFHxA	Ave	1.039	1.019		9.81	10.0	-1.9	30.0
13C2 PFDA	Ave	0.7921	0.7651		9.66	10.0	-3.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240971/22 Calibration Date: 08/20/2018 17:57
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.220		48.0	45.0	6.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.057		4.86	4.86	-0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.667		15.2	15.1	0.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.067		9.70	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.060		19.4	19.8	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7989		9.59	9.90	-3.1	30.0
13C2 PFHxA	Ave	1.039	1.019		9.81	10.0	-1.9	30.0
13C2 PFDA	Ave	0.7921	0.7651		9.66	10.0	-3.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_024.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Aug-2018 17:57:47 ALS Bottle#: 3 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	4780483	48.0		11654	
298.90 > 99.00	1.388	1.388	0.0	1.000	3333813		1.43(0.00-0.00)	4668	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	1021269	9.81		9393	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.662	0.0	1.000	514813	4.86		118	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.662	0.0	1.000	2192960	15.2		1275	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1001941	10.0		7246	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	1058868	9.70		135	
413.00 > 169.00	1.851	1.851	0.0	1.000	567451		1.87(0.00-0.00)	1230	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.109	0.0		2495250	28.7		5171	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1822803	19.4		2987	
499.00 > 99.00	2.109	2.109	0.0	1.000	385329		4.73(0.00-0.00)	531	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	792429	9.59		116	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	766600	9.66		4846	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_024.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Aug-2018 17:57:47 ALS Bottle#: 3 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	4780483	48.0		11654	
298.90 > 99.00	1.388	1.388	0.0	1.000	3333813		1.43(0.00-0.00)	4668	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	1021269	9.81		9393	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.662	0.0	1.000	514813	4.86		118	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.662	0.0	1.000	2192960	15.2		1275	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1001941	10.0		7246	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	1058868	9.70		135	
413.00 > 169.00	1.851	1.851	0.0	1.000	567451		1.87(0.00-0.00)	1230	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.109	0.0		2495250	28.7		5171	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	1822803	19.4		2987	
499.00 > 99.00	2.109	2.109	0.0	1.000	385329		4.73(0.00-0.00)	531	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	792429	9.59		116	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	766600	9.66		4846	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_024.d

Injection Date: 20-Aug-2018 17:57:47

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

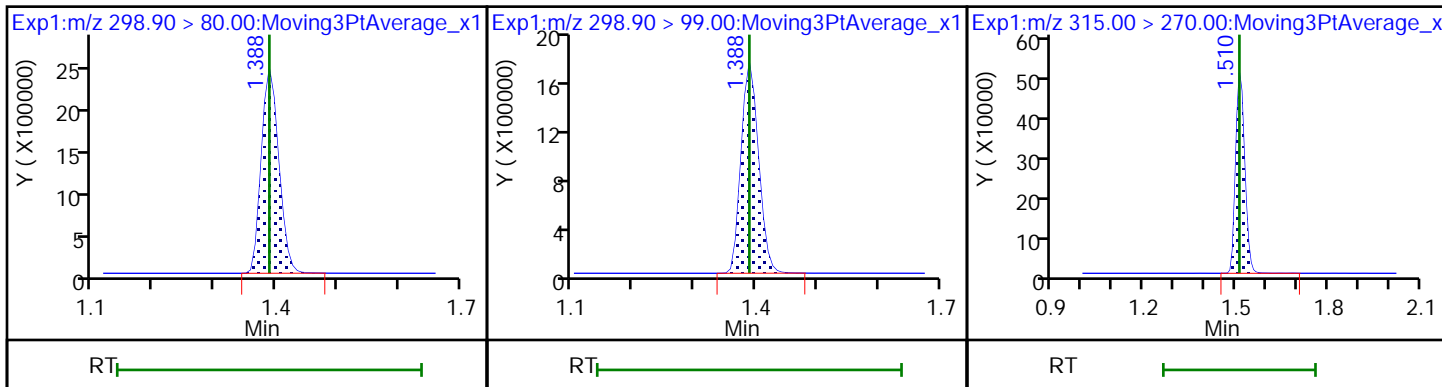
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

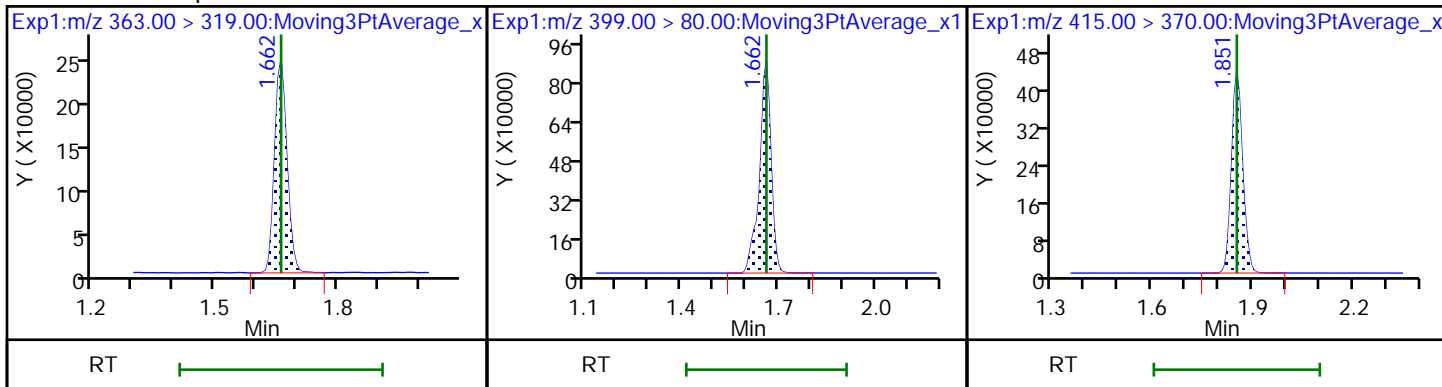
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

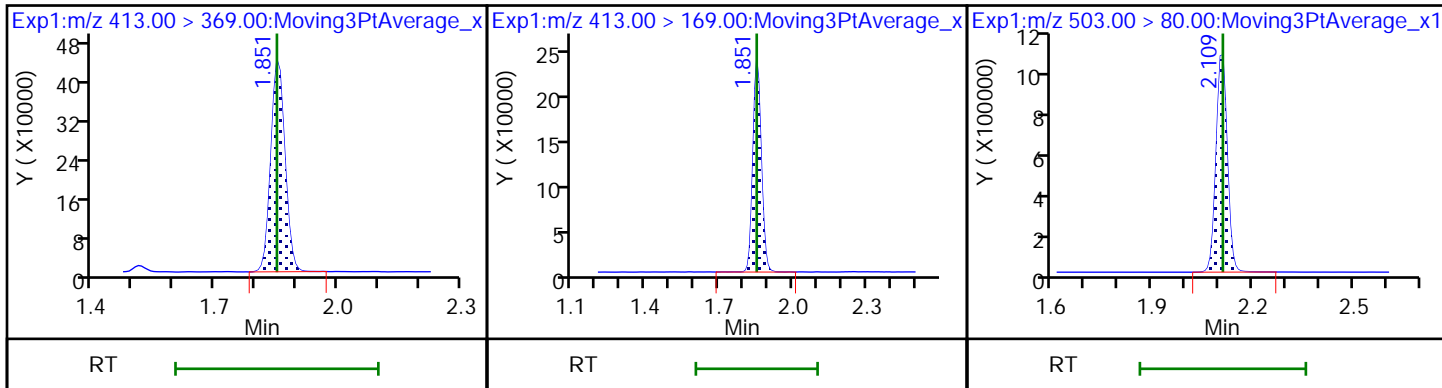
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

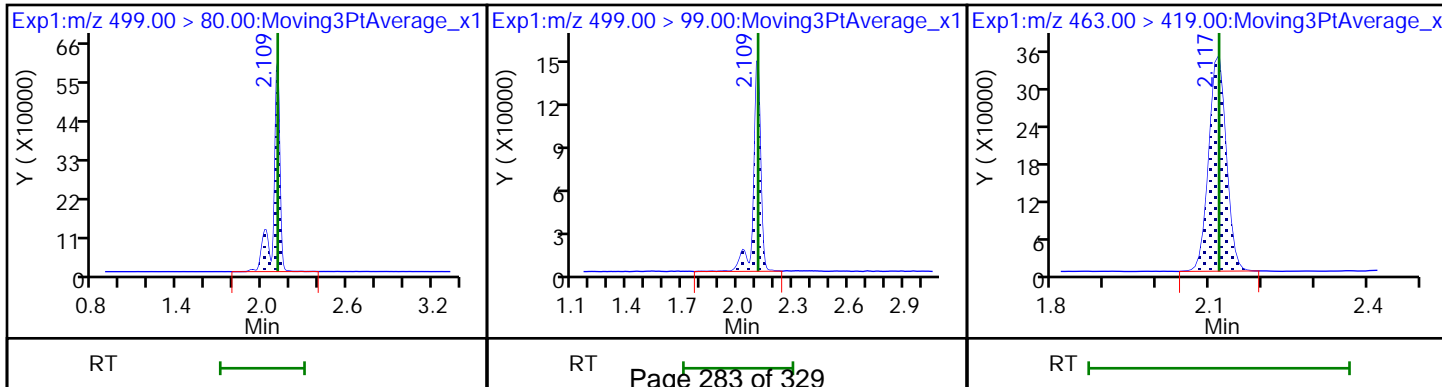
* 7 13C4 PFOS



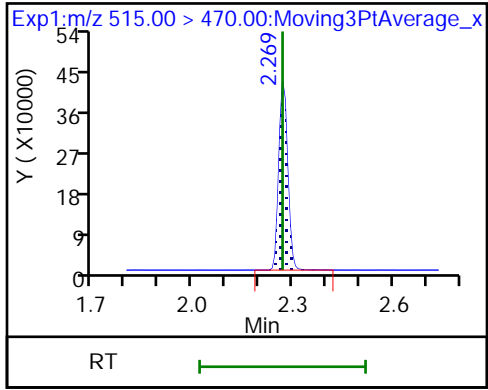
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_024.d

Injection Date: 20-Aug-2018 17:57:47

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

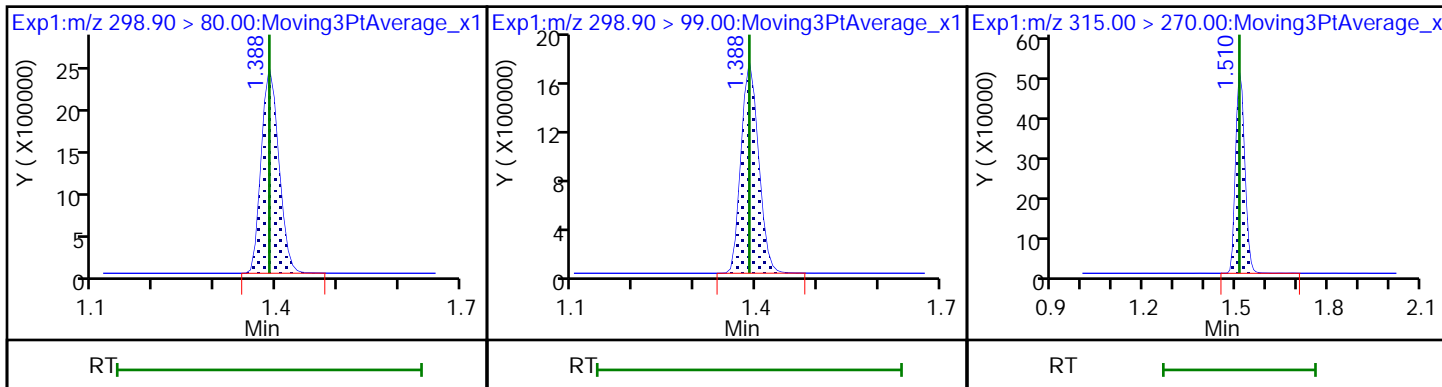
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

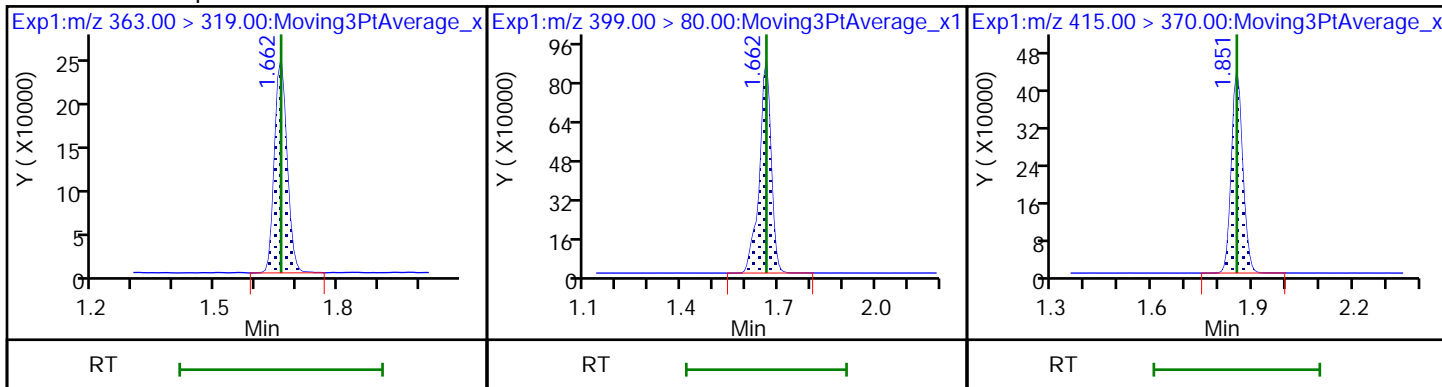
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

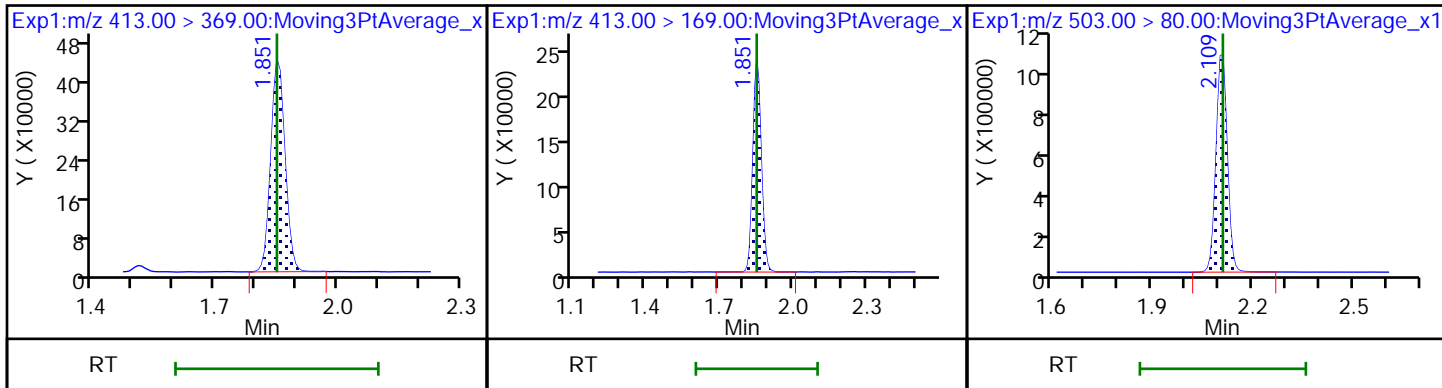
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

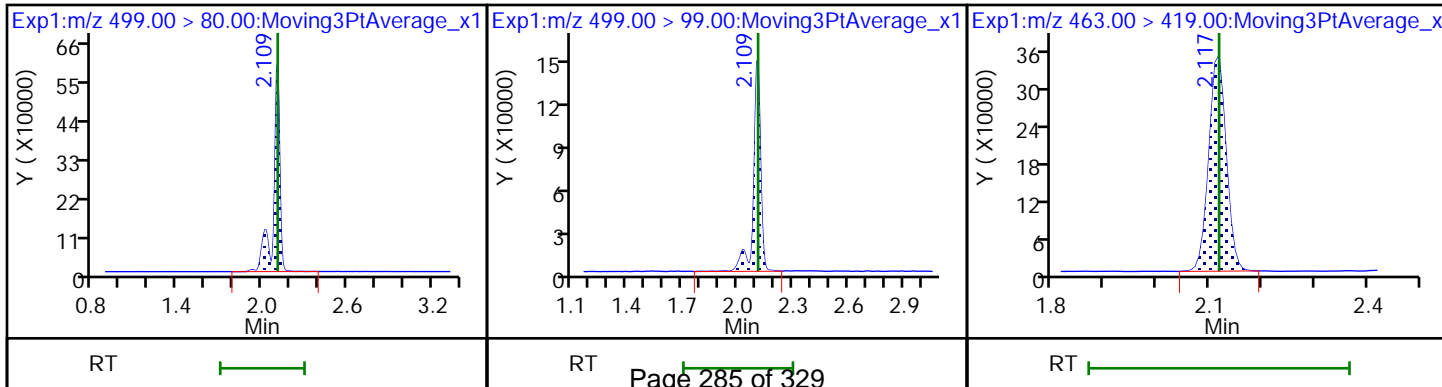
* 7 13C4 PFOS



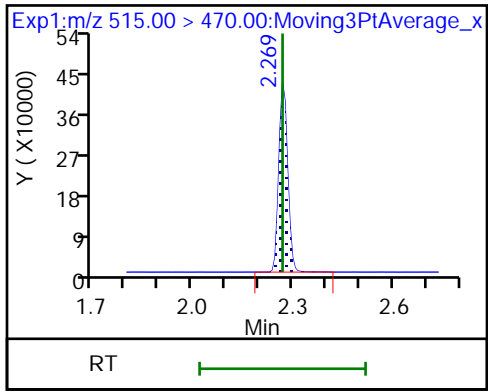
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240971/34 Calibration Date: 08/20/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.084		128	135	-5.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.048		14.4	14.6	-0.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.708		46.8	45.4	3.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.080		29.4	29.7	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.095		60.1	59.3	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7927		28.6	29.7	-3.8	30.0
13C2 PFHxA	Ave	1.039	1.064		10.2	10.0	2.4	30.0
13C2 PFDA	Ave	0.7921	0.7887		9.96	10.0	-0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240972/34 Calibration Date: 08/20/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.084		128	135	-5.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.048		14.4	14.6	-0.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.708		46.8	45.4	3.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.080		29.4	29.7	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.095		60.1	59.3	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7927		28.6	29.7	-3.8	30.0
13C2 PFHxA	Ave	1.039	1.064		10.2	10.0	2.4	30.0
13C2 PFDA	Ave	0.7921	0.7887		9.96	10.0	-0.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_036.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Aug-2018 18:53:52 ALS Bottle#: 5 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	12444344	127.9		17140	
298.90 > 99.00	1.381	1.381	0.0	1.000	9098347		1.37(0.00-0.00)	10045	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.502	0.0	1.000	1023808	10.2		10019	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1470222	14.4		335	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	6587917	46.8		3716	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.844	0.0		962352	10.0		9053	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.844	0.0	1.000	3087793	29.4		401	
413.00 > 169.00	1.844	1.844	0.0	1.000	1697665		1.82(0.00-0.00)	3535	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.094	0.0		2437811	28.7		5072	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.109	-0.015	1.000	5520841	60.1		6737	
499.00 > 99.00	2.094	2.109	-0.015	1.000	1165133		4.74(0.00-0.00)	1638	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.102	0.0	1.000	2265789	28.6		293	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	758971	9.96		5180	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_036.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Aug-2018 18:53:52 ALS Bottle#: 5 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	12444344	127.9		17140	
298.90 > 99.00	1.381	1.381	0.0	1.000	9098347		1.37(0.00-0.00)	10045	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.502	0.0	1.000	1023808	10.2		10019	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	1470222	14.4		335	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	6587917	46.8		3716	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.844	0.0		962352	10.0		9053	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.844	0.0	1.000	3087793	29.4		401	
413.00 > 169.00	1.844	1.844	0.0	1.000	1697665		1.82(0.00-0.00)	3535	
* 7 13C4 PFOS									
503.00 > 80.00	2.094	2.094	0.0		2437811	28.7		5072	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.094	2.109	-0.015	1.000	5520841	60.1		6737	
499.00 > 99.00	2.094	2.109	-0.015	1.000	1165133		4.74(0.00-0.00)	1638	
9 Perfluorononanoic acid									
463.00 > 419.00	2.102	2.102	0.0	1.000	2265789	28.6		293	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	758971	9.96		5180	

Reagents:

LC537-L5_00026 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_036.d

Injection Date: 20-Aug-2018 18:53:52

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 34

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

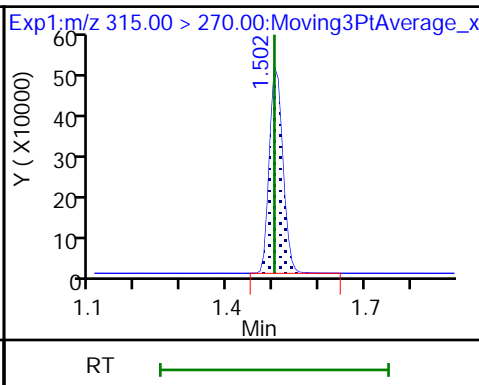
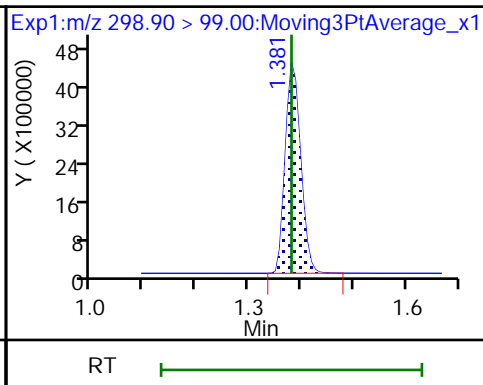
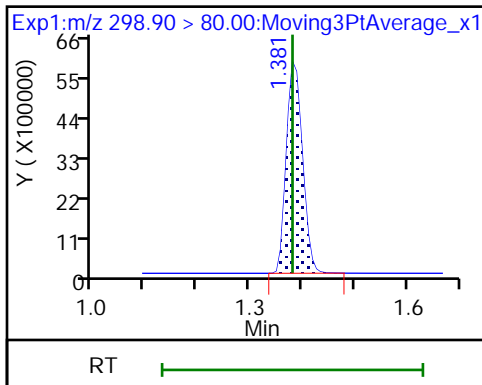
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

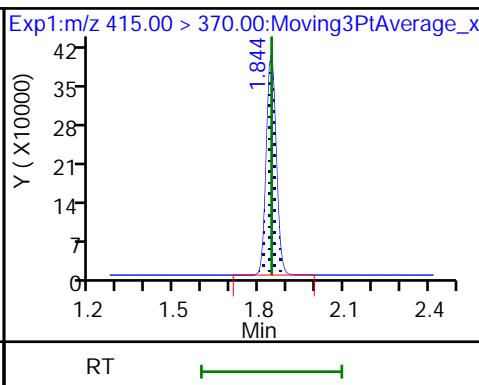
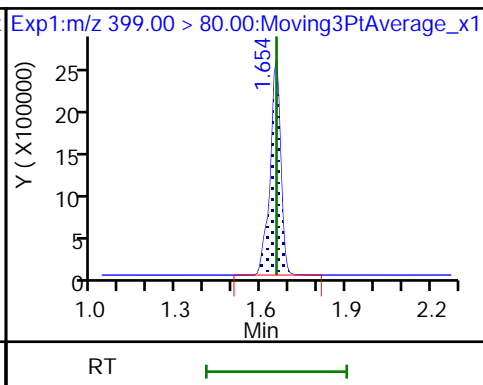
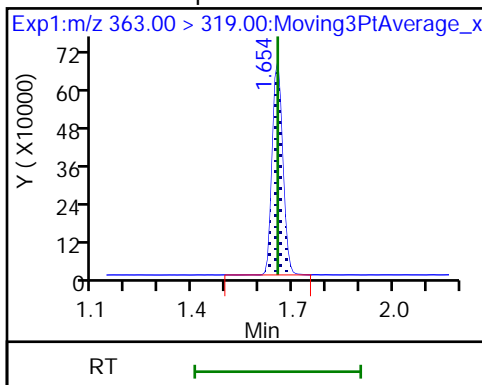
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

