



**Off-Base Drinking Water Sample Results,
Level 2 Laboratory Report, Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Figure, SDG J24178-1**

*Naval Air Station Whidbey Island
Oak Harbor, Washington*

June 2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Sacramento

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West Sacramento, CA 95605

Tel: (916)373-5600

TestAmerica Job ID: 320-24178-1

Client Project/Site: Whidbey Island

For:

CH2M Hill Constructors, Inc.

1100 NE Circle Blvd

Corvallis, Oregon 97330

Attn: Tiffany Hill



Authorized for release by:

12/19/2016 8:54:25 AM

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

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

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

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Definitions/Glossary

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

TestAmerica Job ID: 320-24178-1

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.

dw	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

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Case Narrative

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

TestAmerica Job ID: 320-24178-1

Job ID: 320-24178-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-24178-1

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

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

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

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

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

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

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

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

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

RECEIPT

The samples were received on 12/08/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.2 C.

An extended TAT was requested by the client via an email on December 8. Samples received on December 8 and 9 were requested to have a due date of December 19, 2016.

PFOA/PFOS

Samples WI-CV-1RW23-1216 (320-24178-1), WI-CV-1RW23P-1216 (320-24178-2), WI-CV-1FB23-1216 (320-24178-3), WI-CV-1RW24-1216 (320-24178-4), WI-CV-1FB24-1216 (320-24178-5), WI-CV-1RW25-1216 (320-24178-6), WI-CV-1FB25-1216 (320-24178-7), WI-CV-1RW26-1216 (320-24178-8), WI-CV-1FB26-1216 (320-24178-9), WI-CV-1RW27-1216 (320-24178-10), WI-CV-1FB27-1216 (320-24178-11), WI-CV-1RW28-1216 (320-24178-12) and WI-CV-1FB28-1216 (320-24178-13) were analyzed for

Case Narrative

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

TestAmerica Job ID: 320-24178-1

Job ID: 320-24178-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

PFOA/PFOS in accordance with 537. The samples were prepared on 12/09/2016 and analyzed on 12/15/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-141540.

After concentration, the following sample had a lot of orange sediment on the bottom.

WI-CV-1RW28-1216 (320-24178-12)

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

Detection Summary

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Lab Sample ID: 320-24178-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1RW23P-1216

Lab Sample ID: 320-