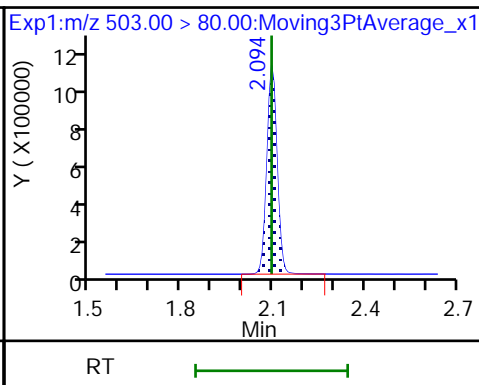
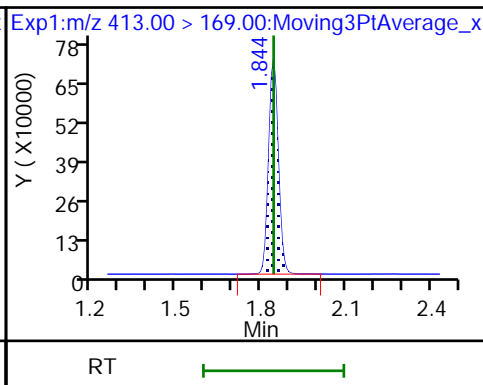
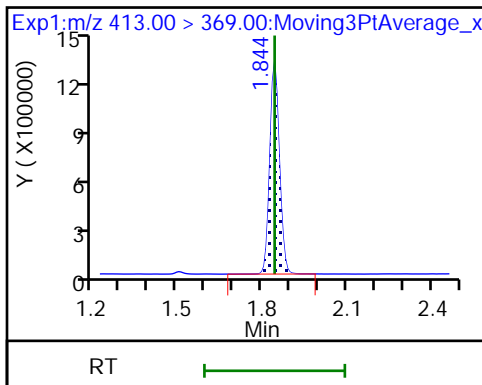
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

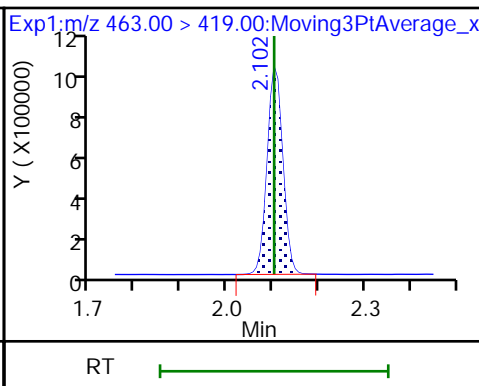
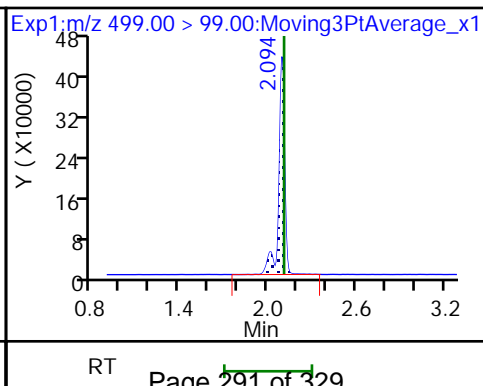
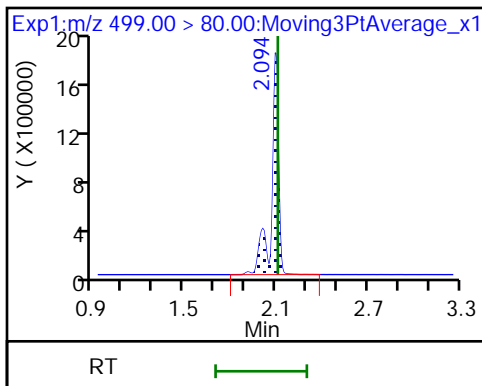
* 7 13C4 PFOS



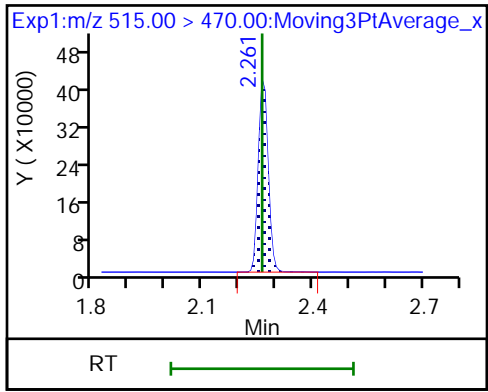
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_036.d

Injection Date: 20-Aug-2018 18:53:52

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 34

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

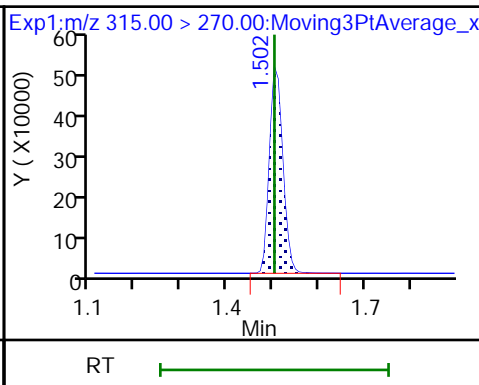
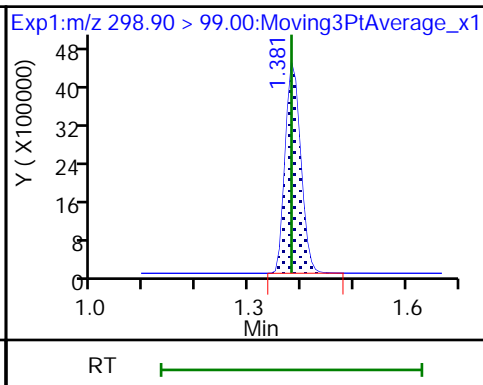
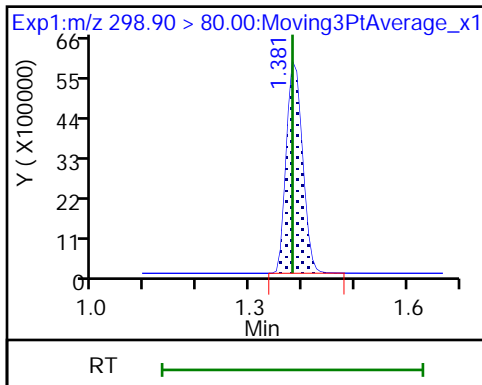
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

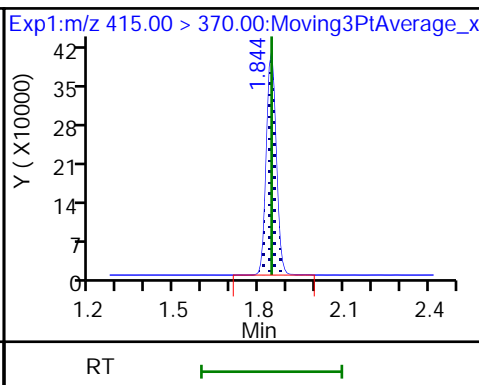
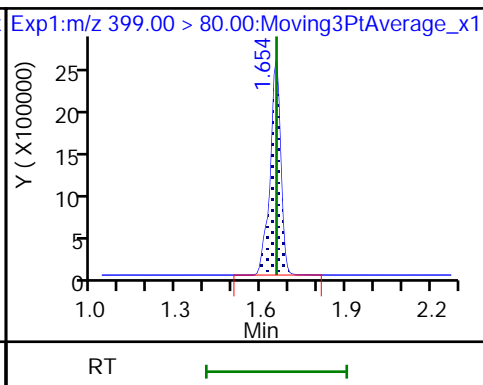
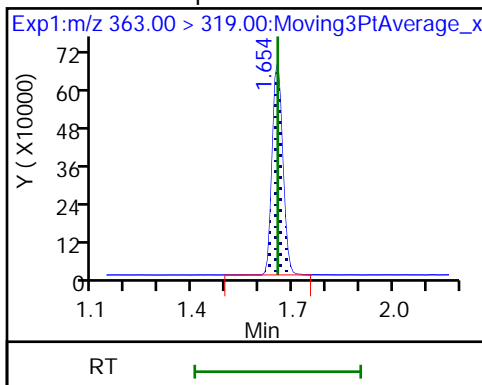
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

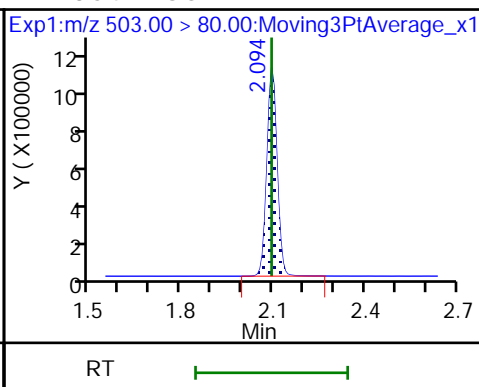
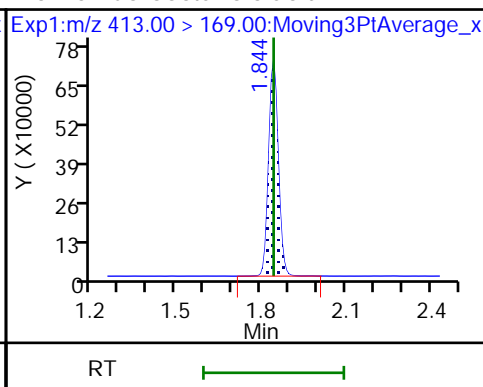
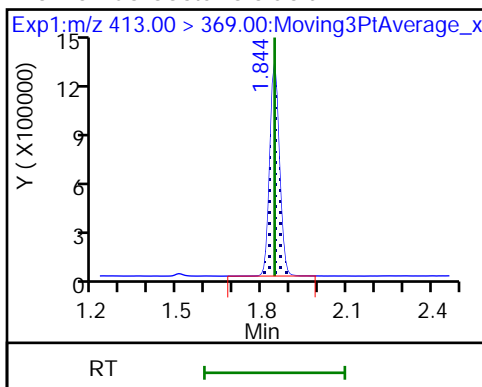
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

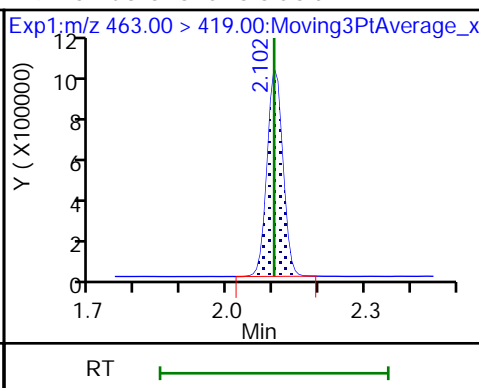
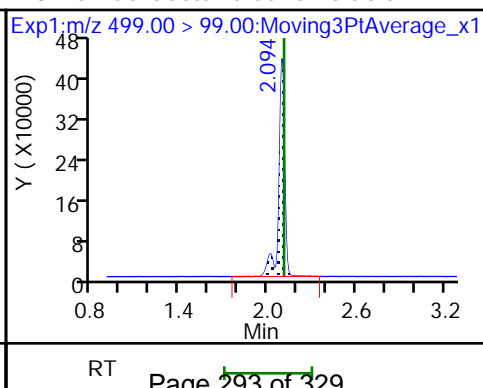
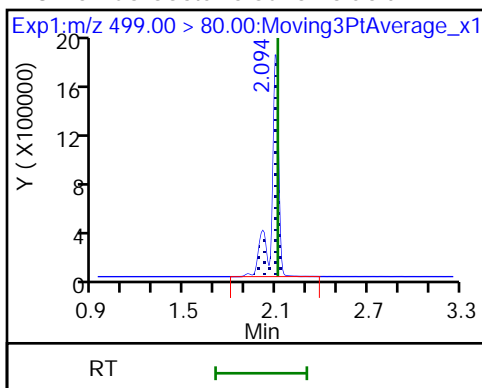
* 7 13C4 PFOS



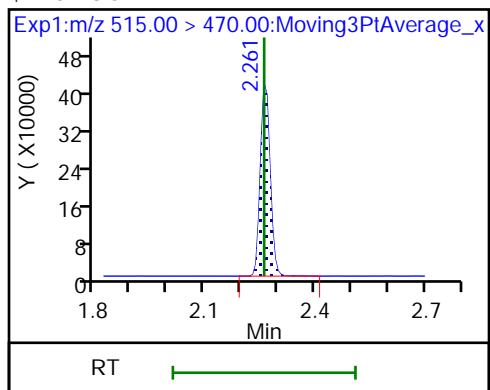
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240972/39 Calibration Date: 08/20/2018 19:17
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.203		47.3	45.0	5.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.051		4.83	4.86	-0.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.677		15.3	15.1	1.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.060		9.63	9.90	-2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.044		19.1	19.8	-3.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8182		9.83	9.90	-0.7	30.0
13C2 PFHxA	Ave	1.039	1.072		10.3	10.0	3.2	30.0
13C2 PFDA	Ave	0.7921	0.7561		9.55	10.0	-4.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_041.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 20-Aug-2018 19:17:13 ALS Bottle#: 3 Worklist Smp#: 39
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-537_A8_N*sub9
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:45 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	4648226	47.3		11831	
298.90 > 99.00	1.381	1.381	0.0	1.000	3331575		1.40(0.00-0.00)	5060	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.502	0.0	1.000	1042817	10.3		9631	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	496766	4.83		115	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	2176603	15.3		1392	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.844	0.0		972350	10.0		7162	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.844	0.0	1.000	1020043	9.63		130	
413.00 > 169.00	1.844	1.844	0.0	1.000	553992		1.84(0.00-0.00)	1286	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.102	0.0		2461190	28.7		5081	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.109	0.0	1.000	787653	9.83		106	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1770801	19.1		2833	
499.00 > 99.00	2.102	2.109	-0.007	1.000	388440		4.56(0.00-0.00)	554	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	735181	9.55		5114	

Reagents:

LC537-L3_00025 Amount Added: 1.00 Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_041.d

Injection Date: 20-Aug-2018 19:17:13

Instrument ID: A8_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 39

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

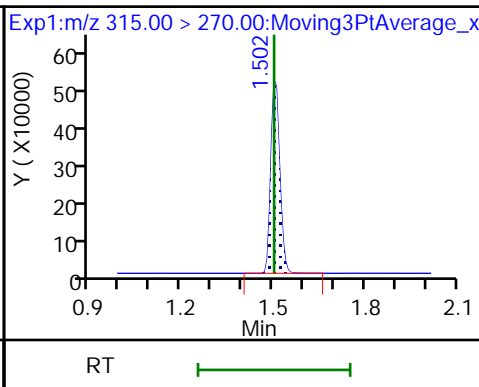
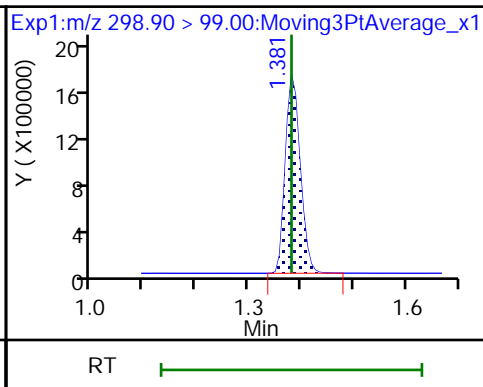
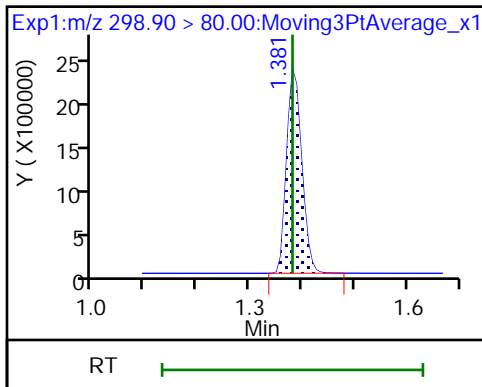
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

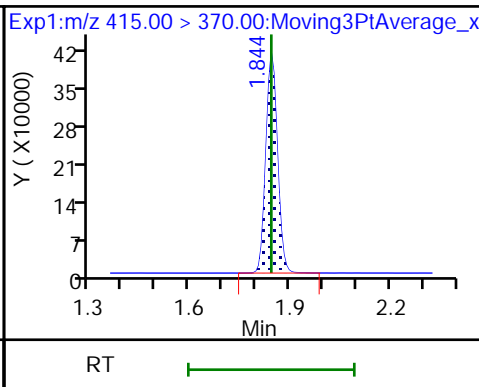
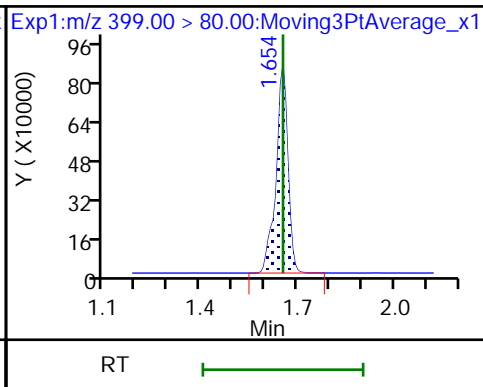
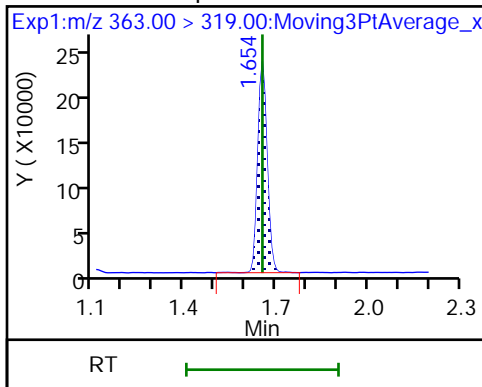
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

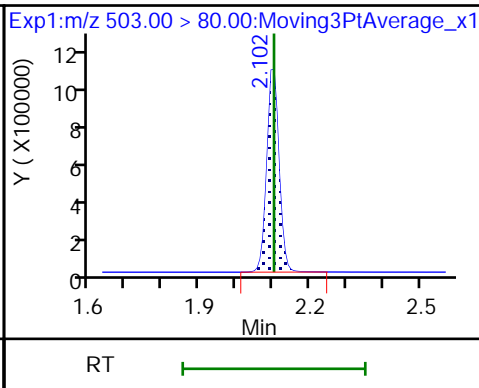
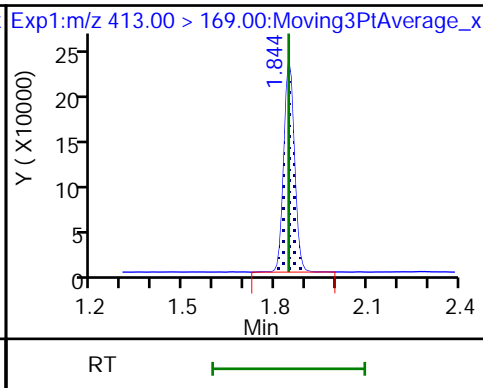
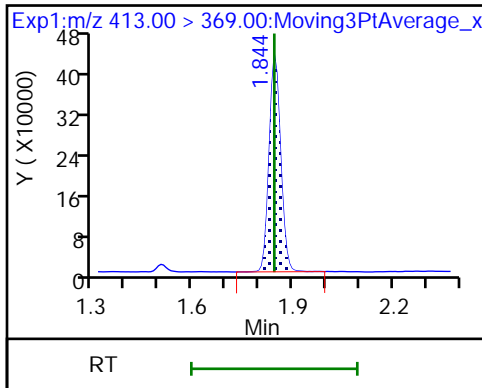
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

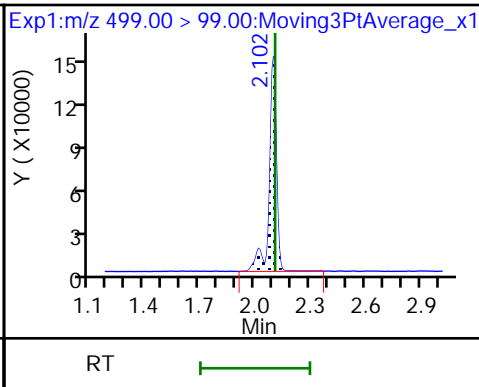
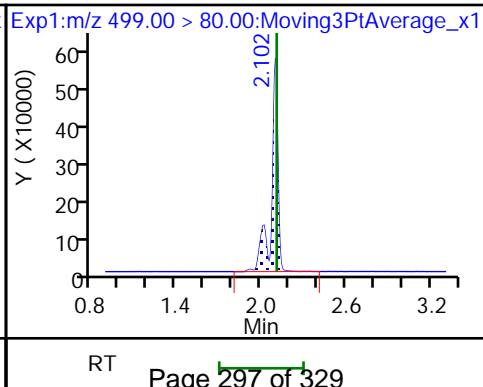
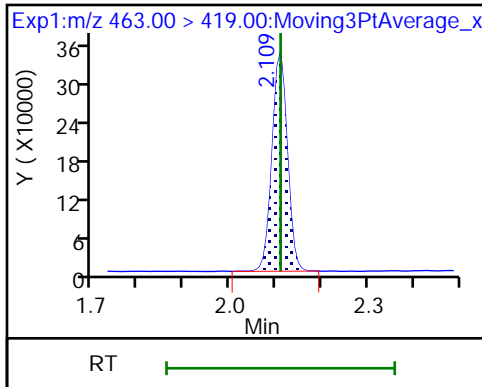
* 7 13C4 PFOS



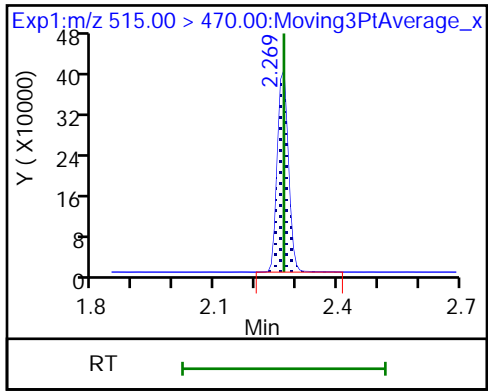
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-240636/1-A
 Matrix: Water Lab File ID: 2018.08.20_537A_014.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/20/2018 17:11
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_014.d
 Lims ID: MB 320-240636/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 20-Aug-2018 17:11:01 ALS Bottle#: 7 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-240636/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
\$ 2 13C2 PFHxA	315.00 > 270.00	1.510	1.510	0.0	1.000	1015188	9.36	9032	
* 6 13C2-PFOA	415.00 > 370.00	1.859	1.851	0.008		1043452	10.0	7754	
* 7 13C4 PFOS	503.00 > 80.00	2.109	2.102	0.007		2514398	28.7	5383	
\$ 10 13C2 PFDA	515.00 > 470.00	2.269	2.269	0.0	1.000	706109	8.54	4544	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_014.d

Injection Date: 20-Aug-2018 17:11:01

Instrument ID: A8_N

Lims ID: MB 320-240636/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

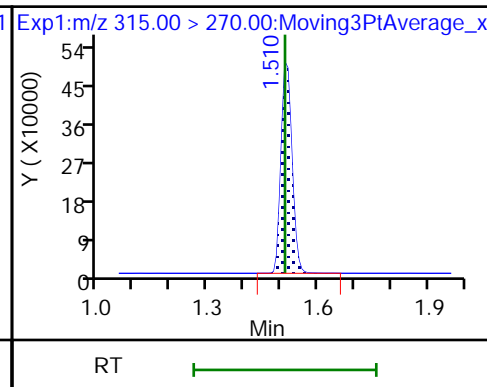
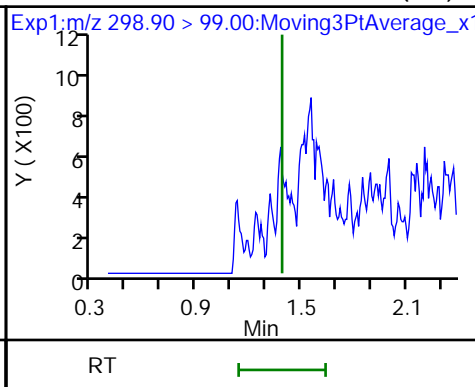
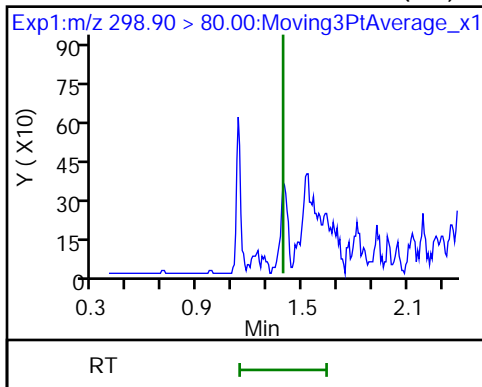
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

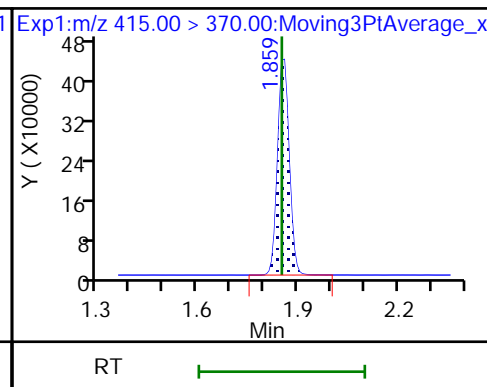
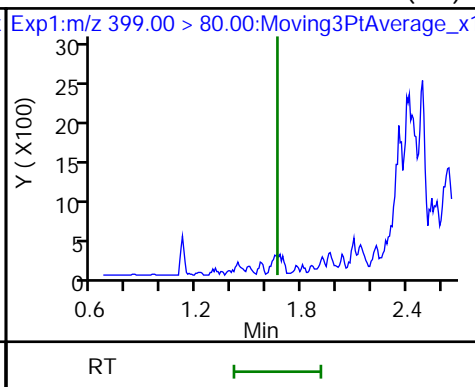
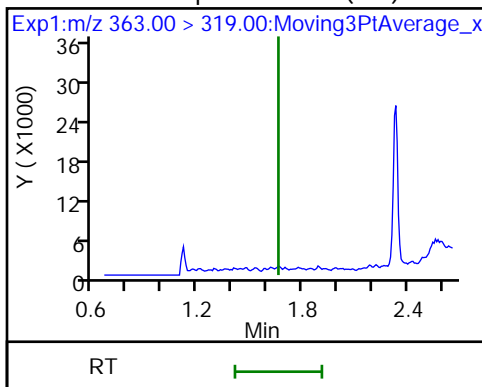
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

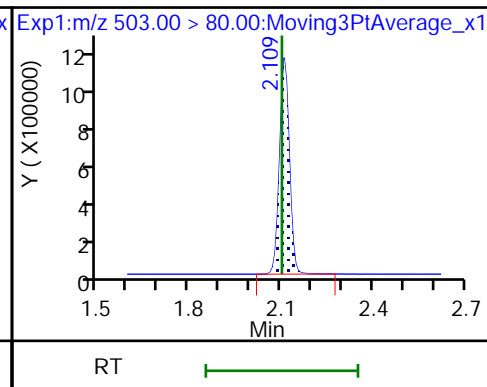
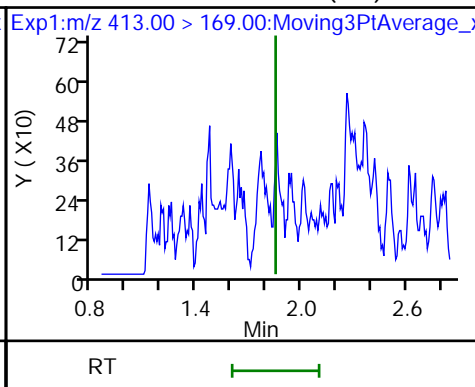
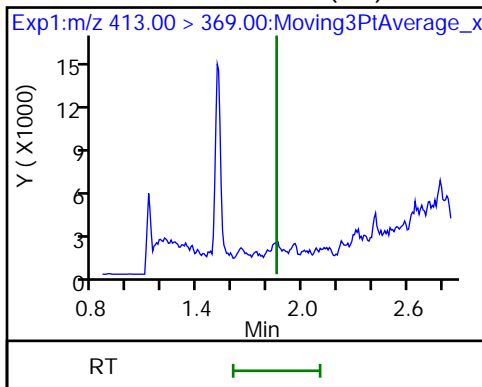
* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

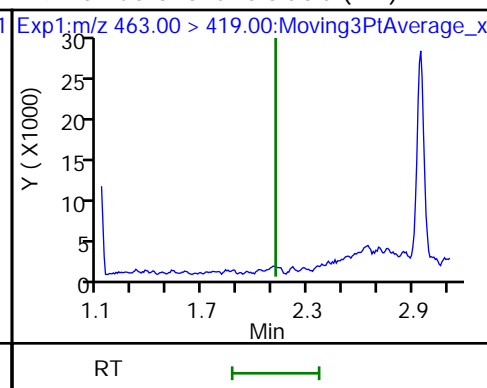
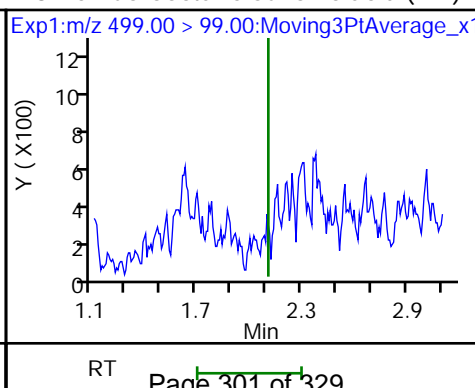
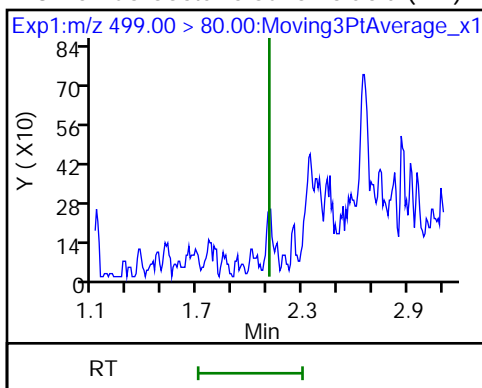
* 7 13C4 PFOS



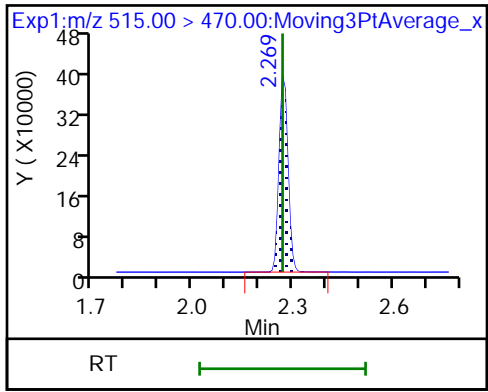
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

9 Perfluorononanoic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_014.d
 Lims ID: MB 320-240636/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 20-Aug-2018 17:11:01 ALS Bottle#: 7 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-240636/1-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.36	93.60
\$ 10 13C2 PFDA	10.0	8.54	85.43

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-240636/2-A
 Matrix: Water Lab File ID: 2018.08.20_537A_015.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/20/2018 17:15
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	41.5		40	16	6.8
335-67-1	Perfluorooctanoic acid (PFOA)	18.8	J	20	8.0	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.1	J	24	20	8.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	33.3		30	12	5.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.0		10	4.0	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	105		90	36	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	85		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_015.d
 Lims ID: LLCS 320-240636/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 20-Aug-2018 17:15:41 ALS Bottle#: 8 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-240636/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.388	1.388	0.0	1.000	2694466	26.4		7409	
298.90 > 99.00	1.388	1.388	0.0	1.000	1849481		1.46(0.00-0.00)	2677	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	999165	9.17		7986	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.662	1.662	0.0	1.000	278436	2.51		52.9	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.662	1.662	0.0	1.000	1231013	8.33		810	
* 6 13C2-PFOA									
415.00 > 370.00	1.851	1.851	0.0		1048348	10.0		7475	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.851	1.851	0.0	1.000	536561	4.70		64.8	
413.00 > 169.00	1.851	1.851	0.0	1.000	298058		1.80(0.00-0.00)	646	
* 7 13C4 PFOS									
503.00 > 80.00	2.109	2.102	0.007		2560394	28.7		5061	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.109	2.109	0.0	1.000	999956	10.4		1564	
499.00 > 99.00	2.109	2.109	0.0	1.000	219858		4.55(0.00-0.00)	325	
9 Perfluorononanoic acid									
463.00 > 419.00	2.117	2.117	0.0	1.000	413235	4.78		62.0	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	707838	8.52		5013	

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_015.d

Injection Date: 20-Aug-2018 17:15:41

Instrument ID: A8_N

Lims ID: LLCS 320-240636/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 8

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

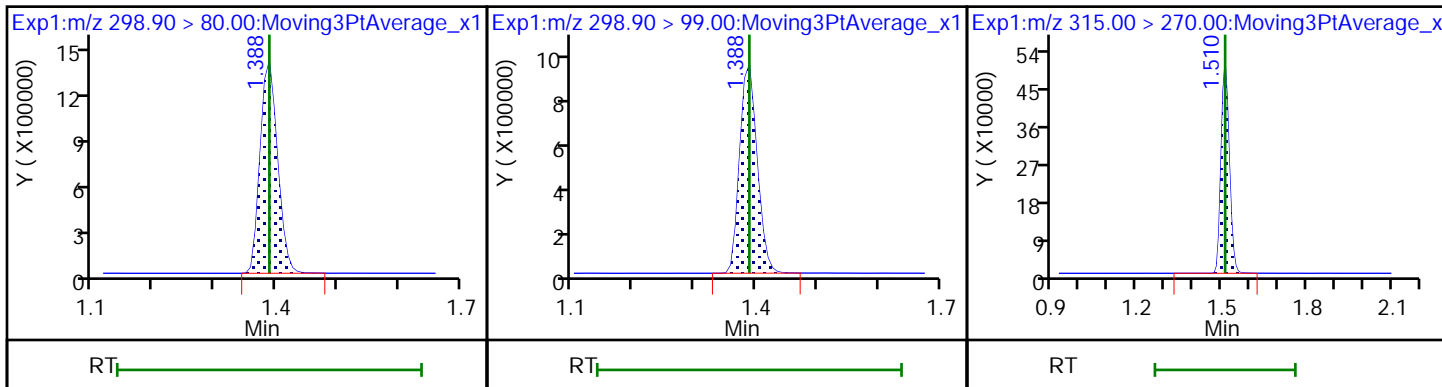
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

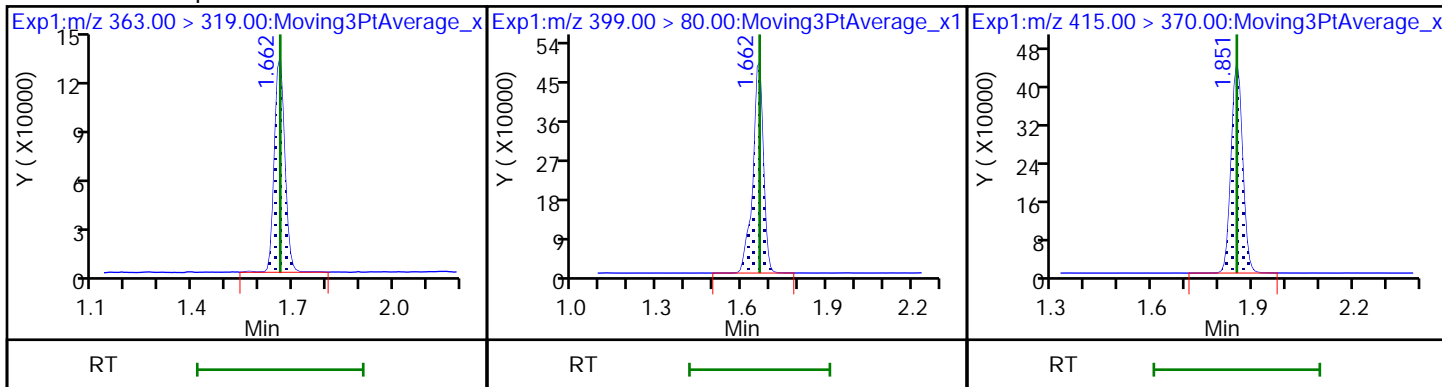
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

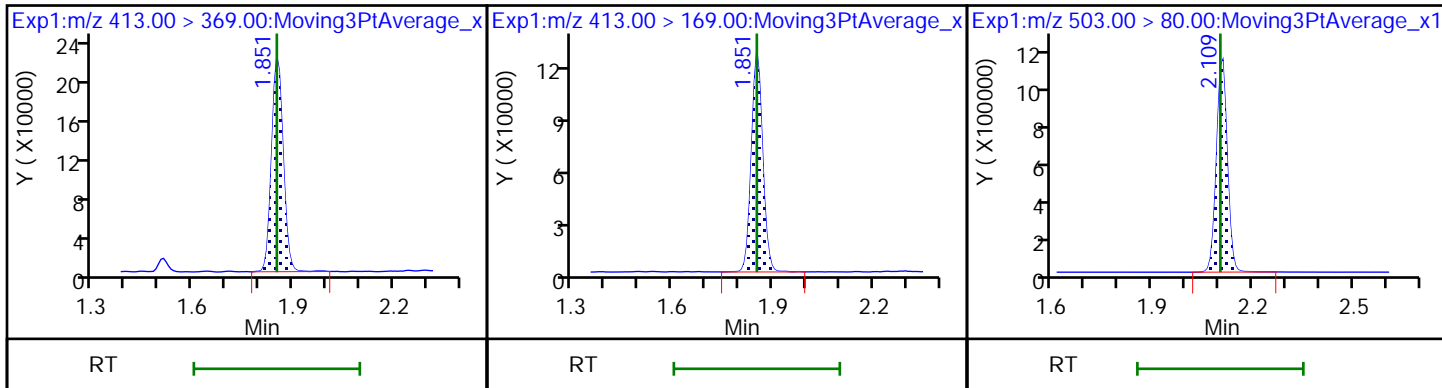
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

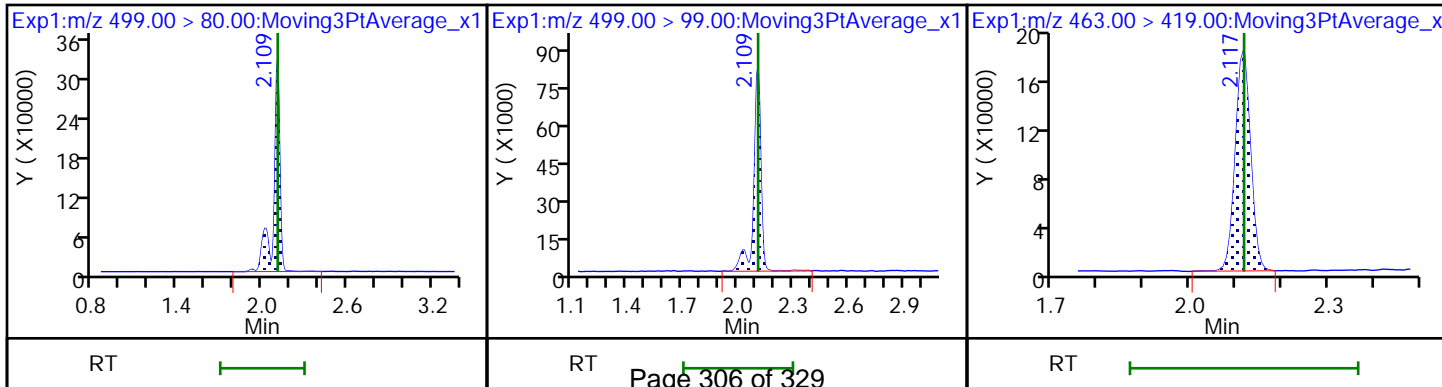
* 7 13C4 PFOS



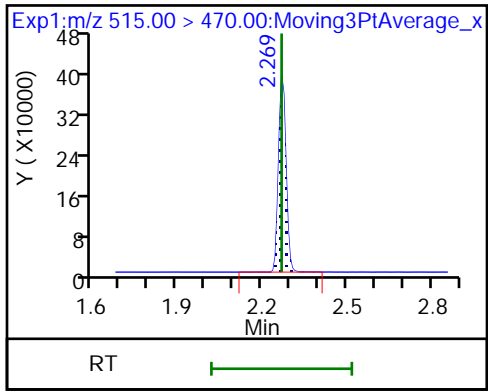
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_015.d
 Lims ID: LLCS 320-240636/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 20-Aug-2018 17:15:41 ALS Bottle#: 8 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: llcs 320-240636/2-a
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:03:21 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.17	91.70
\$ 10 13C2 PFDA	10.0	8.52	85.24

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-207 LMS Lab Sample ID: 320-41889-17 LMS
 Matrix: Water Lab File ID: 2018.08.20_537A_035.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 266.9(mL) Date Analyzed: 08/20/2018 18:49
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	44.5		37	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	23.9		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18.1	J	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	30.1		28	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	9.20	J	9.4	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	103		84	34	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_035.d
 Lims ID: 320-41889-A-17-B LMS
 Client ID:
 Sample Type: LMS
 Inject. Date: 20-Aug-2018 18:49:13 ALS Bottle#: 26 Worklist Smp#: 33
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-17-b lms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:02:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.388	-0.007	1.000	2834654	27.6		4826	
298.90 > 99.00	1.381	1.388	-0.007	1.000	1887442		1.50(0.00-0.00)	2493	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.510	1.510	0.0	1.000	1020054	9.03		12022	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.662	-0.008	1.000	282277	2.46		31.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.662	-0.008	1.000	1195370	8.03		630	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.851	-0.007		1086637	10.0		7790	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.851	-0.007	1.000	753742	6.37		86.0	
413.00 > 169.00	1.844	1.851	-0.007	1.000	420337		1.79(0.00-0.00)	835	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.109	-0.007		2576287	28.7		4015	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1151748	11.9		654	
499.00 > 99.00	2.102	2.109	-0.007	1.000	242748		4.74(0.00-0.00)	297	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.117	-0.008	1.000	431918	4.82		28.6	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.269	2.269	0.0	1.000	756139	8.78		5066	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_035.d

Injection Date: 20-Aug-2018 18:49:13

Instrument ID: A8_N

Lims ID: 320-41889-A-17-B LMS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 26

Worklist Smp#: 33

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

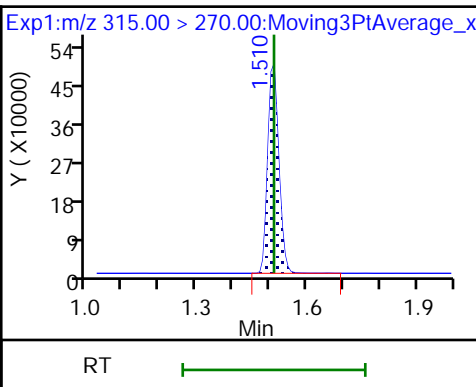
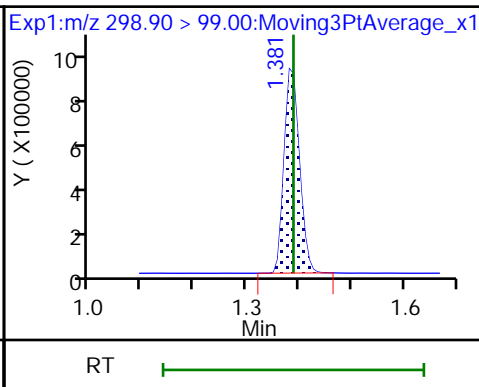
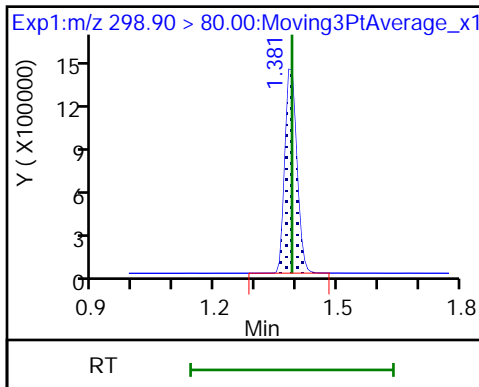
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

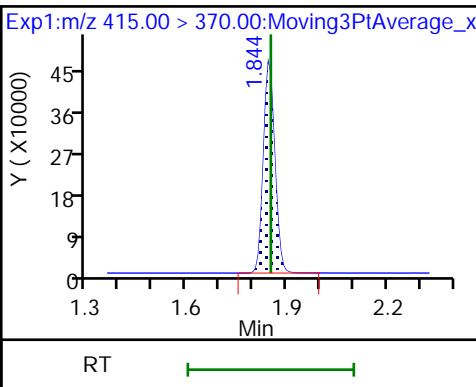
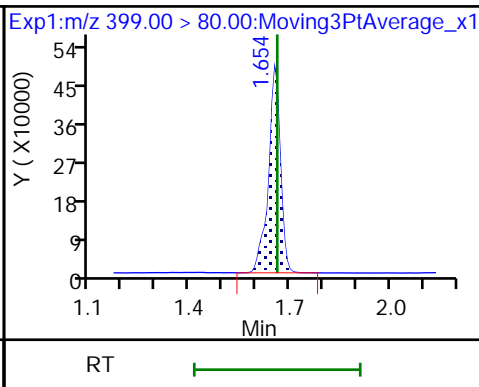
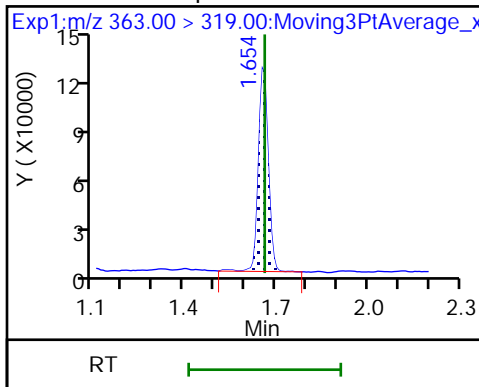
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

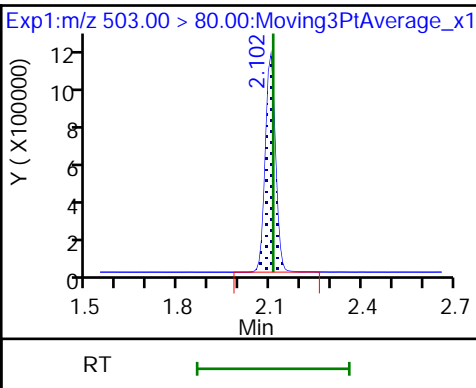
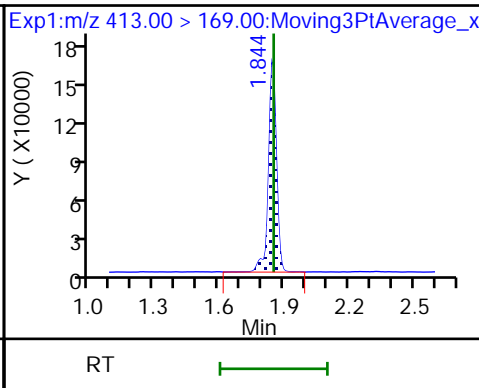
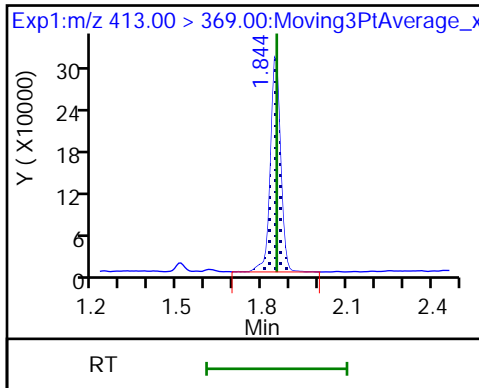
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

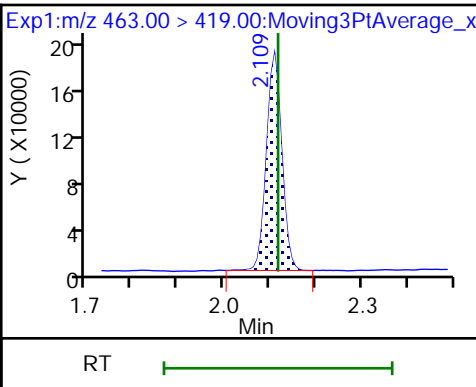
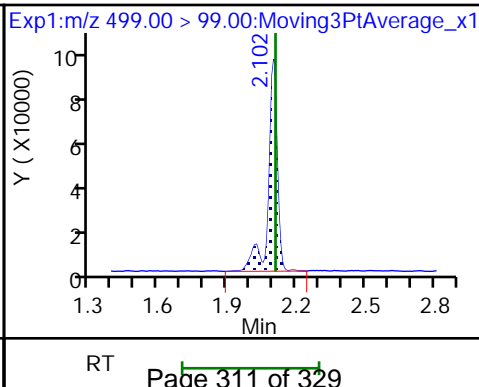
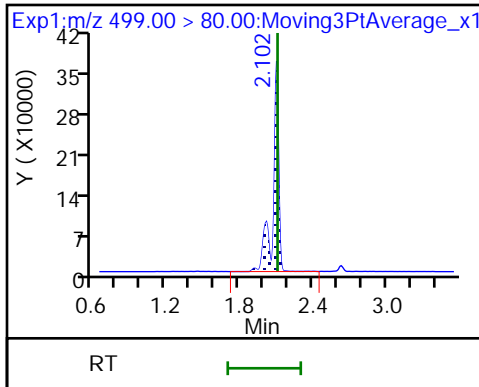
* 7 13C4 PFOS



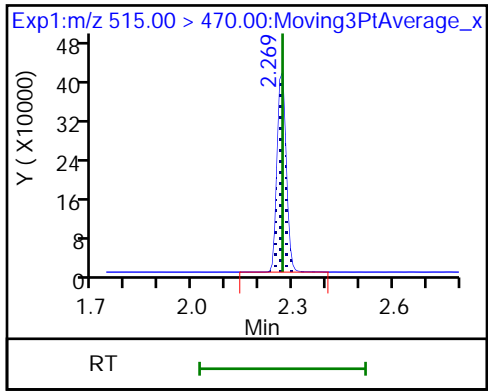
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_035.d
 Lims ID: 320-41889-A-17-B LMS
 Client ID:
 Sample Type: LMS
 Inject. Date: 20-Aug-2018 18:49:13 ALS Bottle#: 26 Worklist Smp#: 33
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-17-b lms
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:15 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:02:20

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.03	90.31
\$ 10 13C2 PFDA	10.0	8.78	87.85

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-207 LMSD Lab Sample ID: 320-41889-17 LMSD
 Matrix: Water Lab File ID: 2018.08.20_537A_038.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 246.4 (mL) Date Analyzed: 08/20/2018 19:03
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	52.3		41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	27.6		20	8.1	2.8
375-95-1	Perfluorononanoic acid (PFNA)	19.3	J	24	20	8.1
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32.8		30	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	10.1		10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	109		91	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	85		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_038.d
 Lims ID: 320-41889-A-17-C LMSD
 Client ID:
 Sample Type: LMSD
 Inject. Date: 20-Aug-2018 19:03:10 ALS Bottle#: 27 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-17-c lmsd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:02:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.381	1.381	0.0	1.000	2725840	27.0		3749	
298.90 > 99.00	1.381	1.381	0.0	1.000	1880981		1.45(0.00-0.00)	2744	
\$ 2 13C2 PFHxA									
315.00 > 270.00	1.502	1.502	0.0	1.000	1004543	9.00		9745	
4 Perfluoroheptanoic acid									
363.00 > 319.00	1.654	1.654	0.0	1.000	282753	2.49		44.5	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	1.654	1.654	0.0	1.000	1181301	8.08		538	
* 6 13C2-PFOA									
415.00 > 370.00	1.844	1.844	0.0		1074351	10.0		9020	
5 Perfluorooctanoic acid									
413.00 > 369.00	1.844	1.844	0.0	1.000	797059	6.81		93.6	
413.00 > 169.00	1.844	1.844	0.0	1.000	449597		1.77(0.00-0.00)	978	
* 7 13C4 PFOS									
503.00 > 80.00	2.102	2.094	0.008		2531785	28.7		2818	
9 Perfluorononanoic acid									
463.00 > 419.00	2.109	2.102	0.007	1.000	420474	4.75		29.0	
8 Perfluorooctane sulfonic acid									
499.00 > 80.00	2.102	2.109	-0.007	1.000	1229157	12.9		376	
499.00 > 99.00	2.102	2.109	-0.007	1.000	255489		4.81(0.00-0.00)	312	
\$ 10 13C2 PFDA									
515.00 > 470.00	2.261	2.261	0.0	1.000	726210	8.53		5311	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_038.d

Injection Date: 20-Aug-2018 19:03:10

Instrument ID: A8_N

Lims ID: 320-41889-A-17-C LMSD

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 27

Worklist Smp#: 36

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

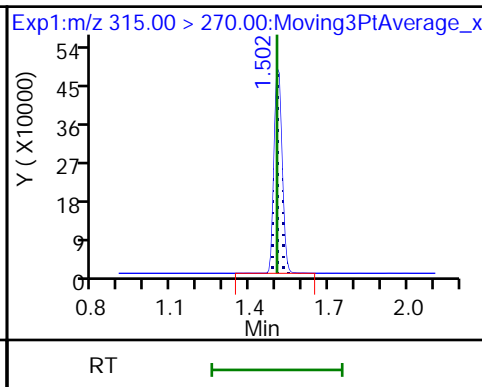
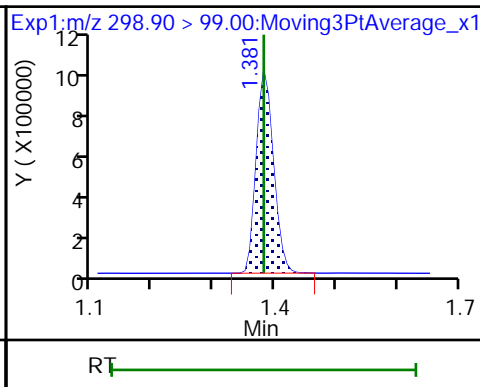
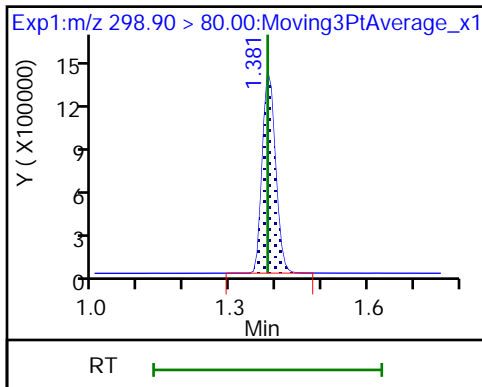
Method: 537_A8_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

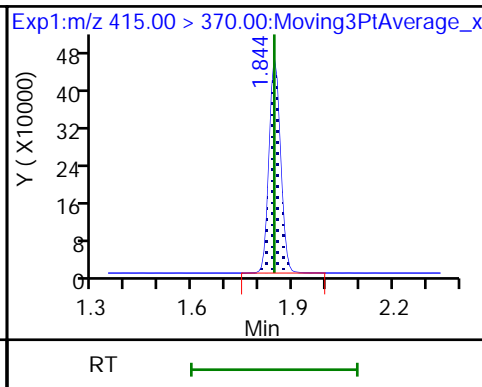
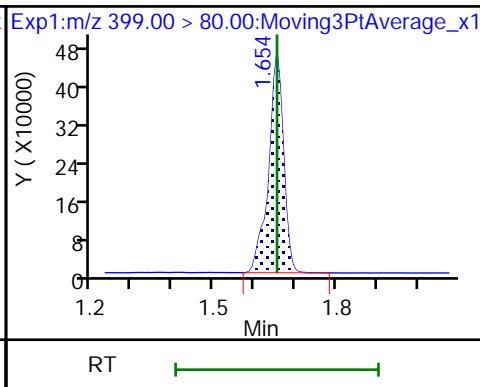
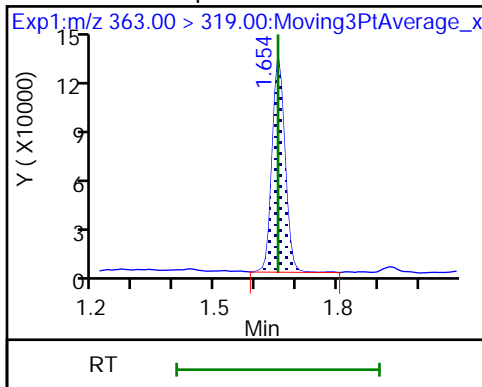
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

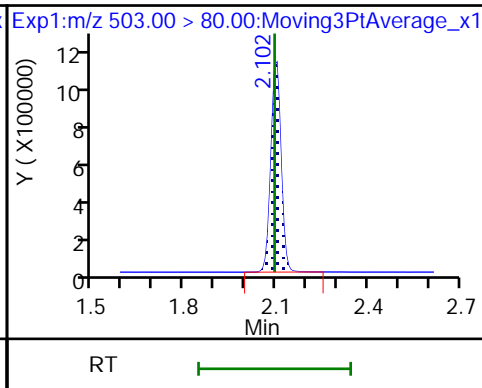
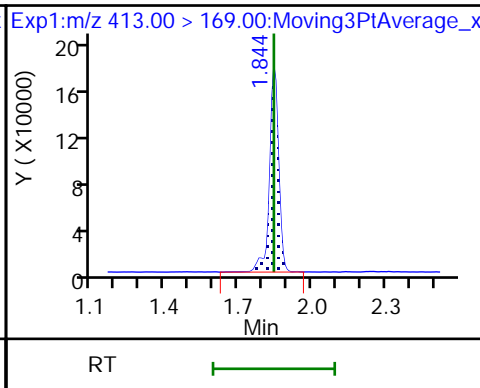
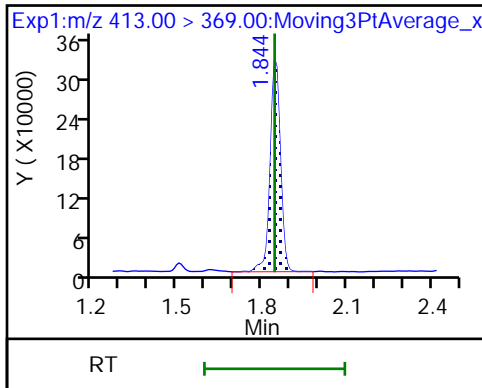
* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

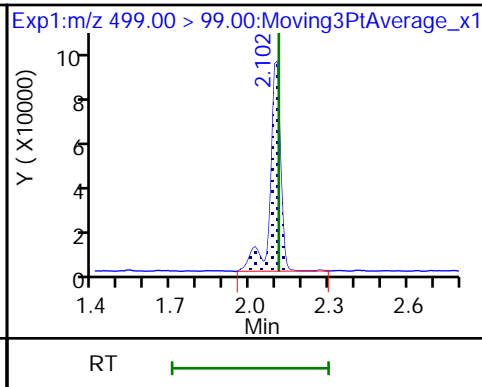
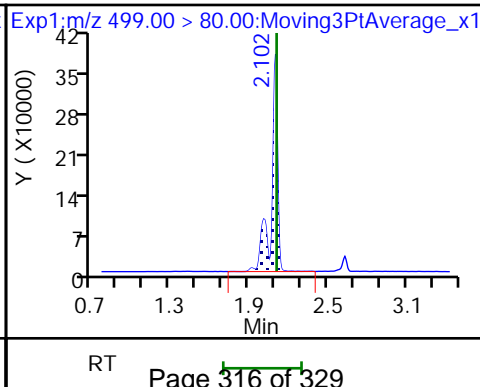
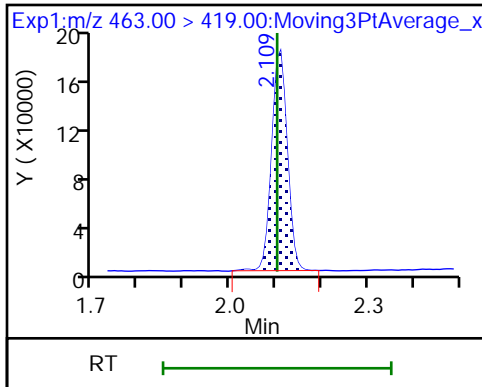
* 7 13C4 PFOS



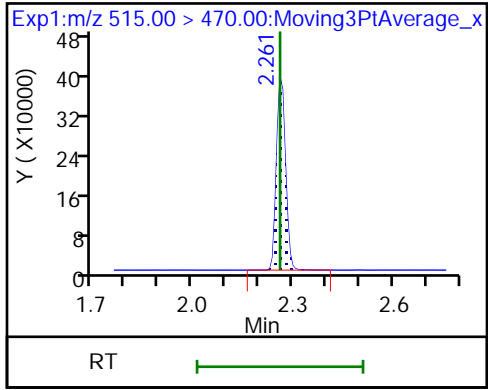
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\2018.08.20_537A_038.d
 Lims ID: 320-41889-A-17-C LMSD
 Client ID:
 Sample Type: LMSD
 Inject. Date: 20-Aug-2018 19:03:10 ALS Bottle#: 27 Worklist Smp#: 36
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-41889-a-17-c lmsd
 Misc. Info.: Plate: 1 Rack: 2
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180820-62982.b\537_A8_N.m
 Limit Group: LC 537 ICAL
 Last Update: 21-Aug-2018 11:04:37 Calib Date: 15-Aug-2018 18:44:32
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180815-62769.b\2018.08.15_537CURVE_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: barnettj Date: 21-Aug-2018 11:02:38

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.00	89.96
\$ 10 13C2 PFDA	10.0	8.53	85.33

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/15/2018 18:21

Analysis Batch Number: 240166 End Date: 08/15/2018 19:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-240166/2		08/15/2018 18:21	1	2018.08.15_537C URVE 003.d	GeminiC18 3x100 3(mm)
IC 320-240166/3		08/15/2018 18:25	1	2018.08.15_537C URVE 004.d	GeminiC18 3x100 3(mm)
IC 320-240166/4		08/15/2018 18:30	1	2018.08.15_537C URVE 005.d	GeminiC18 3x100 3(mm)
IC 320-240166/5 ICISAV		08/15/2018 18:35	1	2018.08.15_537C URVE 006.d	GeminiC18 3x100 3(mm)
IC 320-240166/6		08/15/2018 18:39	1	2018.08.15_537C URVE 007.d	GeminiC18 3x100 3(mm)
IC 320-240166/7		08/15/2018 18:44	1	2018.08.15_537C URVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/15/2018 18:49	1		GeminiC18 3x100 3(mm)
CCVL 320-240166/9		08/15/2018 18:53	1	2018.08.15_537C URVE 010.d	GeminiC18 3x100 3(mm)
ICB 320-240166/10		08/15/2018 18:58	1		GeminiC18 3x100 3(mm)
ICV 320-240166/11		08/15/2018 19:03	1	2018.08.15_537C URVE 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 16:19

Analysis Batch Number: 240968 End Date: 08/20/2018 17:01

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-240968/1		08/20/2018 16:19	1	2018.08.20_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-240968/2 CCVIS		08/20/2018 16:24	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:28	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:33	10		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:38	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:43	1		GeminiC18 3x100 3(mm)
CCV 320-240968/10 CCVIS		08/20/2018 17:01	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 17:01

Analysis Batch Number: 240970 End Date: 08/20/2018 17:57

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240970/10 CCVIS		08/20/2018 17:01	1	2018.08.20_537A 012.d	GeminiC18 3x100 3(mm)
MB 320-240636/1-A		08/20/2018 17:11	1	2018.08.20_537A 014.d	GeminiC18 3x100 3(mm)
LLCS 320-240636/2-A		08/20/2018 17:15	1	2018.08.20_537A 015.d	GeminiC18 3x100 3(mm)
320-41889-1		08/20/2018 17:20	1	2018.08.20_537A 016.d	GeminiC18 3x100 3(mm)
320-41889-2		08/20/2018 17:25	1	2018.08.20_537A 017.d	GeminiC18 3x100 3(mm)
320-41889-3		08/20/2018 17:29	1	2018.08.20_537A 018.d	GeminiC18 3x100 3(mm)
320-41889-4		08/20/2018 17:34	1	2018.08.20_537A 019.d	GeminiC18 3x100 3(mm)
320-41889-5		08/20/2018 17:39	1	2018.08.20_537A 020.d	GeminiC18 3x100 3(mm)
320-41889-6		08/20/2018 17:43	1	2018.08.20_537A 021.d	GeminiC18 3x100 3(mm)
320-41889-7		08/20/2018 17:48	1	2018.08.20_537A 022.d	GeminiC18 3x100 3(mm)
320-41889-8		08/20/2018 17:53	1	2018.08.20_537A 023.d	GeminiC18 3x100 3(mm)
CCV 320-240970/22 CCVIS		08/20/2018 17:57	1	2018.08.20_537A 024.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 17:57

Analysis Batch Number: 240971 End Date: 08/20/2018 18:53

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240971/22 CCVIS		08/20/2018 17:57	1	2018.08.20_537A 024.d	GeminiC18 3x100 3(mm)
320-41889-9		08/20/2018 18:07	1	2018.08.20_537A 026.d	GeminiC18 3x100 3(mm)
320-41889-10		08/20/2018 18:11	1	2018.08.20_537A 027.d	GeminiC18 3x100 3(mm)
320-41889-11		08/20/2018 18:16	1	2018.08.20_537A 028.d	GeminiC18 3x100 3(mm)
320-41889-12		08/20/2018 18:21	1	2018.08.20_537A 029.d	GeminiC18 3x100 3(mm)
320-41889-13		08/20/2018 18:25	1	2018.08.20_537A 030.d	GeminiC18 3x100 3(mm)
320-41889-14		08/20/2018 18:30	1	2018.08.20_537A 031.d	GeminiC18 3x100 3(mm)
320-41889-15		08/20/2018 18:35	1	2018.08.20_537A 032.d	GeminiC18 3x100 3(mm)
320-41889-16		08/20/2018 18:39	1	2018.08.20_537A 033.d	GeminiC18 3x100 3(mm)
320-41889-17		08/20/2018 18:44	1	2018.08.20_537A 034.d	GeminiC18 3x100 3(mm)
320-41889-17 LMS		08/20/2018 18:49	1	2018.08.20_537A 035.d	GeminiC18 3x100 3(mm)
CCV 320-240971/34 CCVIS		08/20/2018 18:53	1	2018.08.20_537A 036.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 18:53

Analysis Batch Number: 240972 End Date: 08/20/2018 19:17

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240972/34 CCVIS		08/20/2018 18:53	1	2018.08.20_537A 036.d	GeminiC18 3x100 3(mm)
320-41889-17 LMSD		08/20/2018 19:03	1	2018.08.20_537A 038.d	GeminiC18 3x100 3(mm)
320-41889-18		08/20/2018 19:07	1	2018.08.20_537A 039.d	GeminiC18 3x100 3(mm)
320-41889-19		08/20/2018 19:12	1	2018.08.20_537A 040.d	GeminiC18 3x100 3(mm)
CCV 320-240972/39 CCVIS		08/20/2018 19:17	1	2018.08.20_537A 041.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Batch Number: 240636 Batch Start Date: 08/17/18 20:01 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/20/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-240636/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LLCS 320-240636/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-41889-A-1	WGNA-080718-RW-4 848	537, 537	T	283.90 g	38.89 g	245 mL	1.00 mL	7 SU	100 uL
320-41889-A-2	WGNA-080718-FRB- 4848	537, 537	T	299.18 g	28.10 g	271.1 mL	1.00 mL	7 SU	100 uL
320-41889-A-3	WGNA-080718-RW-0 344	537, 537	T	308.09 g	38.88 g	269.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-4	WGNA-080718-FRB- 0344	537, 537	T	313.34 g	28.05 g	285.3 mL	1.00 mL	7 SU	100 uL
320-41889-A-5	WGNA-080718-RW-0 104	537, 537	T	301.07 g	38.87 g	262.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-6	WGNA-080718-FRB- 0104	537, 537	T	314.14 g	28.02 g	286.1 mL	1.00 mL	7 SU	100 uL
320-41889-A-7	NAWC-080718-RW-1 06	537, 537	T	325.00 g	38.85 g	286.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-8	NAWC-080718-FRB- 106	537, 537	T	314.37 g	29.07 g	285.3 mL	1.00 mL	7 SU	100 uL
320-41889-A-9	WGNA-080718-RW-3 322	537, 537	T	307.90 g	39.13 g	268.8 mL	1.00 mL	7 SU	100 uL
320-41889-A-10	WGNA-080718-FRB- 3322	537, 537	T	305.70 g	29.01 g	276.7 mL	1.00 mL	7 SU	100 uL
320-41889-A-11	NAWC-080718-RW-0 81	537, 537	T	309.24 g	38.80 g	270.4 mL	1.00 mL	7 SU	100 uL
320-41889-A-12	NAWC-080718-FRB- 081	537, 537	T	316.04 g	28.82 g	287.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-13	NAWC-080718-RW-0 82	537, 537	T	301.41 g	28.14 g	273.3 mL	1.00 mL	7 SU	100 uL
320-41889-A-14	NAWC-080718-FRB- 082	537, 537	T	307.00 g	28.32 g	278.7 mL	1.00 mL	7 SU	100 uL
320-41889-A-15	NAWC-080718-RW-2 58	537, 537	T	314.84 g	38.94 g	275.9 mL	1.00 mL	7 SU	100 uL
320-41889-A-16	NAWC-080718-FRB- 258	537, 537	T	305.15 g	28.12 g	277 mL	1.00 mL	7 SU	100 uL
320-41889-A-17	NAWC-080718-RW-2 07	537, 537	T	304.49 g	38.99 g	265.5 mL	1.00 mL	7 SU	100 uL
320-41889-A-17 LMS	NAWC-080718-RW-2 07	537, 537	T	305.68 g	38.81 g	266.9 mL	1.00 mL	7 SU	100 uL
320-41889-A-17 LMSD	NAWC-080718-RW-2 07	537, 537	T	285.35 g	38.93 g	246.4 mL	1.00 mL	7 SU	100 uL
320-41889-A-18	NAWC-080718-FRB- 207	537, 537	T	313.84 g	27.79 g	286.1 mL	1.00 mL	7 SU	100 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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Batch Number: 240636 Batch Start Date: 08/17/18 20:01 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/20/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
320-41889-A-19	WGNA-080718-DUP-44	537, 537	T	306.43 g	38.71 g	267.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
MB 320-240636/1		537, 537			100 uL	C1 ND			
LLCS 320-240636/2		537, 537		100 uL	100 uL	C1 ND			
320-41889-A-1	WGNA-080718-RW-4848	537, 537	T		100 uL	C1 ND			
320-41889-A-2	WGNA-080718-FRB-4848	537, 537	T		100 uL	C1 ND			
320-41889-A-3	WGNA-080718-RW-0344	537, 537	T		100 uL	C1 ND			
320-41889-A-4	WGNA-080718-FRB-0344	537, 537	T		100 uL	C1 ND			
320-41889-A-5	WGNA-080718-RW-0104	537, 537	T		100 uL	C1 ND			
320-41889-A-6	WGNA-080718-FRB-0104	537, 537	T		100 uL	C1 ND			
320-41889-A-7	NAWC-080718-RW-106	537, 537	T		100 uL	C1 ND			
320-41889-A-8	NAWC-080718-FRB-106	537, 537	T		100 uL	C1 ND			
320-41889-A-9	WGNA-080718-RW-3322	537, 537	T		100 uL	C1 ND			
320-41889-A-10	WGNA-080718-FRB-3322	537, 537	T		100 uL	C1 ND			
320-41889-A-11	NAWC-080718-RW-081	537, 537	T		100 uL	C1 ND			
320-41889-A-12	NAWC-080718-FRB-081	537, 537	T		100 uL	C1 ND			
320-41889-A-13	NAWC-080718-RW-082	537, 537	T		100 uL	C1 ND			
320-41889-A-14	NAWC-080718-FRB-082	537, 537	T		100 uL	C1 ND			
320-41889-A-15	NAWC-080718-RW-258	537, 537	T		100 uL	C1 ND			
320-41889-A-16	NAWC-080718-FRB-258	537, 537	T		100 uL	C1 ND			
320-41889-A-17	NAWC-080718-RW-207	537, 537	T		100 uL	C1 ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Batch Number: 240636 Batch Start Date: 08/17/18 20:01 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/20/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
320-41889-A-17 LMS	NAWC-080718-RW-2 07	537, 537	T	100 uL	100 uL	Cl ND			
320-41889-A-17 LMSD	NAWC-080718-RW-2 07	537, 537	T	100 uL	100 uL	Cl ND			
320-41889-A-18	NAWC-080718-FRB- 207	537, 537	T		100 uL	Cl ND			
320-41889-A-19	WGNA-080718-DUP- 44	537, 537	T		100 uL	Cl ND			

Batch Notes	
Analyst ID - Aliquot Step	KMK
Batch Comment	Sample labels matches client IDs: JER
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	KMK
Internal Standard ID#	1334015
Manifold ID	3, 4
Methanol ID	1328636
pH Indicator ID	1718
Pipette ID	O34709G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	GXL
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	GXL
SPE Cartridge Lot ID	6390138-08
Trizma ID	SLBR5241V
Reagent Water ID	08/16/18

Basis	Basis Description
T	Total/NA

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

Shipping and Receiving Documents

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-41889-1

Login Number: 41889

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","16","ng/L","U","6.9","DL","","TRG","","","41","LOQ","YES","-99","","245","1.00","16","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","8.2","ng/L","U M","2.9","DL","","TRG","","","20","LOQ","YES","-99","","245","1.00","8.2","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","12","ng/L","U","5.6","DL","","TRG","","","31","LOQ","YES","-99","","245","1.00","12","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","37","ng/L","U","16","DL","","TRG","","","92","LOQ","YES","-99","","245","1.00","37","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.1","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","245","1.00","4.1","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","20","ng/L","U","8.2","DL","","TRG","","","24","LOQ","YES","-99","","245","1.00","20","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","86","","-99","LOQ","YES","40.8","","245","1.00","0","","
"WGNA-080718-RW-4848","537","RES","320-41889-1","TALSAC","STL00996","13C2
PFDA","37","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","40.8","","245","1.00","0","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES","-99","","276.7","1.00","14","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES","-99","","276.7","1.00","7.2","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES","-99","","276.7","1.00","11","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","33","ng/L","U","15","DL","","TRG","","","81","LOQ","YES","-99","","276.7","1.00","33","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES","-99","","276.7","1.00","3.6","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES","-99","","276.7","1.00","18","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","STL00993","13C2
PFHxA","33","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","36.1","","276.7","1.00","0","","
"WGNA-080718-FRB-3322","537","RES","320-41889-10","TALSAC","STL00996","13C2
PFDA","33","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","36.1","","276.7","1.00","0","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","20","ng/L","J","6.3","DL","","TRG","","","37","LOQ","YES","-99","","270.4","1.00","15","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","15","ng/L","J","2.6","DL","","TRG","","","18","LOQ","YES","-99","","270.4","1.00","7.4","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","J","5.1","DL","","TRG","","","28","LOQ","YES","-99","","270.4","1.00","11","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","33","ng/L","U","15","DL","","TRG","","","83","LOQ","YES","-99","","270.4","1.00","33","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","4.4","ng/L","J","1.8","DL","","TRG","","","9.2","LOQ","YES","-99","","270.4","1.00","3.7","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.4","DL","","TRG","","","22","LOQ","YES","-99","","270.4","1.00","18","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","STL00993","13C2
PFHxA","34","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","37.0","","270.4","1.00","0","","
"NAWC-080718-RW-081","537","RES","320-41889-11","TALSAC","STL00996","13C2
PFDA","33","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","37.0","","270.4","1.00","0","","
"NAWC-080718-FRB-081","537","RES","320-41889-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","14","ng/L","U","5.9","DL","","TRG","","","35","LOQ","YES","-99","","287.2","1.00","14","","
"NAWC-080718-FRB-081","537","RES","320-41889-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.0","ng/L","U","2.4","DL","","TRG","","","17","LOQ","YES","-99","","287.2","1.00","7.0","","
"NAWC-080718-FRB-081","537","RES","320-41889-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)", "10", "ng/L", "U", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "287.2", "1.00", "10", ""
"NAWC-080718-FRB-081", "537", "RES", "320-41889-12", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "31", "ng/L", "U", "14", "DL", "", "TRG", "", "", "78", "LOQ", "YES", "-99", "", "287.2", "1.00", "31", ""
"NAWC-080718-FRB-081", "537", "RES", "320-41889-12", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.5", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "8.7", "LOQ", "YES", "-99", "", "287.2", "1.00", "3.5", ""
"NAWC-080718-FRB-081", "537", "RES", "320-41889-12", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "17", "ng/L", "U", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "287.2", "1.00", "17", ""
"NAWC-080718-FRB-081", "537", "RES", "320-41889-12", "TALSAC", "STL00993", "13C2
PFHxA", "32", "ng/L", "", "-99", "DL", "", "SURR", "92", "", "-99", "LOQ", "YES", "34.8", "", "287.2", "1.00", "0", ""
"NAWC-080718-FRB-081", "537", "RES", "320-41889-12", "TALSAC", "STL00996", "13C2
PFDA", "31", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "34.8", "", "287.2", "1.00", "0", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "19", "ng/L", "J", "6.2", "DL", "", "TRG", "", "", "37", "LOQ", "YES", "-99", "", "273.3", "1.00", "15", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "16", "ng/L", "J", "2.6", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "273.3", "1.00", "7.3", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "12", "ng/L", "J", "5.0", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "273.3", "1.00", "11", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "33", "ng/L", "U", "15", "DL", "", "TRG", "", "", "82", "LOQ", "YES", "-99", "", "273.3", "1.00", "33", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "5.3", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "9.1", "LOQ", "YES", "-99", "", "273.3", "1.00", "3.7", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.3", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "273.3", "1.00", "18", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "STL00993", "13C2
PFHxA", "34", "ng/L", "", "-99", "DL", "", "SURR", "92", "", "-99", "LOQ", "YES", "36.6", "", "273.3", "1.00", "0", ""
"NAWC-080718-RW-082", "537", "RES", "320-41889-13", "TALSAC", "STL00996", "13C2
PFDA", "34", "ng/L", "", "-99", "DL", "", "SURR", "93", "", "-99", "LOQ", "YES", "36.6", "", "273.3", "1.00", "0", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "6.1", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "278.7", "1.00", "14", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.2", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "278.7", "1.00", "7.2", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "4.9", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "278.7", "1.00", "11", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "81", "LOQ", "YES", "-99", "", "278.7", "1.00", "32", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.6", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "9.0", "LOQ", "YES", "-99", "", "278.7", "1.00", "3.6", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.2", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "278.7", "1.00", "18", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "STL00993", "13C2
PFHxA", "33", "ng/L", "", "-99", "DL", "", "SURR", "92", "", "-99", "LOQ", "YES", "35.9", "", "278.7", "1.00", "0", ""
"NAWC-080718-FRB-082", "537", "RES", "320-41889-14", "TALSAC", "STL00996", "13C2
PFDA", "32", "ng/L", "", "-99", "DL", "", "SURR", "88", "", "-99", "LOQ", "YES", "35.9", "", "278.7", "1.00", "0", ""
"NAWC-080718-RW-258", "537", "RES", "320-41889-15", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "17", "ng/L", "J", "6.2", "DL", "", "TRG", "", "", "36", "LOQ", "YES", "-99", "", "275.9", "1.00", "14", ""
"NAWC-080718-RW-258", "537", "RES", "320-41889-15", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "19", "ng/L", "", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "275.9", "1.00", "7.2", ""
"NAWC-080718-RW-258", "537", "RES", "320-41889-15", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U M", "5.0", "DL", "", "TRG", "", "", "27", "LOQ", "YES", "-99", "", "275.9", "1.00", "11", ""
"NAWC-080718-RW-258", "537", "RES", "320-41889-15", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "33", "ng/L", "U", "15", "DL", "", "TRG", "", "", "82", "LOQ", "YES", "-99", "", "275.9", "1.00", "33", ""
"NAWC-080718-RW-258", "537", "RES", "320-41889-15", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "6.7", "ng/L", "J", "1.7", "DL", "", "TRG", "", "", "9.1", "LOQ", "YES", "-99", "", "275.9", "1.00", "3.6", ""
"NAWC-080718-RW-258", "537", "RES", "320-41889-15", "TALSAC", "375-95-1", "Perfluorononanoic acid

(PFNA),"9.4","ng/L","J","7.2","DL","","TRG","","","22","LOQ","YES",-99","","275.9","1.00","18","","
"NAWC-080718-RW-258","537","RES","320-41889-15","TALSAC","STL00993","13C2
PFHxA","33","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","36.2","","275.9","1.00","0","","
"NAWC-080718-RW-258","537","RES","320-41889-15","TALSAC","STL00996","13C2
PFDA","31","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","36.2","","275.9","1.00","0","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.1","DL","","TRG","","","36","LOQ","YES",-99","","277","1.00","14","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.2","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99","","277","1.00","7.2","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.0","DL","","TRG","","","27","LOQ","YES",-99","","277","1.00","11","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","32","ng/L","U","15","DL","","TRG","","","81","LOQ","YES",-99","","277","1.00","32","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.6","ng/L","U","1.7","DL","","TRG","","","9.0","LOQ","YES",-99","","277","1.00","3.6","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18","ng/L","U","7.2","DL","","TRG","","","22","LOQ","YES",-99","","277","1.00","18","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","STL00993","13C2
PFHxA","32","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","36.1","","277","1.00","0","","
"NAWC-080718-FRB-258","537","RES","320-41889-16","TALSAC","STL00996","13C2
PFDA","31","ng/L","","-99","DL","","SURR","87","","-99","LOQ","YES","36.1","","277","1.00","0","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","15","ng/L","U","6.4","DL","","TRG","","","38","LOQ","YES",-99","","265.5","1.00","15","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","6.4","ng/L","J","2.6","DL","","TRG","","","19","LOQ","YES",-99","","265.5","1.00","7.5","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U","5.2","DL","","TRG","","","28","LOQ","YES",-99","","265.5","1.00","11","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","","TRG","","","85","LOQ","YES",-99","","265.5","1.00","34","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.8","ng/L","U","1.8","DL","","TRG","","","9.4","LOQ","YES",-99","","265.5","1.00","3.8","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.5","DL","","TRG","","","23","LOQ","YES",-99","","265.5","1.00","19","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","STL00993","13C2
PFHxA","35","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","37.7","","265.5","1.00","0","","
"NAWC-080718-RW-207","537","RES","320-41889-17","TALSAC","STL00996","13C2
PFDA","34","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","37.7","","265.5","1.00","0","","
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","44.5","ng/L","","6.4","DL","","SPK","118","","37","LOQ","YES","37.7","NAWC-080718-RW-
207","266.9","1.00","15","","
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","23.9","ng/L","","2.6","DL","","SPK","93","","19","LOQ","YES","18.7","NAWC-080718-RW-
207","266.9","1.00","7.5","","
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","30.1","ng/L","","5.2","DL","","SPK","106","","28","LOQ","YES","28.4","NAWC-080718-RW-
207","266.9","1.00","11","","
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","103","ng/L","","15","DL","","SPK","122","","84","LOQ","YES","84.5","NAWC-080718-RW-
207","266.9","1.00","34","","
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","9.20","ng/L","J","1.8","DL","","SPK","98","","9.4","LOQ","YES","9.37","NAWC-080718-RW-
207","266.9","1.00","3.7","","
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","18.1","ng/L","J","7.5","DL","","SPK","96","","22","LOQ","YES","18.7","NAWC-080718-RW-

207","266.9","1.00","19",""
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","STL00993","13C2
PFHxA","33.8","ng/L","",-99","DL","","SURR","90","",-99","LOQ","YES","37.5","NAWC-080718-RW-
207","266.9","1.00","0",""
"NAWC-080718-RW-207MS","537","RES","320-41889-17MS","TALSAC","STL00996","13C2
PFDA","32.9","ng/L","",-99","DL","","SURR","88","",-99","LOQ","YES","37.5","NAWC-080718-RW-
207","266.9","1.00","0",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS)","52.3","ng/L","","6.9","DL","","SPK","128","16","41","LOQ","YES","40.8","NAWC-080718-RW-
207","246.4","1.00","16",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","27.6","ng/L","","2.8","DL","","SPK","105","15","20","LOQ","YES","20.3","NAWC-080718-RW-
207","246.4","1.00","8.1",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","355-46-4","Perfluorohexanesulfonic
acid (PFHxS)","32.8","ng/L","","5.6","DL","","SPK","107","9","30","LOQ","YES","30.8","NAWC-080718-RW-
207","246.4","1.00","12",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","375-73-5","Perfluorobutanesulfonic
acid (PFBS)","109","ng/L","","16","DL","","SPK","120","6","91","LOQ","YES","91.5","NAWC-080718-RW-
207","246.4","1.00","37",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","10.1","ng/L","","1.9","DL","","SPK","100","9","10","LOQ","YES","10.1","NAWC-080718-RW-
207","246.4","1.00","4.1",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19.3","ng/L","J","8.1","DL","","SPK","95","6","24","LOQ","YES","20.3","NAWC-080718-RW-
207","246.4","1.00","20",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","STL00993","13C2
PFHxA","36.5","ng/L","",-99","DL","","SURR","90","",-99","LOQ","YES","40.6","NAWC-080718-RW-
207","246.4","1.00","0",""
"NAWC-080718-RW-207MSD","537","RES","320-41889-17MSD","TALSAC","STL00996","13C2
PFDA","34.6","ng/L","",-99","DL","","SURR","85","",-99","LOQ","YES","40.6","NAWC-080718-RW-
207","246.4","1.00","0",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","5.9","DL","","TRG","","","35","LOQ","YES","-99","","286.1","1.00","14",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.4","DL","","TRG","","","17","LOQ","YES","-99","","286.1","1.00","7.0",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES","-99","","286.1","1.00","10",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","","TRG","","","79","LOQ","YES","-99","","286.1","1.00","31",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","","TRG","","","8.7","LOQ","YES","-99","","286.1","1.00","3.5",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES","-99","","286.1","1.00","17",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","STL00993","13C2
PFHxA","32","ng/L","",-99","DL","","SURR","90","",-99","LOQ","YES","35.0","","286.1","1.00","0",""
"NAWC-080718-FRB-207","537","RES","320-41889-18","TALSAC","STL00996","13C2
PFDA","31","ng/L","",-99","DL","","SURR","88","",-99","LOQ","YES","35.0","","286.1","1.00","0",""
"WGNA-080718-DUP-44","537","RES","320-41889-19","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","17","ng/L","J","6.4","DL","","TRG","","","37","LOQ","YES","-99","","267.7","1.00","15",""
"WGNA-080718-DUP-44","537","RES","320-41889-19","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19","ng/L","","2.6","DL","","TRG","","","19","LOQ","YES","-99","","267.7","1.00","7.5",""
"WGNA-080718-DUP-44","537","RES","320-41889-19","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","U M","5.1","DL","","TRG","","","28","LOQ","YES","-99","","267.7","1.00","11",""
"WGNA-080718-DUP-44","537","RES","320-41889-19","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)", "34", "ng/L", "U", "15", "DL", "", "TRG", "", "", "84", "LOQ", "YES", "-99", "", "267.7", "1.00", "34", ""
"WGNA-080718-DUP-44", "537", "RES", "320-41889-19", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "6.9", "ng/L", "J", "1.8", "DL", "", "TRG", "", "", "9.3", "LOQ", "YES", "-99", "", "267.7", "1.00", "3.7", ""
"WGNA-080718-DUP-44", "537", "RES", "320-41889-19", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "9.4", "ng/L", "J", "7.5", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "267.7", "1.00", "19", ""
"WGNA-080718-DUP-44", "537", "RES", "320-41889-19", "TALSAC", "STL00993", "13C2
PFHxA", "34", "ng/L", "", "-99", "DL", "", "SURR", "90", "", "-99", "LOQ", "YES", "37.4", "", "267.7", "1.00", "0", ""
"WGNA-080718-DUP-44", "537", "RES", "320-41889-19", "TALSAC", "STL00996", "13C2
PFDA", "32", "ng/L", "", "-99", "DL", "", "SURR", "87", "", "-99", "LOQ", "YES", "37.4", "", "267.7", "1.00", "0", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "15", "ng/L", "U", "6.3", "DL", "", "TRG", "", "", "37", "LOQ", "YES", "-99", "", "271.1", "1.00", "15", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.4", "ng/L", "U", "2.6", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "271.1", "1.00", "7.4", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "5.1", "DL", "", "TRG", "", "", "28", "LOQ", "YES", "-99", "", "271.1", "1.00", "11", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "33", "ng/L", "U", "15", "DL", "", "TRG", "", "", "83", "LOQ", "YES", "-99", "", "271.1", "1.00", "33", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.7", "ng/L", "U", "1.8", "DL", "", "TRG", "", "", "9.2", "LOQ", "YES", "-99", "", "271.1", "1.00", "3.7", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.4", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "271.1", "1.00", "18", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "STL00993", "13C2
PFHxA", "34", "ng/L", "", "-99", "DL", "", "SURR", "93", "", "-99", "LOQ", "YES", "36.9", "", "271.1", "1.00", "0", ""
"WGNA-080718-FRB-4848", "537", "RES", "320-41889-2", "TALSAC", "STL00996", "13C2
PFDA", "33", "ng/L", "", "-99", "DL", "", "SURR", "90", "", "-99", "LOQ", "YES", "36.9", "", "271.1", "1.00", "0", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "28", "ng/L", "J", "6.3", "DL", "", "TRG", "", "", "37", "LOQ", "YES", "-99", "", "269.2", "1.00", "15", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "27", "ng/L", "", "2.6", "DL", "", "TRG", "", "", "19", "LOQ", "YES", "-99", "", "269.2", "1.00", "7.4", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "20", "ng/L", "J", "5.1", "DL", "", "TRG", "", "", "28", "LOQ", "YES", "-99", "", "269.2", "1.00", "11", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "33", "ng/L", "U", "15", "DL", "", "TRG", "", "", "84", "LOQ", "YES", "-99", "", "269.2", "1.00", "33", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "6.2", "ng/L", "J", "1.8", "DL", "", "TRG", "", "", "9.3", "LOQ", "YES", "-99", "", "269.2", "1.00", "3.7", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "35", "ng/L", "", "7.4", "DL", "", "TRG", "", "", "22", "LOQ", "YES", "-99", "", "269.2", "1.00", "19", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "STL00993", "13C2
PFHxA", "35", "ng/L", "", "-99", "DL", "", "SURR", "94", "", "-99", "LOQ", "YES", "37.1", "", "269.2", "1.00", "0", ""
"WGNA-080718-RW-0344", "537", "RES", "320-41889-3", "TALSAC", "STL00996", "13C2
PFDA", "33", "ng/L", "", "-99", "DL", "", "SURR", "89", "", "-99", "LOQ", "YES", "37.1", "", "269.2", "1.00", "0", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "14", "ng/L", "U", "6.0", "DL", "", "TRG", "", "", "35", "LOQ", "YES", "-99", "", "285.3", "1.00", "14", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "7.0", "ng/L", "U", "2.5", "DL", "", "TRG", "", "", "18", "LOQ", "YES", "-99", "", "285.3", "1.00", "7.0", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFHxS)", "11", "ng/L", "U", "4.8", "DL", "", "TRG", "", "", "26", "LOQ", "YES", "-99", "", "285.3", "1.00", "11", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "32", "ng/L", "U", "14", "DL", "", "TRG", "", "", "79", "LOQ", "YES", "-99", "", "285.3", "1.00", "32", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "3.5", "ng/L", "U", "1.7", "DL", "", "TRG", "", "", "8.8", "LOQ", "YES", "-99", "", "285.3", "1.00", "3.5", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "18", "ng/L", "U", "7.0", "DL", "", "TRG", "", "", "21", "LOQ", "YES", "-99", "", "285.3", "1.00", "18", ""
"WGNA-080718-FRB-0344", "537", "RES", "320-41889-4", "TALSAC", "STL00993", "13C2

PFHxA","33","ng/L","",-99,"DL","",,"SURR","94","",-99,"LOQ","YES","35.1","",,"285.3","1.00","0",""
"WGNA-080718-FRB-0344","537","RES","320-41889-4","TALSAC","STL00996","13C2
PFDA","31","ng/L","",-99,"DL","",,"SURR","89","",-99,"LOQ","YES","35.1","",,"285.3","1.00","0",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","39","ng/L","",,"6.5","DL","",,"TRG","",,"",,"38","LOQ","YES","-99","",,"262.2","1.00","15",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","19","ng/L","",,"2.7","DL","",,"TRG","",,"",,"19","LOQ","YES","-99","",,"262.2","1.00","7.6",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","32","ng/L","",,"5.2","DL","",,"TRG","",,"",,"29","LOQ","YES","-99","",,"262.2","1.00","11",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","34","ng/L","U","15","DL","",,"TRG","",,"",,"86","LOQ","YES","-99","",,"262.2","1.00","34",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","5.4","ng/L","J","1.8","DL","",,"TRG","",,"",,"9.5","LOQ","YES","-99","",,"262.2","1.00","3.8",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","19","ng/L","U","7.6","DL","",,"TRG","",,"",,"23","LOQ","YES","-99","",,"262.2","1.00","19",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","STL00993","13C2
PFHxA","35","ng/L","",-99,"DL","",,"SURR","93","",-99,"LOQ","YES","38.1","",,"262.2","1.00","0",""
"WGNA-080718-RW-0104","537","RES","320-41889-5","TALSAC","STL00996","13C2
PFDA","35","ng/L","",-99,"DL","",,"SURR","93","",-99,"LOQ","YES","38.1","",,"262.2","1.00","0",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","5.9","DL","",,"TRG","",,"",,"35","LOQ","YES","-99","",,"286.1","1.00","14",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","7.0","ng/L","U","2.4","DL","",,"TRG","",,"",,"17","LOQ","YES","-99","",,"286.1","1.00","7.0",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","10","ng/L","U","4.8","DL","",,"TRG","",,"",,"26","LOQ","YES","-99","",,"286.1","1.00","10",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","",,"TRG","",,"",,"79","LOQ","YES","-99","",,"286.1","1.00","31",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","3.5","ng/L","U","1.7","DL","",,"TRG","",,"",,"8.7","LOQ","YES","-99","",,"286.1","1.00","3.5",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","7.0","DL","",,"TRG","",,"",,"21","LOQ","YES","-99","",,"286.1","1.00","17",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","STL00993","13C2
PFHxA","33","ng/L","",-99,"DL","",,"SURR","94","",-99,"LOQ","YES","35.0","",,"286.1","1.00","0",""
"WGNA-080718-FRB-0104","537","RES","320-41889-6","TALSAC","STL00996","13C2
PFDA","32","ng/L","",-99,"DL","",,"SURR","90","",-99,"LOQ","YES","35.0","",,"286.1","1.00","0",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","20","ng/L","J","5.9","DL","",,"TRG","",,"",,"35","LOQ","YES","-99","",,"286.2","1.00","14",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","21","ng/L","",,"2.4","DL","",,"TRG","",,"",,"17","LOQ","YES","-99","",,"286.2","1.00","7.0",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","11","ng/L","J","4.8","DL","",,"TRG","",,"",,"26","LOQ","YES","-99","",,"286.2","1.00","10",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","31","ng/L","U","14","DL","",,"TRG","",,"",,"79","LOQ","YES","-99","",,"286.2","1.00","31",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","8.3","ng/L","J","1.7","DL","",,"TRG","",,"",,"8.7","LOQ","YES","-99","",,"286.2","1.00","3.5",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","17","ng/L","U","7.0","DL","",,"TRG","",,"",,"21","LOQ","YES","-99","",,"286.2","1.00","17",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","STL00993","13C2
PFHxA","31","ng/L","",-99,"DL","",,"SURR","88","",-99,"LOQ","YES","34.9","",,"286.2","1.00","0",""
"NAWC-080718-RW-106","537","RES","320-41889-7","TALSAC","STL00996","13C2
PFDA","30","ng/L","",-99,"DL","",,"SURR","85","",-99,"LOQ","YES","34.9","",,"286.2","1.00","0",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","14","ng/L","U","6.0","DL","",,"TRG","",,"",,"35","LOQ","YES","-99","",,"285.3","1.00","14",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","335-67-1","Perfluorooctanoic acid

(PFOA),"7.0","ng/L","U","2.5","DL","","TRG","","","18","LOQ","YES",-99","","285.3","1.00","7.0",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"11","ng/L","U","4.8","DL","","TRG","","","26","LOQ","YES",-99","","285.3","1.00","11",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"32","ng/L","U","14","DL","","TRG","","","79","LOQ","YES",-99","","285.3","1.00","32",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"3.5","ng/L","U","1.7","DL","","TRG","","","8.8","LOQ","YES",-99","","285.3","1.00","3.5",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"18","ng/L","U","7.0","DL","","TRG","","","21","LOQ","YES",-99","","285.3","1.00","18",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","STL00993","13C2
PFHxA,"32","ng/L","","-99","DL","","SURR","90","","-99","LOQ","YES","35.1","","285.3","1.00","0",""
"NAWC-080718-FRB-106","537","RES","320-41889-8","TALSAC","STL00996","13C2
PFDA,"31","ng/L","","-99","DL","","SURR","88","","-99","LOQ","YES","35.1","","285.3","1.00","0",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"24","ng/L","J","6.3","DL","","TRG","","","37","LOQ","YES",-99","","268.8","1.00","15",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"18","ng/L","J","2.6","DL","","TRG","","","19","LOQ","YES",-99","","268.8","1.00","7.4",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"5.3","ng/L","J","5.1","DL","","TRG","","","28","LOQ","YES",-99","","268.8","1.00","11",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"33","ng/L","U","15","DL","","TRG","","","84","LOQ","YES",-99","","268.8","1.00","33",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"5.5","ng/L","J","1.8","DL","","TRG","","","9.3","LOQ","YES",-99","","268.8","1.00","3.7",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19","ng/L","U","7.4","DL","","TRG","","","22","LOQ","YES",-99","","268.8","1.00","19",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","STL00993","13C2
PFHxA,"34","ng/L","","-99","DL","","SURR","91","","-99","LOQ","YES","37.2","","268.8","1.00","0",""
"WGNA-080718-RW-3322","537","RES","320-41889-9","TALSAC","STL00996","13C2
PFDA,"33","ng/L","","-99","DL","","SURR","89","","-99","LOQ","YES","37.2","","268.8","1.00","0",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic
acid (PFOS),"41.5","ng/L","","6.8","DL","","SPK","103","","40","LOQ","YES","40.2","","250.00","1.00","16",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"18.8","ng/L","J","2.8","DL","","SPK","94","","20","LOQ","YES","20.0","","250.00","1.00","8.0",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"33.3","ng/L","","5.5","DL","","SPK","110","","30","LOQ","YES","30.3","","250.00","1.00","12",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"105","ng/L","","16","DL","","SPK","117","","90","LOQ","YES","90.2","","250.00","1.00","36",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"10.0","ng/L","","1.9","DL","","SPK","100","","10","LOQ","YES","10.0","","250.00","1.00","4.0",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"19.1","ng/L","J","8.0","DL","","SPK","96","","24","LOQ","YES","20.0","","250.00","1.00","20",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","STL00993","13C2
PFHxA,"36.7","ng/L","","-99","DL","","SURR","92","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"LLCS 320-240636/2-A","537","RES","LLCS 320-240636/2-A","TALSAC","STL00996","13C2
PFDA,"34.1","ng/L","","-99","DL","","SURR","85","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS),"16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES",-99","","250.00","1.00","16",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA),"8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES",-99","","250.00","1.00","8.0",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES",-99","","250.00","1.00","12",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES",-99","","250.00","1.00","36",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid

(PFHpA),"4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250.00","1.00","4.0",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","20","ng/L","U","8.0","DL","","TRG","","","24","LOQ","YES","-99","","250.00","1.00","20",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","STL00993","13C2
PFHxA","37.4","ng/L","","-99","DL","","SURR","94","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"MB 320-240636/1-A","537","RES","MB 320-240636/1-A","TALSAC","STL00996","13C2
PFDA","34.2","ng/L","","-99","DL","","SURR","85","","-99","LOQ","YES","40.0","","250.00","1.00","0",""
"Unknown","Unknown","WGNA-080718-RW-4848","08/07/2018 07:25","AQ","320-41889-
1","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-FRB-3322","08/07/2018 09:35","AQ","320-41889-
10","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:11","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-081","08/07/2018 10:10","AQ","320-41889-
11","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:16","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-FRB-081","08/07/2018 10:05","AQ","320-41889-
12","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:21","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-082","08/07/2018 10:20","AQ","320-41889-
13","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:25","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-FRB-082","08/07/2018 10:15","AQ","320-41889-
14","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:30","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-258","08/07/2018 11:10","AQ","320-41889-
15","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:35","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-FRB-258","08/07/2018 11:05","AQ","320-41889-
16","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:39","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-207","08/07/2018 12:40","AQ","320-41889-
17","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:44","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-207MS","08/07/2018 12:40","AQ","320-41889-
17MS","MS","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:49","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-207MSD","08/07/2018 12:40","AQ","320-41889-
17MSD","MSD","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
19:03","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240972","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-FRB-207","08/07/2018 12:35","AQ","320-41889-
18","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
19:07","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-

240972","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-DUP-44","08/07/2018 07:00","AQ","320-41889-
19","FD","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
19:12","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240972","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-FRB-4848","08/07/2018 07:20","AQ","320-41889-
2","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:25","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-RW-0344","08/07/2018 08:10","AQ","320-41889-
3","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:29","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-FRB-0344","08/07/2018 08:05","AQ","320-41889-
4","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:34","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-RW-0104","08/07/2018 08:40","AQ","320-41889-
5","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:39","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-FRB-0104","08/07/2018 08:35","AQ","320-41889-
6","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:43","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-RW-106","08/07/2018 09:10","AQ","320-41889-
7","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:48","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","NAWC-080718-FRB-106","08/07/2018 09:05","AQ","320-41889-
8","FB","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:53","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","WGNA-080718-RW-3322","08/07/2018 09:40","AQ","320-41889-
9","NM","","4.90","537","METHOD","RES","08/17/2018 20:02","08/20/2018
18:07","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240971","320-41889-1","08/08/2018 13:27","08/09/2018 10:00",""
"Unknown","Unknown","LLCS 320-240636/2-A","","AQ","LLCS 320-240636/2-
A","LCS","","-99","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:15","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/17/2018 20:02","08/09/2018 10:00",""
"Unknown","Unknown","MB 320-240636/1-A","","AQ","MB 320-240636/1-
A","MB","","-99","537","METHOD","RES","08/17/2018 20:02","08/20/2018
17:11","TALSAC","COA","WET","NA","1","NA","NA","","100","320-240636","320-240636","NA","320-
240970","320-41889-1","08/17/2018 20:02","08/09/2018 10:00",""

TO: A. FREBOWITZ
SDG: 320-41889-1

PAGE 2

Notes

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

<u>Sample</u>	<u>Associated FRB</u>
NAWC-080718-RW-081	NAWC-080718-FRB-081
NAWC-080718-RW-082	NAWC-080718-FRB-082
NAWC-080718-RW-106	NAWC-080718-FRB-106
NAWC-080718-RW-207	NAWC-080718-FRB-207
NAWC-080718-RW-258	NAWC-080718-FRB-258
WGNA-080718-DUP-44	NAWC-080718-FRB-258
WGNA-080718-RW-0104	WGNA-080718-FRB-0104
WGNA-080718-RW-0344	WGNA-080718-FRB-0344
WGNA-080718-RW-3322	WGNA-080718-FRB-3322
WGNA-080718-RW-4848	WGNA-080718-FRB-4848

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

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

Executive Summary

Laboratory Performance: None.

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

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009), US EPA National Functional Guidelines for Organic Data Review (January 2017), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013) as applicable. The text of this report has been formulated to address only those areas affecting data quality.



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



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

Attachments:

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

Data Qualifier Definitions

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

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

Appendix A

Qualified Analytical Results

Qualifier Codes:

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

PROJ_NO: 08005-WE04 SDG: 320-41889-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-080718-FRB-081			NAWC-080718-FRB-082			NAWC-080718-FRB-106			NAWC-080718-FRB-207		
	LAB_ID	320-41889-12			320-41889-14			320-41889-8			320-41889-18		
	SAMP_DATE	8/7/2018			8/7/2018			8/7/2018			8/7/2018		
	QC_TYPE	FB			FB			FB			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	7	U		7.2	U		7	U		7	U		
PERFLUOROBUTANESULFONIC ACID (PFBS)	31	U		32	U		32	U		31	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.5	U		3.6	U		3.5	U		3.5	U		
PERFLUOROHEXANESULFONIC ACID (PFHXS)	10	U		11	U		11	U		10	U		
PERFLUORONONANOIC ACID (PFNA)	17	U		18	U		18	U		17	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	14	U		14	U		14	U		14	U		

PROJ_NO: 08005-WE04 SDG: 320-41889-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-080718-FRB-258			NAWC-080718-RW-081			NAWC-080718-RW-082			NAWC-080718-RW-106		
	LAB_ID	320-41889-16			320-41889-11			320-41889-13			320-41889-7		
	SAMP_DATE	8/7/2018			8/7/2018			8/7/2018			8/7/2018		
	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	7.2	U		15	J	P	16	J	P	21			
PERFLUOROBUTANESULFONIC ACID (PFBS)	32	U		33	U		33	U		31	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.6	U		4.4	J	P	5.3	J	P	8.3	J	P	
PERFLUOROHEXANESULFONIC ACID (PFHXS)	11	U		11	J	P	12	J	P	11	J	P	
PERFLUORONONANOIC ACID (PFNA)	18	U		18	U		18	U		17	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	14	U		20	J	P	19	J	P	20	J	P	

PROJ_NO: 08005-WE04 SDG: 320-41889-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	NAWC-080718-RW-207			NAWC-080718-RW-258			WGNA-080718-DUP-44			WGNA-080718-FRB-0104		
	LAB_ID	320-41889-17			320-41889-15			320-41889-19			320-41889-6		
	SAMP_DATE	8/7/2018			8/7/2018			8/7/2018			8/7/2018		
	QC_TYPE	NM			NM			FD			FB		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							NAWC-080718-RW-258					
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	6.4	J	P	19			19			7	U		
PERFLUOROBUTANESULFONIC ACID (PFBS)	34	U		33	U		34	U		31	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.8	U		6.7	J	P	6.9	J	P	3.5	U		
PERFLUOROHEXANESULFONIC ACID (PFHXS)	11	U		11	U		11	U		10	U		
PERFLUORONONANOIC ACID (PFNA)	19	U		9.4	J	P	9.4	J	P	17	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	15	U		17	J	P	17	J	P	14	U		

PROJ_NO: 08005-WE04 SDG: 320-41889-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-080718-FRB-0344			WGNA-080718-FRB-3322			WGNA-080718-FRB-4848			WGNA-080718-RW-0104		
	LAB_ID	320-41889-4			320-41889-10			320-41889-2			320-41889-5		
	SAMP_DATE	8/7/2018			8/7/2018			8/7/2018			8/7/2018		
	QC_TYPE	FB			FB			FB			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	7	U		7.2	U		7.4	U		19			
PERFLUOROBUTANESULFONIC ACID (PFBS)	32	U		33	U		33	U		34	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	3.5	U		3.6	U		3.7	U		5.4	J	P	
PERFLUOROHEXANESULFONIC ACID (PFHXS)	11	U		11	U		11	U		32			
PERFLUORONONANOIC ACID (PFNA)	18	U		18	U		18	U		19	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	14	U		14	U		15	U		39			

PROJ_NO: 08005-WE04 SDG: 320-41889-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	WGNA-080718-RW-0344			WGNA-080718-RW-3322			WGNA-080718-RW-4848		
	LAB_ID	320-41889-3			320-41889-9			320-41889-1		
	SAMP_DATE	8/7/2018			8/7/2018			8/7/2018		
	QC_TYPE	NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0		
	DUP_OF									
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCTANOIC ACID (PFOA)	27			18	J	P	8.2	U		
PERFLUOROBUTANESULFONIC ACID (PFBS)	33	U		33	U		37	U		
PERFLUOROHEPTANOIC ACID (PFHPA)	6.2	J	P	5.5	J	P	4.1	U		
PERFLUOROHEXANESULFONIC ACID (PFHXS)	20	J	P	5.3	J	P	12	U		
PERFLUORONONANOIC ACID (PFNA)	35			19	U		20	U		
PERFLUOROOCTANESULFONIC ACID (PFOS)	28	J	P	24	J	P	16	U		

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-4848 Lab Sample ID: 320-41889-1
 Matrix: Water Lab File ID: 2018.08.20_537A_016.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:25
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 245 (mL) Date Analyzed: 08/20/2018 17:20
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U M	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	89		70-130

Mari L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-4848 Lab Sample ID: 320-41889-2
 Matrix: Water Lab File ID: 2018.08.20_537A_017.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:20
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 271.1(mL) Date Analyzed: 08/20/2018 17:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	90		70-130

Wesley L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-0344 Lab Sample ID: 320-41889-3
 Matrix: Water Lab File ID: 2018.08.20_537A_018.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 269.2 (mL) Date Analyzed: 08/20/2018 17:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	27		19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	35		22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

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

Wesley L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-0344 Lab Sample ID: 320-41889-4
 Matrix: Water Lab File ID: 2018.08.20_537A_019.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 285.3(mL) Date Analyzed: 08/20/2018 17:34
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

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

Steve L. Salzman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-0104 Lab Sample ID: 320-41889-5
 Matrix: Water Lab File ID: 2018.08.20_537A_020.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 262.2 (mL) Date Analyzed: 08/20/2018 17:39
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39		38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32		29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.4	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

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

Mari L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-0104 Lab Sample ID: 320-41889-6
 Matrix: Water Lab File ID: 2018.08.20_537A_021.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.1(mL) Date Analyzed: 08/20/2018 17:43
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	90		70-130

Heidi L. Salmeron
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-106 Lab Sample ID: 320-41889-7
 Matrix: Water Lab File ID: 2018.08.20_537A_022.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.2 (mL) Date Analyzed: 08/20/2018 17:48
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	21		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	85		70-130

Steve L. Salzman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-106 Lab Sample ID: 320-41889-8
 Matrix: Water Lab File ID: 2018.08.20_537A_023.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 285.3(mL) Date Analyzed: 08/20/2018 17:53
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

Wesley L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-3322 Lab Sample ID: 320-41889-9
 Matrix: Water Lab File ID: 2018.08.20_537A_026.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 268.8(mL) Date Analyzed: 08/20/2018 18:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	89		70-130

Wesley L. Salzman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-3322 Lab Sample ID: 320-41889-10
 Matrix: Water Lab File ID: 2018.08.20_537A_027.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 276.7(mL) Date Analyzed: 08/20/2018 18:11
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

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

Wesley L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-081 Lab Sample ID: 320-41889-11
 Matrix: Water Lab File ID: 2018.08.20_537A_028.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 270.4 (mL) Date Analyzed: 08/20/2018 18:16
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.4	J	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	89		70-130

Amir L. Salaman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-081 Lab Sample ID: 320-41889-12
 Matrix: Water Lab File ID: 2018.08.20_537A_029.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 287.2 (mL) Date Analyzed: 08/20/2018 18:21
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	88		70-130

Wesley L. Salomon
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-082 Lab Sample ID: 320-41889-13
 Matrix: Water Lab File ID: 2018.08.20_537A_030.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:20
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 273.3(mL) Date Analyzed: 08/20/2018 18:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.3	J	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	93		70-130

Wendy L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-082 Lab Sample ID: 320-41889-14
 Matrix: Water Lab File ID: 2018.08.20_537A_031.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:15
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 278.7(mL) Date Analyzed: 08/20/2018 18:30
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	88		70-130

Mari L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-258 Lab Sample ID: 320-41889-15
 Matrix: Water Lab File ID: 2018.08.20_537A_032.d
 Analysis Method: 537 Date Collected: 08/07/2018 11:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 275.9(mL) Date Analyzed: 08/20/2018 18:35
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	19		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	9.4	J	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U-M	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	87		70-130

Wesley L. Salomon
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-258 Lab Sample ID: 320-41889-16
 Matrix: Water Lab File ID: 2018.08.20_537A_033.d
 Analysis Method: 537 Date Collected: 08/07/2018 11:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 277(mL) Date Analyzed: 08/20/2018 18:39
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	87		70-130

Maria L. Salmeron
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-207 Lab Sample ID: 320-41889-17
 Matrix: Water Lab File ID: 2018.08.20_537A_034.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 265.5 (mL) Date Analyzed: 08/20/2018 18:44
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	90		70-130

Steve L. Selman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-207 Lab Sample ID: 320-41889-18
 Matrix: Water Lab File ID: 2018.08.20_537A_039.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.1(mL) Date Analyzed: 08/20/2018 19:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

Wesley L. Salzman
10/02/2018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-DUP-44 Lab Sample ID: 320-41889-19
 Matrix: Water Lab File ID: 2018.08.20_537A_040.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:00
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 267.7(mL) Date Analyzed: 08/20/2018 19:12
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	37	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	9.4	J	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U M	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.9	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

Wesley L. Selman
10/02/2018

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-4848 Lab Sample ID: 320-41889-1
 Matrix: Water Lab File ID: 2018.08.20_537A_016.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:25
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 245 (mL) Date Analyzed: 08/20/2018 17:20
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	16	U	41	16	6.9
335-67-1	Perfluorooctanoic acid (PFOA)	8.2	U M	20	8.2	2.9
375-95-1	Perfluorononanoic acid (PFNA)	20	U	24	20	8.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	U	31	12	5.6
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.1	U	10	4.1	1.9
375-73-5	Perfluorobutanesulfonic acid (PFBS)	37	U	92	37	16

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	89		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-4848 Lab Sample ID: 320-41889-2
 Matrix: Water Lab File ID: 2018.08.20_537A_017.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:20
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 271.1(mL) Date Analyzed: 08/20/2018 17:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	15	U	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	7.4	U	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.7	U	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	90		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-0344 Lab Sample ID: 320-41889-3
 Matrix: Water Lab File ID: 2018.08.20_537A_018.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 269.2 (mL) Date Analyzed: 08/20/2018 17:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	28	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	27		19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	35		22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	20	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.2	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

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

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-0344 Lab Sample ID: 320-41889-4
 Matrix: Water Lab File ID: 2018.08.20_537A_019.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 285.3(mL) Date Analyzed: 08/20/2018 17:34
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

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

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-0104 Lab Sample ID: 320-41889-5
 Matrix: Water Lab File ID: 2018.08.20_537A_020.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 262.2 (mL) Date Analyzed: 08/20/2018 17:39
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39		38	15	6.5
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.6	2.7
375-95-1	Perfluorononanoic acid (PFNA)	19	U	23	19	7.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	32		29	11	5.2
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.4	J	9.5	3.8	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	86	34	15

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

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-0104 Lab Sample ID: 320-41889-6
 Matrix: Water Lab File ID: 2018.08.20_537A_021.d
 Analysis Method: 537 Date Collected: 08/07/2018 08:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.1(mL) Date Analyzed: 08/20/2018 17:43
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	90		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-106 Lab Sample ID: 320-41889-7
 Matrix: Water Lab File ID: 2018.08.20_537A_022.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.2 (mL) Date Analyzed: 08/20/2018 17:48
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	21		17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	8.3	J	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	85		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-106 Lab Sample ID: 320-41889-8
 Matrix: Water Lab File ID: 2018.08.20_537A_023.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 285.3(mL) Date Analyzed: 08/20/2018 17:53
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	18	7.0	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	21	18	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	26	11	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.8	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	79	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-RW-3322 Lab Sample ID: 320-41889-9
 Matrix: Water Lab File ID: 2018.08.20_537A_026.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 268.8(mL) Date Analyzed: 08/20/2018 18:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	24	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	18	J	19	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	19	U	22	19	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.3	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.5	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	84	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	89		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-FRB-3322 Lab Sample ID: 320-41889-10
 Matrix: Water Lab File ID: 2018.08.20_537A_027.d
 Analysis Method: 537 Date Collected: 08/07/2018 09:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 276.7(mL) Date Analyzed: 08/20/2018 18:11
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	81	33	15

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

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-081 Lab Sample ID: 320-41889-11
 Matrix: Water Lab File ID: 2018.08.20_537A_028.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 270.4 (mL) Date Analyzed: 08/20/2018 18:16
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20	J	37	15	6.3
335-67-1	Perfluorooctanoic acid (PFOA)	15	J	18	7.4	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.4
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	J	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.4	J	9.2	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	83	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	89		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-081 Lab Sample ID: 320-41889-12
 Matrix: Water Lab File ID: 2018.08.20_537A_029.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 287.2 (mL) Date Analyzed: 08/20/2018 18:21
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	78	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	88		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-082 Lab Sample ID: 320-41889-13
 Matrix: Water Lab File ID: 2018.08.20_537A_030.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:20
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 273.3(mL) Date Analyzed: 08/20/2018 18:25
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	19	J	37	15	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	16	J	18	7.3	2.6
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.3
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	12	J	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.3	J	9.1	3.7	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	93		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-082 Lab Sample ID: 320-41889-14
 Matrix: Water Lab File ID: 2018.08.20_537A_031.d
 Analysis Method: 537 Date Collected: 08/07/2018 10:15
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 278.7(mL) Date Analyzed: 08/20/2018 18:30
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	4.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	88		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-258 Lab Sample ID: 320-41889-15
 Matrix: Water Lab File ID: 2018.08.20_537A_032.d
 Analysis Method: 537 Date Collected: 08/07/2018 11:10
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 275.9(mL) Date Analyzed: 08/20/2018 18:35
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	36	14	6.2
335-67-1	Perfluorooctanoic acid (PFOA)	19		18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	9.4	J	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U M	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.7	J	9.1	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33	U	82	33	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		70-130
STL00996	13C2 PFDA	87		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-258 Lab Sample ID: 320-41889-16
 Matrix: Water Lab File ID: 2018.08.20_537A_033.d
 Analysis Method: 537 Date Collected: 08/07/2018 11:05
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 277(mL) Date Analyzed: 08/20/2018 18:39
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	36	14	6.1
335-67-1	Perfluorooctanoic acid (PFOA)	7.2	U	18	7.2	2.5
375-95-1	Perfluorononanoic acid (PFNA)	18	U	22	18	7.2
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U	27	11	5.0
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.6	U	9.0	3.6	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	32	U	81	32	15

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	87		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-RW-207 Lab Sample ID: 320-41889-17
 Matrix: Water Lab File ID: 2018.08.20_537A_034.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:40
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 265.5 (mL) Date Analyzed: 08/20/2018 18:44
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240971 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	90		70-130

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Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: NAWC-080718-FRB-207 Lab Sample ID: 320-41889-18
 Matrix: Water Lab File ID: 2018.08.20_537A_039.d
 Analysis Method: 537 Date Collected: 08/07/2018 12:35
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 286.1(mL) Date Analyzed: 08/20/2018 19:07
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	14	U	35	14	5.9
335-67-1	Perfluorooctanoic acid (PFOA)	7.0	U	17	7.0	2.4
375-95-1	Perfluorononanoic acid (PFNA)	17	U	21	17	7.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	10	U	26	10	4.8
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.5	U	8.7	3.5	1.7
375-73-5	Perfluorobutanesulfonic acid (PFBS)	31	U	79	31	14

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	88		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: WGNA-080718-DUP-44 Lab Sample ID: 320-41889-19
 Matrix: Water Lab File ID: 2018.08.20_537A_040.d
 Analysis Method: 537 Date Collected: 08/07/2018 07:00
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 267.7(mL) Date Analyzed: 08/20/2018 19:12
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240972 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	17	J	37	15	6.4
335-67-1	Perfluorooctanoic acid (PFOA)	19		19	7.5	2.6
375-95-1	Perfluorononanoic acid (PFNA)	9.4	J	22	19	7.5
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	11	U M	28	11	5.1
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.9	J	9.3	3.7	1.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34	U	84	34	15

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

Appendix C

Support Documentation

ANALYTE	ORIGINAL	DUPLICATE		RL	RPD	RPD > 30% Aqueous	ORIGINAL SAMPLE	DUPLICATE	DIFFERENCE >2XRL
	WGNA-080718-RW-258	WGNA-080718-DUP-44	CONC >2xRL				SAMPLE CONC >2xRL		
Perfluorooctanoic acid (PFOA)	19	19	18	0.00	FALSE	FALSE	FALSE	FALSE	
Perfluoroheptanoic acid (PFHpA)	6.7	6.9	9.1	2.94	FALSE	FALSE	FALSE	FALSE	
Perfluorononanoic acid (PFNA)	9.4	9.4	22	0.00	FALSE	FALSE	FALSE	FALSE	
Perfluorooctanesulfonic acid (PFOS)	17	17	36	0.00	FALSE	FALSE	FALSE	FALSE	


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

Chain of Custody Record

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Andy Frebowitz		Site Contact: Mary Kay Bond		Date: 8/7/2018		COC No:	
TelraTech		Tel/Fax: 610.382.1170		Lab Contact: Dave Alltucker		Carrier: FedEx		1 of 1 COCs	
234 Mall Boulevard Suite 260		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS / MSD (Y / N) EPA 537 UCMR3				Sampler: Mary Kay Bond	
King of Prussia, PA 19406		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS						For Lab Use Only:	
610-382-1174		TAT if different from Below 21						Walk-in Client:	
610-491-9688		<input type="checkbox"/> 2 weeks						Lab Sampling:	
Project Name: WE04		<input type="checkbox"/> 1 week						/ SDG No.:	
Site: WE04		<input type="checkbox"/> 2 days							
P O # 1132358 (through EarthToxics)		<input type="checkbox"/> 1 day							
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y / N)	EPA 537 UCMR3	Sample Specific Notes:
WGNA-080718-RW-4848	8/7/2018	7:25	G	DW	2	N	N	Y	
WGNA-080718-FRB-4848	8/7/2018	7:20	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-080718-RW-0344	8/7/2018	8:10	G	DW	2	N	N	Y	
WGNA-080718-FRB-0344	8/7/2018	8:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-080718-RW-0104	8/7/2018	8:40	G	DW	2	N	N	Y	
WGNA-080718-FRB-0104	8/7/2018	8:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-080718-RW-106	8/7/2018	9:10	G	DW	2	N	N	Y	
NAWC-080718-FRB-106	8/7/2018	9:05	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-080718-RW-3322	8/7/2018	9:40	G	DW	2	N	N	Y	
WGNA-080718-FRB-3322	8/7/2018	9:35	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-080718-RW-081	8/7/2018	10:10	G	DW	2	N	N	Y	
NAWC-080718-FRB-081	8/7/2018	10:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-080718-RW-082	8/7/2018	10:20	G	DW	2	N	N	Y	
NAWC-080718-FRB-082	8/7/2018	10:15	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-080718-RW-258	8/7/2018	11:10	G	DW	2	N	N	Y	
NAWC-080718-FRB-258	8/7/2018	11:05	G	DW	2	N	N	Y	Field Reagent Blank
NAWC-080718-RW-207	8/7/2018	12:40	G	DW	6	N	Y	Y	MS/MSD
NAWC-080718-FRB-207	8/7/2018	12:35	G	DW	2	N	N	Y	Field Reagent Blank
WGNA-080718-DUP-44	8/7/2018	7:00	G	DW	2	N	N	Y	Duplicate
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other: Trizma						6			
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for: _____ Months			
Fed Ex Tracking: 7729 1695 4978									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 4.9		Corr'd: 4.9		Therm ID No.: AK5	
Relinquished by: <i>Mary Kay Bond</i>		Company: Tetra Tech		Date/Time: 8/7/2018 16:00		Received by: <i>[Signature]</i>		Company: <i>TRUSTAC</i>	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

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Job Narrative
320-41889-1

Receipt

The samples were received on 8/8/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9° C.

LCMS

Method(s) 537: The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

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

Organic Prep

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

Definitions/Glossary

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

TestAmerica Job ID: 320-41889-1

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

Glossary

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

Method Summary

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

TestAmerica Job ID: 320-41889-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-41889-1

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-41889-1	WGNA-080718-RW-4848	Water	08/07/18 07:25	08/08/18 13:27
320-41889-2	WGNA-080718-FRB-4848	Water	08/07/18 07:20	08/08/18 13:27
320-41889-3	WGNA-080718-RW-0344	Water	08/07/18 08:10	08/08/18 13:27
320-41889-4	WGNA-080718-FRB-0344	Water	08/07/18 08:05	08/08/18 13:27
320-41889-5	WGNA-080718-RW-0104	Water	08/07/18 08:40	08/08/18 13:27
320-41889-6	WGNA-080718-FRB-0104	Water	08/07/18 08:35	08/08/18 13:27
320-41889-7	NAWC-080718-RW-106	Water	08/07/18 09:10	08/08/18 13:27
320-41889-8	NAWC-080718-FRB-106	Water	08/07/18 09:05	08/08/18 13:27
320-41889-9	WGNA-080718-RW-3322	Water	08/07/18 09:40	08/08/18 13:27
320-41889-10	WGNA-080718-FRB-3322	Water	08/07/18 09:35	08/08/18 13:27
320-41889-11	NAWC-080718-RW-081	Water	08/07/18 10:10	08/08/18 13:27
320-41889-12	NAWC-080718-FRB-081	Water	08/07/18 10:05	08/08/18 13:27
320-41889-13	NAWC-080718-RW-082	Water	08/07/18 10:20	08/08/18 13:27
320-41889-14	NAWC-080718-FRB-082	Water	08/07/18 10:15	08/08/18 13:27
320-41889-15	NAWC-080718-RW-258	Water	08/07/18 11:10	08/08/18 13:27
320-41889-16	NAWC-080718-FRB-258	Water	08/07/18 11:05	08/08/18 13:27
320-41889-17	NAWC-080718-RW-207	Water	08/07/18 12:40	08/08/18 13:27
320-41889-18	NAWC-080718-FRB-207	Water	08/07/18 12:35	08/08/18 13:27
320-41889-19	WGNA-080718-DUP-44	Water	08/07/18 07:00	08/08/18 13:27

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Matrix: Water

Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WGNA-080718-RW-484 8	320-41889-1	86	89
WGNA-080718-FRB-48 48	320-41889-2	93	90
WGNA-080718-RW-034 4	320-41889-3	94	89
WGNA-080718-FRB-03 44	320-41889-4	94	89
WGNA-080718-RW-010 4	320-41889-5	93	93
WGNA-080718-FRB-01 04	320-41889-6	94	90
NAWC-080718-RW-106	320-41889-7	88	85
NAWC-080718-FRB-10 6	320-41889-8	90	88
WGNA-080718-RW-332 2	320-41889-9	91	89
WGNA-080718-FRB-33 22	320-41889-10	90	92
NAWC-080718-RW-081	320-41889-11	91	89
NAWC-080718-FRB-08 1	320-41889-12	92	88
NAWC-080718-RW-082	320-41889-13	92	93
NAWC-080718-FRB-08 2	320-41889-14	92	88
NAWC-080718-RW-258	320-41889-15	92	87
NAWC-080718-FRB-25 8	320-41889-16	89	87
NAWC-080718-RW-207	320-41889-17	94	90
NAWC-080718-FRB-20 7	320-41889-18	90	88
WGNA-080718-DUP-44	320-41889-19	90	87
	MB 320-240636/1-A	94	85
	LLCS 320-240636/2-A	92	85
NAWC-080718-RW-207 LMS	320-41889-17 LMS	90	88
NAWC-080718-RW-207 LMSD	320-41889-17 LMSD	90	85

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC LIMITS
70-130
70-130

Column to be used to flag recovery values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.20_537A_015.d
 Lab ID: LLCS 320-240636/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	40.2	41.5	103	50-150	
Perfluorooctanoic acid (PFOA)	20.0	18.8 J	94	50-150	
Perfluorononanoic acid (PFNA)	20.0	19.1 J	96	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.3	33.3	110	50-150	
Perfluoroheptanoic acid (PFHpA)	10.0	10.0	100	50-150	
Perfluorobutanesulfonic acid (PFBS)	90.2	105	117	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.08.20_537A_035.d
 Lab ID: 320-41889-17 LMS Client ID: NAWC-080718-RW-207 LMS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	LMS CONCENTRATION (ng/L)	LMS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	37.7	15 U	44.5	118	50-150	
Perfluorooctanoic acid (PFOA)	18.7	6.4 J	23.9	93	50-150	
Perfluorononanoic acid (PFNA)	18.7	19 U	18.1 J	96	50-150	
Perfluorohexanesulfonic acid (PFHxS)	28.4	11 U	30.1	106	50-150	
Perfluoroheptanoic acid (PFHpA)	9.37	3.8 U	9.20 J	98	50-150	
Perfluorobutanesulfonic acid (PFBS)	84.5	34 U	103	122	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-41889-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.08.20_537A_038.d

Lab ID: 320-41889-17 LMSD

Client ID: NAWC-080718-RW-207 LMSD

COMPOUND	SPIKE ADDED (ng/L)	LMSD CONCENTRATION (ng/L)	LMSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	40.8	52.3	128	16	50	50-150	
Perfluorooctanoic acid (PFOA)	20.3	27.6	105	15	50	50-150	
Perfluorononanoic acid (PFNA)	20.3	19.3 J	95	6	50	50-150	
Perfluorohexanesulfonic acid (PFHxS)	30.8	32.8	107	9	50	50-150	
Perfluoroheptanoic acid (PFHpA)	10.1	10.1	100	9	50	50-150	
Perfluorobutanesulfonic acid (PFBS)	91.5	109	120	6	50	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab File ID: 2018.08.20_537A_014.d Lab Sample ID: MB 320-240636/1-A
 Matrix: Water Date Extracted: 08/17/2018 20:02
 Instrument ID: A8_N Date Analyzed: 08/20/2018 17:11
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-240636/2-A	2018.08.20_537A_015.d	08/20/2018 17:15
WGNA-080718-RW-4848	320-41889-1	2018.08.20_537A_016.d	08/20/2018 17:20
WGNA-080718-FRB-4848	320-41889-2	2018.08.20_537A_017.d	08/20/2018 17:25
WGNA-080718-RW-0344	320-41889-3	2018.08.20_537A_018.d	08/20/2018 17:29
WGNA-080718-FRB-0344	320-41889-4	2018.08.20_537A_019.d	08/20/2018 17:34
WGNA-080718-RW-0104	320-41889-5	2018.08.20_537A_020.d	08/20/2018 17:39
WGNA-080718-FRB-0104	320-41889-6	2018.08.20_537A_021.d	08/20/2018 17:43
NAWC-080718-RW-106	320-41889-7	2018.08.20_537A_022.d	08/20/2018 17:48
NAWC-080718-FRB-106	320-41889-8	2018.08.20_537A_023.d	08/20/2018 17:53
WGNA-080718-RW-3322	320-41889-9	2018.08.20_537A_026.d	08/20/2018 18:07
WGNA-080718-FRB-3322	320-41889-10	2018.08.20_537A_027.d	08/20/2018 18:11
NAWC-080718-RW-081	320-41889-11	2018.08.20_537A_028.d	08/20/2018 18:16
NAWC-080718-FRB-081	320-41889-12	2018.08.20_537A_029.d	08/20/2018 18:21
NAWC-080718-RW-082	320-41889-13	2018.08.20_537A_030.d	08/20/2018 18:25
NAWC-080718-FRB-082	320-41889-14	2018.08.20_537A_031.d	08/20/2018 18:30
NAWC-080718-RW-258	320-41889-15	2018.08.20_537A_032.d	08/20/2018 18:35
NAWC-080718-FRB-258	320-41889-16	2018.08.20_537A_033.d	08/20/2018 18:39
NAWC-080718-RW-207	320-41889-17	2018.08.20_537A_034.d	08/20/2018 18:44
NAWC-080718-RW-207 LMS	320-41889-17 LMS	2018.08.20_537A_035.d	08/20/2018 18:49
NAWC-080718-RW-207 LMSD	320-41889-17 LMSD	2018.08.20_537A_038.d	08/20/2018 19:03
NAWC-080718-FRB-207	320-41889-18	2018.08.20_537A_039.d	08/20/2018 19:07
WGNA-080718-DUP-44	320-41889-19	2018.08.20_537A_040.d	08/20/2018 19:12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-240636/1-A
 Matrix: Water Lab File ID: 2018.08.20_537A_014.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 08/17/2018 20:02
 Sample wt/vol: 250.00 (mL) Date Analyzed: 08/20/2018 17:11
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 240970 Units: ng/L

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

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

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
INITIAL CALIBRATION MEAN AREA AND MEAN RT	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCVL 320-240166/9		1006603	1.84	2388436	2.10	
ICV 320-240166/11		1022273	1.84	2551643	2.10	
CCVL 320-240968/1		1080920	1.86	2508240	2.11	
CCV 320-240970/10 CCVIS		997051	1.85	2521958	2.10	
MB 320-240636/1-A		1043452	1.86	2514398	2.11	
LLCS 320-240636/2-A		1048348	1.85	2560394	2.11	
320-41889-1	WGNA-080718-RW-4848	1017318	1.85	2445657	2.11	
320-41889-2	WGNA-080718-FRB-4848	911784	1.86	2210739	2.12	
320-41889-3	WGNA-080718-RW-0344	1043234	1.85	2593121	2.10	
320-41889-4	WGNA-080718-FRB-0344	1068783	1.85	2570764	2.11	
320-41889-5	WGNA-080718-RW-0104	1038784	1.85	2529065	2.11	
320-41889-6	WGNA-080718-FRB-0104	977783	1.86	2433594	2.11	
320-41889-7	NAWC-080718-RW-106	1059234	1.85	2549617	2.11	
320-41889-8	NAWC-080718-FRB-106	1002543	1.85	2386513	2.10	
CCV 320-240970/22 CCVIS		1001941	1.85	2495250	2.11	
CCV 320-240971/22 CCVIS		1001941	1.85	2495250	2.11	
320-41889-9	WGNA-080718-RW-3322	1043293	1.85	2566611	2.10	
320-41889-10	WGNA-080718-FRB-3322	990544	1.85	2507055	2.10	
320-41889-11	NAWC-080718-RW-081	1072384	1.85	2539525	2.11	
320-41889-12	NAWC-080718-FRB-081	1078564	1.84	2599060	2.10	
320-41889-13	NAWC-080718-RW-082	964435	1.85	2347526	2.10	
320-41889-14	NAWC-080718-FRB-082	1110754	1.84	2585217	2.10	
320-41889-15	NAWC-080718-RW-258	1037426	1.84	2496872	2.09	
320-41889-16	NAWC-080718-FRB-258	1077494	1.84	2563616	2.10	
320-41889-17	NAWC-080718-RW-207	1074750	1.85	2644977	2.10	
320-41889-17 LMS	NAWC-080718-RW-207 LMS	1086637	1.84	2576287	2.10	
CCV 320-240971/34 CCVIS		962352	1.84	2437811	2.09	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area

RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Instrument ID: A8_N Calibration Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 08/15/2018 18:44
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
<u>INITIAL CALIBRATION MEAN AREA AND MEAN RT</u>	999840	1.85	2469394	2.11		
UPPER LIMIT	1499760	2.35	3704091	2.61		
LOWER LIMIT	499920	1.35	1234697	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCV 320-240972/34 CCVIS		962352	1.84	2437811	2.09	
320-41889-17 LMSD	NAWC-080718-RW-207 LMSD	1074351	1.84	2531785	2.10	
320-41889-18	NAWC-080718-FRB-207	1051278	1.85	2544130	2.10	
320-41889-19	WGNA-080718-DUP-44	1067268	1.85	2610922	2.10	
CCV 320-240972/39 CCVIS		972350	1.84	2461190	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240970/10 Date Analyzed: 08/20/2018 17:01
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_012 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	997051	1.85	2521958	2.10		
UPPER LIMIT	1395871	2.35	3530741	2.60		
LOWER LIMIT	697936	1.35	1765371	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-240636/1-A		1043452	1.86	2514398	2.11	
LLCS 320-240636/2-A		1048348	1.85	2560394	2.11	
320-41889-1	WGNA-080718-RW-4848	1017318	1.85	2445657	2.11	
320-41889-2	WGNA-080718-FRB-4848	911784	1.86	2210739	2.12	
320-41889-3	WGNA-080718-RW-0344	1043234	1.85	2593121	2.10	
320-41889-4	WGNA-080718-FRB-0344	1068783	1.85	2570764	2.11	
320-41889-5	WGNA-080718-RW-0104	1038784	1.85	2529065	2.11	
320-41889-6	WGNA-080718-FRB-0104	977783	1.86	2433594	2.11	
320-41889-7	NAWC-080718-RW-106	1059234	1.85	2549617	2.11	
320-41889-8	NAWC-080718-FRB-106	1002543	1.85	2386513	2.10	

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240970/22 Date Analyzed: 08/20/2018 17:57
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_024 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1001941	1.85	2495250	2.11		
UPPER LIMIT	1402717	2.35	3493350	2.61		
LOWER LIMIT	701359	1.35	1746675	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-240636/1-A		1043452	1.86	2514398	2.11	
LLCS 320-240636/2-A		1048348	1.85	2560394	2.11	
320-41889-1	WGNA-080718-RW-4848	1017318	1.85	2445657	2.11	
320-41889-2	WGNA-080718-FRB-4848	911784	1.86	2210739	2.12	
320-41889-3	WGNA-080718-RW-0344	1043234	1.85	2593121	2.10	
320-41889-4	WGNA-080718-FRB-0344	1068783	1.85	2570764	2.11	
320-41889-5	WGNA-080718-RW-0104	1038784	1.85	2529065	2.11	
320-41889-6	WGNA-080718-FRB-0104	977783	1.86	2433594	2.11	
320-41889-7	NAWC-080718-RW-106	1059234	1.85	2549617	2.11	
320-41889-8	NAWC-080718-FRB-106	1002543	1.85	2386513	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240971/22 Date Analyzed: 08/20/2018 17:57
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_024 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	1001941	1.85	2495250	2.11		
UPPER LIMIT	1402717	2.35	3493350	2.61		
LOWER LIMIT	701359	1.35	1746675	1.61		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-9	WGNA-080718-RW-3322	1043293	1.85	2566611	2.10	
320-41889-10	WGNA-080718-FRB-3322	990544	1.85	2507055	2.10	
320-41889-11	NAWC-080718-RW-081	1072384	1.85	2539525	2.11	
320-41889-12	NAWC-080718-FRB-081	1078564	1.84	2599060	2.10	
320-41889-13	NAWC-080718-RW-082	964435	1.85	2347526	2.10	
320-41889-14	NAWC-080718-FRB-082	1110754	1.84	2585217	2.10	
320-41889-15	NAWC-080718-RW-258	1037426	1.84	2496872	2.09	
320-41889-16	NAWC-080718-FRB-258	1077494	1.84	2563616	2.10	
320-41889-17	NAWC-080718-RW-207	1074750	1.85	2644977	2.10	
320-41889-17 LMS	NAWC-080718-RW-207 LMS	1086637	1.84	2576287	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240971/34 Date Analyzed: 08/20/2018 18:53
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_036 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	962352	1.84	2437811	2.09		
UPPER LIMIT	1347293	2.34	3412935	2.59		
LOWER LIMIT	673646	1.34	1706468	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-9	WGNA-080718-RW-3322	1043293	1.85	2566611	2.10	
320-41889-10	WGNA-080718-FRB-3322	990544	1.85	2507055	2.10	
320-41889-11	NAWC-080718-RW-081	1072384	1.85	2539525	2.11	
320-41889-12	NAWC-080718-FRB-081	1078564	1.84	2599060	2.10	
320-41889-13	NAWC-080718-RW-082	964435	1.85	2347526	2.10	
320-41889-14	NAWC-080718-FRB-082	1110754	1.84	2585217	2.10	
320-41889-15	NAWC-080718-RW-258	1037426	1.84	2496872	2.09	
320-41889-16	NAWC-080718-FRB-258	1077494	1.84	2563616	2.10	
320-41889-17	NAWC-080718-RW-207	1074750	1.85	2644977	2.10	
320-41889-17 LMS	NAWC-080718-RW-207 LMS	1086637	1.84	2576287	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240972/34 Date Analyzed: 08/20/2018 18:53
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_036 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	962352	1.84	2437811	2.09		
UPPER LIMIT	1347293	2.34	3412935	2.59		
LOWER LIMIT	673646	1.34	1706468	1.59		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-17 LMSD	NAWC-080718-RW-207 LMSD	1074351	1.84	2531785	2.10	
320-41889-18	NAWC-080718-FRB-207	1051278	1.85	2544130	2.10	
320-41889-19	WGNA-080718-DUP-44	1067268	1.85	2610922	2.10	

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

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

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Sample No.: CCV 320-240972/39 Date Analyzed: 08/20/2018 19:17
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.08.20_537A_041 Heated Purge: (Y/N) N
 Calibration ID: 40641

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	972350	1.84	2461190	2.10		
UPPER LIMIT	1361290	2.34	3445666	2.60		
LOWER LIMIT	680645	1.34	1722833	1.60		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-41889-17 LMSD	NAWC-080718-RW-207 LMSD		1074351	1.84	2531785	2.10
320-41889-18	NAWC-080718-FRB-207		1051278	1.85	2544130	2.10
320-41889-19	WGNA-080718-DUP-44		1067268	1.85	2610922	2.10

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

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

Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	1.2479 0.9705	1.1886	1.2616	1.1091	1.0906	Ave		1.1447			9.6		30.0				
Perfluoroheptanoic acid (PFHpA)	1.0855 1.0407	1.0364	1.0489	1.0876	1.0460	Ave		1.0575			2.2		30.0				
Perfluorohexanesulfonic acid (PFHxS)	1.6492 1.6115	1.6167	1.6890	1.6380	1.7330	Ave		1.6562			2.8		30.0				
Perfluorooctanoic acid (PFOA)	1.0954 1.0842	1.0529	1.0915	1.1075	1.1058	Ave		1.0895			1.8		30.0				
Perfluorooctanesulfonic acid (PFOS)	1.0830 1.0982	1.0386	1.0683	1.0853	1.1084	Ave		1.0803			2.3		30.0				
Perfluorononanoic acid (PFNA)	0.8630 0.8350	0.7990	0.7881	0.8431	0.8177	Ave		0.8243			3.4		30.0				
13C2 PFHxA	1.0723 1.0545	1.0111	1.0024	1.0515	1.0447	Ave		1.0394			2.6		30.0				
13C2 PFDA	0.7972 0.7976	0.7443	0.7670	0.8351	0.8115	Ave		0.7921			4.1		30.0				

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1 Analy Batch No.: 240166

SDG No.: _____

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

Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid (PFBS)	PFOS	Ave	998954 15136483	2070355	4549188	9386038	11785636	9.00 180	20.0	45.0	90.1	135
Perfluoroheptanoic acid (PFHpA)	13PF OA	Ave	106948 1986691	233189	488515	1105731	1440874	0.960 19.4	2.16	4.86	9.72	14.6
Perfluorohexanesulfonic acid (PFHxS)	PFOS	Ave	440547 8441814	945775	2045536	4655795	6289862	3.00 60.5	6.72	15.1	30.2	45.4
Perfluorooctanoic acid (PFOA)	13PF OA	Ave	222587 4216218	482587	1035552	2293687	3102767	1.98 39.6	4.40	9.90	19.8	29.7
Perfluorooctanesulfonic acid (PFOS)	PFOS	Ave	380845 7518443	794113	1690983	4031609	5257770	3.95 79.1	8.79	19.8	39.5	59.3
Perfluorononanoic acid (PFNA)	13PF OA	Ave	175370 3246932	366204	747749	1746006	2294540	1.98 39.6	4.40	9.90	19.8	29.7
13C2 PFHxA	13PF OA	Ave	1100508 1035478	1053216	960623	1099800	987004	10.0 10.0	10.0	10.0	10.0	10.0
13C2 PFDA	13PF OA	Ave	818198 783206	775306	735076	873467	766710	10.0 10.0	10.0	10.0	10.0	10.0

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1 Analy Batch No.: 240166

SDG No.: _____

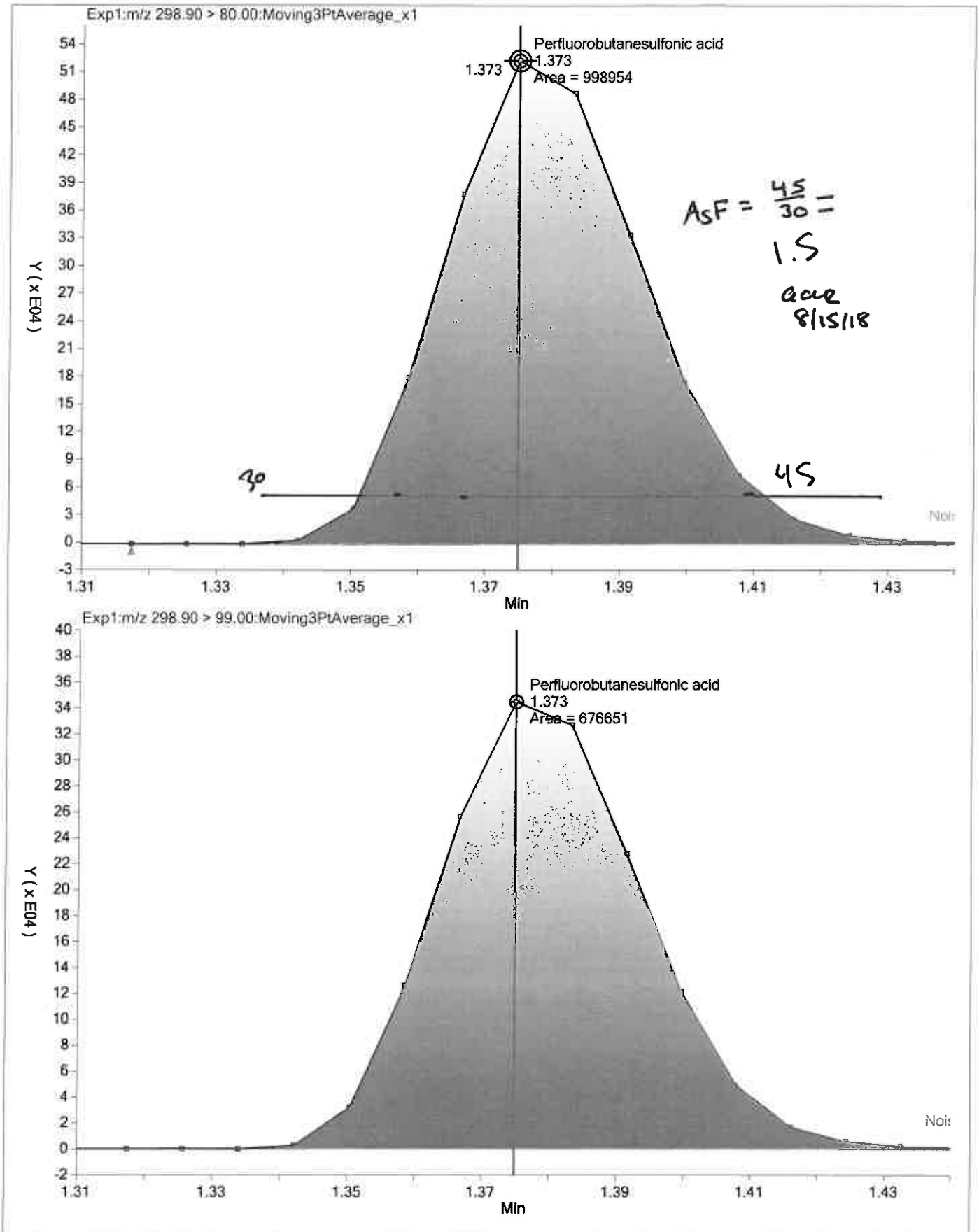
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

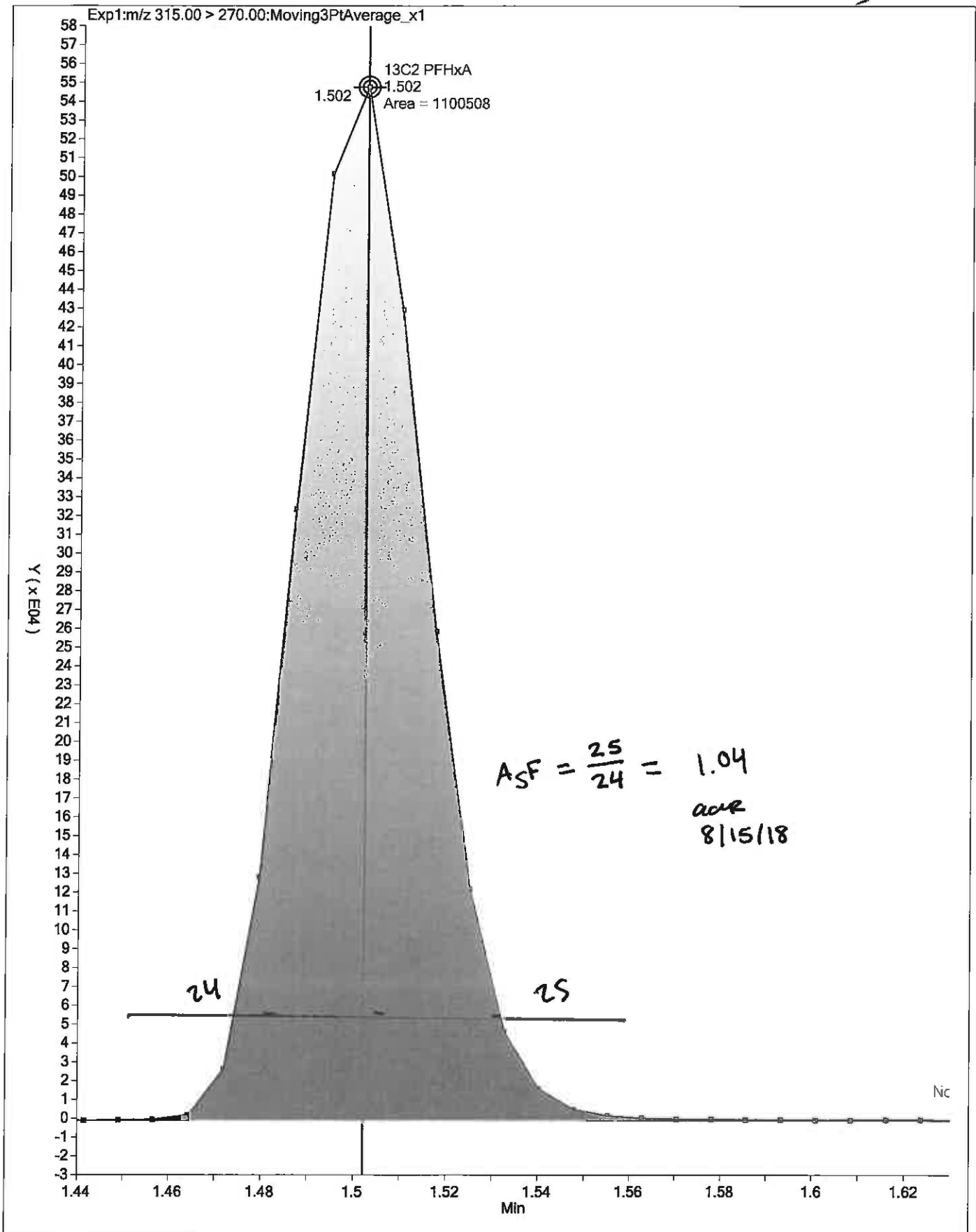
Calibration Start Date: 08/15/2018 18:21 Calibration End Date: 08/15/2018 18:44 Calibration ID: 40641

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-240166/2	2018.08.15_537CURVE_003.d
Level 2	IC 320-240166/3	2018.08.15_537CURVE_004.d
Level 3	IC 320-240166/4	2018.08.15_537CURVE_005.d
Level 4	IC 320-240166/5	2018.08.15_537CURVE_006.d
Level 5	IC 320-240166/6	2018.08.15_537CURVE_007.d
Level 6	IC 320-240166/7	2018.08.15_537CURVE_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid (PFBS)	9.0	3.8	10.2	-3.1	-4.7	-15.2	50	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	2.6	-2.0	-0.8	2.8	-1.1	-1.6	50	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	-0.4	-2.4	2.0	-1.1	4.6	-2.7	50	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	0.5	-3.4	0.2	1.7	1.5	-0.5	50	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	0.2	-3.9	-1.1	0.5	2.6	1.7	50	30	30	30	30	30
Perfluorononanoic acid (PFNA)	4.7	-3.1	-4.4	2.3	-0.8	1.3	50	30	30	30	30	30
13C2 PFHxA	3.2	-2.7	-3.6	1.2	0.5	1.4	30	30	30	30	30	30
13C2 PFDA	0.6	-6.0	-3.2	5.4	2.4	0.7	30	30	30	30	30	30





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240166/9 Calibration Date: 08/15/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.167		20.4	20.0	2.0	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.033		2.11	2.16	-2.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.611		6.54	6.72	-2.7	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.020		4.12	4.40	-6.4	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.039		8.45	8.79	-3.8	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8023		4.28	4.40	-2.7	50.0
13C2 PFHxA	Ave	1.039	1.002		9.64	10.0	-3.6	30.0
13C2 PFDA	Ave	0.7921	0.7658		9.67	10.0	-3.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: ICV 320-240166/11 Calibration Date: 08/15/2018 19:03
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.15_537CURVE_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.005		87.9	100	-12.2	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9536		9.02	10.0	-9.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.530		18.6	20.2	-7.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	0.8802		16.3	20.2	-19.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	0.9603		17.9	20.2	-11.1	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7757		19.0	20.2	-5.9	30.0
13C2 PFHxA	Ave	1.039	1.022		9.83	10.0	-1.7	30.0
13C2 PFDA	Ave	0.7921	0.7952		10.0	10.0	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-240968/1 Calibration Date: 08/20/2018 16:19
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.194		20.9	20.0	4.3	50.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	0.9846		2.01	2.16	-6.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.592		6.46	6.72	-3.9	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.015		4.10	4.40	-6.9	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.035		8.42	8.79	-4.2	50.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7441		3.97	4.40	-9.7	50.0
13C2 PFHxA	Ave	1.039	0.9672		9.31	10.0	-6.9	30.0
13C2 PFDA	Ave	0.7921	0.7090		8.95	10.0	-10.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240970/10 Calibration Date: 08/20/2018 17:01
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.065		126	135	-7.0	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.042		14.4	14.6	-1.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.682		46.1	45.4	1.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.089		29.7	29.7	-0.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.067		58.6	59.3	-1.2	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8058		29.0	29.7	-2.3	30.0
13C2 PFHxA	Ave	1.039	1.071		10.3	10.0	3.0	30.0
13C2 PFDA	Ave	0.7921	0.7778		9.82	10.0	-1.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240970/22 Calibration Date: 08/20/2018 17:57
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.220		48.0	45.0	6.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.057		4.86	4.86	-0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.667		15.2	15.1	0.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.067		9.70	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.060		19.4	19.8	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7989		9.59	9.90	-3.1	30.0
13C2 PFHxA	Ave	1.039	1.019		9.81	10.0	-1.9	30.0
13C2 PFDA	Ave	0.7921	0.7651		9.66	10.0	-3.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240971/22 Calibration Date: 08/20/2018 17:57
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.220		48.0	45.0	6.6	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.057		4.86	4.86	-0.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.667		15.2	15.1	0.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.067		9.70	9.90	-2.0	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.060		19.4	19.8	-1.9	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7989		9.59	9.90	-3.1	30.0
13C2 PFHxA	Ave	1.039	1.019		9.81	10.0	-1.9	30.0
13C2 PFDA	Ave	0.7921	0.7651		9.66	10.0	-3.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240971/34 Calibration Date: 08/20/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.084		128	135	-5.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.048		14.4	14.6	-0.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.708		46.8	45.4	3.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.080		29.4	29.7	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.095		60.1	59.3	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7927		28.6	29.7	-3.8	30.0
13C2 PFHxA	Ave	1.039	1.064		10.2	10.0	2.4	30.0
13C2 PFDA	Ave	0.7921	0.7887		9.96	10.0	-0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240972/34 Calibration Date: 08/20/2018 18:53
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_036.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.084		128	135	-5.3	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.048		14.4	14.6	-0.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.708		46.8	45.4	3.1	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.080		29.4	29.7	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.095		60.1	59.3	1.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.7927		28.6	29.7	-3.8	30.0
13C2 PFHxA	Ave	1.039	1.064		10.2	10.0	2.4	30.0
13C2 PFDA	Ave	0.7921	0.7887		9.96	10.0	-0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1
 SDG No.: _____
 Lab Sample ID: CCV 320-240972/39 Calibration Date: 08/20/2018 19:17
 Instrument ID: A8_N Calib Start Date: 08/15/2018 18:21
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 08/15/2018 18:44
 Lab File ID: 2018.08.20_537A_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	1.145	1.203		47.3	45.0	5.1	30.0
Perfluoroheptanoic acid (PFHpA)	Ave	1.058	1.051		4.83	4.86	-0.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	Ave	1.656	1.677		15.3	15.1	1.3	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.090	1.060		9.63	9.90	-2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.080	1.044		19.1	19.8	-3.4	30.0
Perfluorononanoic acid (PFNA)	Ave	0.8243	0.8182		9.83	9.90	-0.7	30.0
13C2 PFHxA	Ave	1.039	1.072		10.3	10.0	3.2	30.0
13C2 PFDA	Ave	0.7921	0.7561		9.55	10.0	-4.5	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/15/2018 18:21

Analysis Batch Number: 240166 End Date: 08/15/2018 19:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-240166/2		08/15/2018 18:21	1	2018.08.15_537C URVE 003.d	GeminiC18 3x100 3(mm)
IC 320-240166/3		08/15/2018 18:25	1	2018.08.15_537C URVE 004.d	GeminiC18 3x100 3(mm)
IC 320-240166/4		08/15/2018 18:30	1	2018.08.15_537C URVE 005.d	GeminiC18 3x100 3(mm)
IC 320-240166/5 ICISAV		08/15/2018 18:35	1	2018.08.15_537C URVE 006.d	GeminiC18 3x100 3(mm)
IC 320-240166/6		08/15/2018 18:39	1	2018.08.15_537C URVE 007.d	GeminiC18 3x100 3(mm)
IC 320-240166/7		08/15/2018 18:44	1	2018.08.15_537C URVE 008.d	GeminiC18 3x100 3(mm)
ZZZZZ		08/15/2018 18:49	1		GeminiC18 3x100 3(mm)
CCVL 320-240166/9		08/15/2018 18:53	1	2018.08.15_537C URVE 010.d	GeminiC18 3x100 3(mm)
ICB 320-240166/10		08/15/2018 18:58	1		GeminiC18 3x100 3(mm)
ICV 320-240166/11		08/15/2018 19:03	1	2018.08.15_537C URVE 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 16:19

Analysis Batch Number: 240968 End Date: 08/20/2018 17:01

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-240968/1		08/20/2018 16:19	1	2018.08.20_537A 003.d	GeminiC18 3x100 3(mm)
CCV 320-240968/2 CCVIS		08/20/2018 16:24	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:28	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:33	10		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:38	1		GeminiC18 3x100 3(mm)
ZZZZZ		08/20/2018 16:43	1		GeminiC18 3x100 3(mm)
CCV 320-240968/10 CCVIS		08/20/2018 17:01	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 17:01

Analysis Batch Number: 240970 End Date: 08/20/2018 17:57

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240970/10 CCVIS		08/20/2018 17:01	1	2018.08.20_537A 012.d	GeminiC18 3x100 3(mm)
MB 320-240636/1-A		08/20/2018 17:11	1	2018.08.20_537A 014.d	GeminiC18 3x100 3(mm)
LLCS 320-240636/2-A		08/20/2018 17:15	1	2018.08.20_537A 015.d	GeminiC18 3x100 3(mm)
320-41889-1		08/20/2018 17:20	1	2018.08.20_537A 016.d	GeminiC18 3x100 3(mm)
320-41889-2		08/20/2018 17:25	1	2018.08.20_537A 017.d	GeminiC18 3x100 3(mm)
320-41889-3		08/20/2018 17:29	1	2018.08.20_537A 018.d	GeminiC18 3x100 3(mm)
320-41889-4		08/20/2018 17:34	1	2018.08.20_537A 019.d	GeminiC18 3x100 3(mm)
320-41889-5		08/20/2018 17:39	1	2018.08.20_537A 020.d	GeminiC18 3x100 3(mm)
320-41889-6		08/20/2018 17:43	1	2018.08.20_537A 021.d	GeminiC18 3x100 3(mm)
320-41889-7		08/20/2018 17:48	1	2018.08.20_537A 022.d	GeminiC18 3x100 3(mm)
320-41889-8		08/20/2018 17:53	1	2018.08.20_537A 023.d	GeminiC18 3x100 3(mm)
CCV 320-240970/22 CCVIS		08/20/2018 17:57	1	2018.08.20_537A 024.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 17:57

Analysis Batch Number: 240971 End Date: 08/20/2018 18:53

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240971/22 CCVIS		08/20/2018 17:57	1	2018.08.20_537A 024.d	GeminiC18 3x100 3(mm)
320-41889-9		08/20/2018 18:07	1	2018.08.20_537A 026.d	GeminiC18 3x100 3(mm)
320-41889-10		08/20/2018 18:11	1	2018.08.20_537A 027.d	GeminiC18 3x100 3(mm)
320-41889-11		08/20/2018 18:16	1	2018.08.20_537A 028.d	GeminiC18 3x100 3(mm)
320-41889-12		08/20/2018 18:21	1	2018.08.20_537A 029.d	GeminiC18 3x100 3(mm)
320-41889-13		08/20/2018 18:25	1	2018.08.20_537A 030.d	GeminiC18 3x100 3(mm)
320-41889-14		08/20/2018 18:30	1	2018.08.20_537A 031.d	GeminiC18 3x100 3(mm)
320-41889-15		08/20/2018 18:35	1	2018.08.20_537A 032.d	GeminiC18 3x100 3(mm)
320-41889-16		08/20/2018 18:39	1	2018.08.20_537A 033.d	GeminiC18 3x100 3(mm)
320-41889-17		08/20/2018 18:44	1	2018.08.20_537A 034.d	GeminiC18 3x100 3(mm)
320-41889-17 LMS		08/20/2018 18:49	1	2018.08.20_537A 035.d	GeminiC18 3x100 3(mm)
CCV 320-240971/34 CCVIS		08/20/2018 18:53	1	2018.08.20_537A 036.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Instrument ID: A8_N Start Date: 08/20/2018 18:53

Analysis Batch Number: 240972 End Date: 08/20/2018 19:17

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-240972/34 CCVIS		08/20/2018 18:53	1	2018.08.20_537A 036.d	GeminiC18 3x100 3(mm)
320-41889-17 LMSD		08/20/2018 19:03	1	2018.08.20_537A 038.d	GeminiC18 3x100 3(mm)
320-41889-18		08/20/2018 19:07	1	2018.08.20_537A 039.d	GeminiC18 3x100 3(mm)
320-41889-19		08/20/2018 19:12	1	2018.08.20_537A 040.d	GeminiC18 3x100 3(mm)
CCV 320-240972/39 CCVIS		08/20/2018 19:17	1	2018.08.20_537A 041.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Batch Number: 240636 Batch Start Date: 08/17/18 20:01 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/20/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
MB 320-240636/1		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
LLCS 320-240636/2		537, 537				250.00 mL	1.00 mL	7 SU	100 uL
320-41889-A-1	WGNA-080718-RW-4 848	537, 537	T	283.90 g	38.89 g	245 mL	1.00 mL	7 SU	100 uL
320-41889-A-2	WGNA-080718-FRB- 4848	537, 537	T	299.18 g	28.10 g	271.1 mL	1.00 mL	7 SU	100 uL
320-41889-A-3	WGNA-080718-RW-0 344	537, 537	T	308.09 g	38.88 g	269.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-4	WGNA-080718-FRB- 0344	537, 537	T	313.34 g	28.05 g	285.3 mL	1.00 mL	7 SU	100 uL
320-41889-A-5	WGNA-080718-RW-0 104	537, 537	T	301.07 g	38.87 g	262.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-6	WGNA-080718-FRB- 0104	537, 537	T	314.14 g	28.02 g	286.1 mL	1.00 mL	7 SU	100 uL
320-41889-A-7	NAWC-080718-RW-1 06	537, 537	T	325.00 g	38.85 g	286.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-8	NAWC-080718-FRB- 106	537, 537	T	314.37 g	29.07 g	285.3 mL	1.00 mL	7 SU	100 uL
320-41889-A-9	WGNA-080718-RW-3 322	537, 537	T	307.90 g	39.13 g	268.8 mL	1.00 mL	7 SU	100 uL
320-41889-A-10	WGNA-080718-FRB- 3322	537, 537	T	305.70 g	29.01 g	276.7 mL	1.00 mL	7 SU	100 uL
320-41889-A-11	NAWC-080718-RW-0 81	537, 537	T	309.24 g	38.80 g	270.4 mL	1.00 mL	7 SU	100 uL
320-41889-A-12	NAWC-080718-FRB- 081	537, 537	T	316.04 g	28.82 g	287.2 mL	1.00 mL	7 SU	100 uL
320-41889-A-13	NAWC-080718-RW-0 82	537, 537	T	301.41 g	28.14 g	273.3 mL	1.00 mL	7 SU	100 uL
320-41889-A-14	NAWC-080718-FRB- 082	537, 537	T	307.00 g	28.32 g	278.7 mL	1.00 mL	7 SU	100 uL
320-41889-A-15	NAWC-080718-RW-2 58	537, 537	T	314.84 g	38.94 g	275.9 mL	1.00 mL	7 SU	100 uL
320-41889-A-16	NAWC-080718-FRB- 258	537, 537	T	305.15 g	28.12 g	277 mL	1.00 mL	7 SU	100 uL
320-41889-A-17	NAWC-080718-RW-2 07	537, 537	T	304.49 g	38.99 g	265.5 mL	1.00 mL	7 SU	100 uL
320-41889-A-17 LMS	NAWC-080718-RW-2 07	537, 537	T	305.68 g	38.81 g	266.9 mL	1.00 mL	7 SU	100 uL
320-41889-A-17 LMSD	NAWC-080718-RW-2 07	537, 537	T	285.35 g	38.93 g	246.4 mL	1.00 mL	7 SU	100 uL
320-41889-A-18	NAWC-080718-FRB- 207	537, 537	T	313.84 g	27.79 g	286.1 mL	1.00 mL	7 SU	100 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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Batch Number: 240636 Batch Start Date: 08/17/18 20:01 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/20/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00080
320-41889-A-19	WGNA-080718-DUP-44	537, 537	T	306.43 g	38.71 g	267.7 mL	1.00 mL	7 SU	100 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
MB 320-240636/1		537, 537			100 uL	C1 ND			
LLCS 320-240636/2		537, 537		100 uL	100 uL	C1 ND			
320-41889-A-1	WGNA-080718-RW-4848	537, 537	T		100 uL	C1 ND			
320-41889-A-2	WGNA-080718-FRB-4848	537, 537	T		100 uL	C1 ND			
320-41889-A-3	WGNA-080718-RW-0344	537, 537	T		100 uL	C1 ND			
320-41889-A-4	WGNA-080718-FRB-0344	537, 537	T		100 uL	C1 ND			
320-41889-A-5	WGNA-080718-RW-0104	537, 537	T		100 uL	C1 ND			
320-41889-A-6	WGNA-080718-FRB-0104	537, 537	T		100 uL	C1 ND			
320-41889-A-7	NAWC-080718-RW-106	537, 537	T		100 uL	C1 ND			
320-41889-A-8	NAWC-080718-FRB-106	537, 537	T		100 uL	C1 ND			
320-41889-A-9	WGNA-080718-RW-3322	537, 537	T		100 uL	C1 ND			
320-41889-A-10	WGNA-080718-FRB-3322	537, 537	T		100 uL	C1 ND			
320-41889-A-11	NAWC-080718-RW-081	537, 537	T		100 uL	C1 ND			
320-41889-A-12	NAWC-080718-FRB-081	537, 537	T		100 uL	C1 ND			
320-41889-A-13	NAWC-080718-RW-082	537, 537	T		100 uL	C1 ND			
320-41889-A-14	NAWC-080718-FRB-082	537, 537	T		100 uL	C1 ND			
320-41889-A-15	NAWC-080718-RW-258	537, 537	T		100 uL	C1 ND			
320-41889-A-16	NAWC-080718-FRB-258	537, 537	T		100 uL	C1 ND			
320-41889-A-17	NAWC-080718-RW-207	537, 537	T		100 uL	C1 ND			

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-41889-1

SDG No.: _____

Batch Number: 240636 Batch Start Date: 08/17/18 20:01 Batch Analyst: Reed, Jonathan E

Batch Method: 537 Batch End Date: 08/20/18 14:15

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00032	LC537-SU 00077	AnalysisComment			
320-41889-A-17 LMS	NAWC-080718-RW-2 07	537, 537	T	100 uL	100 uL	C1 ND			
320-41889-A-17 LMSD	NAWC-080718-RW-2 07	537, 537	T	100 uL	100 uL	C1 ND			
320-41889-A-18	NAWC-080718-FRB- 207	537, 537	T		100 uL	C1 ND			
320-41889-A-19	WGNA-080718-DUP- 44	537, 537	T		100 uL	C1 ND			

Batch Notes	
Analyst ID - Aliquot Step	KMK
Batch Comment	Sample labels matches client IDs: JER
Analyst ID - Concentration	SKD
Analyst ID - Final Volume Step	KMK
Internal Standard ID#	1334015
Manifold ID	3, 4
Methanol ID	1328636
pH Indicator ID	1718
Pipette ID	O34709G
Analyst ID - IS Reagent Drop	SKD
Analyst ID - IS Reagent Drop Witness	KMK
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	GXL
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	GXL
SPE Cartridge Lot ID	6390138-08
Trizma ID	SLBR5241V
Reagent Water ID	08/16/18

Basis	Basis Description
T	Total/NA

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

PFAS Calibration Calculations:

Initial Calibration
Instrument A8_N

8/15/2018

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	Reported RRF
1.98	222587	1026304	10	1.09536	1.0954
4.4	482587	1041660	10	1.05292	1.0529
9.9	1035552	958352	10	1.09147	1.0915
19.8	2293687	1045953	10	1.10753	1.1075
29.7	3102767	944777	10	1.10577	1.1058
39.6	4216218	981996	10	1.08422	1.0842
Average				1.08955	1.0895
Standard Deviation				0.0200	
RSD				0.0183	
%RSD				1.83275	1.8

Continuing Calibration

08/20/2018 @ 16:19

PFOA

Analyte Concentration	Analyte Response	Internal Standard Response	Internal Standard Amount	RRF	%D	Reported RRF	Reported %D
4.4	482683	1080920	10	1.0149	-6.848782	1.015	-6.9

Sample Identification
Compound

NAWC-080718-RW-207
PFOA

Compound Area	198496	Average RRF	1.0895
Internal Standard Amount (ng)	10	Sample Volume(ml)	265.5
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	1074750	Injection Volume (µl)	1

Concentration 6.3849 ng/L
Reported Result 6.4 ng/L

MS/MSD %R

NAWC-080718-RW-207			
PFOA MS %R	Spike amount	MS concentration	Sample Result
93.58	18.7	23.9	6.4
PFOA MSD %R	Spike amount	MSD concentration	Sample Result
104.43	20.3	27.6	6.4
MS/MSD RPD			
14.37			

Surrogate PFHxA

Compound Area	1052361		
Internal Standard Amount (ng)	10		
Dilution Factor	1	Volume Extract (ml)	1
Internal Standard Area	1074750	Injection Volume (µl)	1
Average RRF	1.0394		
Concentration	9.4205		
Surrogate %R	94.21	Spike amount	10

LCS %R

320-240636/2-A			
PFOA	Spike amount	LCS concentration	
94.00	20	18.8	

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-207	Domestic well	2721553.724	334424.3156	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-207	Ground water	Normal (Regular)	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-258	Domestic well	2707580.588	330251.1543	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-FRB-258	Water for QC samples	Field Reagent Blank	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-258	Domestic well	2707580.588	330251.1543	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-FRB-258	Water for QC samples	Field Reagent Blank	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-081	Domestic well	2711233.709	327759.2555	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-081	Ground water	Normal (Regular)	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-081	Domestic well	2711233.709	327759.2555	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-081	Ground water	Normal (Regular)	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-258	Domestic well	2707580.588	330251.1543	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-FRB-081	Water for QC samples	Field Reagent Blank	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-258	Domestic well	2707580.588	330251.1543	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-258-D	Ground water	Field duplicate	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-207	Domestic well	2721553.724	334424.3156	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-FRB-207	Water for QC samples	Field Reagent Blank	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-082	Domestic well	2711294.124	327875.182	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-082	Ground water	Normal (Regular)	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-082	Domestic well	2711294.124	327875.182	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-082	Ground water	Normal (Regular)	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-106	Domestic well	2711183.281	328399.793	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-FRB-106	Water for QC samples	Field Reagent Blank	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-106	Domestic well	2711183.281	328399.793	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-FRB-106	Water for QC samples	Field Reagent Blank	7-Aug-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	WARMINSTER_NAWC	320-41889-1	OFFSITE_RW	SITE 00001	NAWC-RW-106	Domestic well	2711183.281	328399.793	N6247016D9008	WE04	TETRA TECH, INC.	NAWC-080718-RW-106	Ground water	Normal (Regular)	7-Aug-18	537	Perfluoroalkyl Compounds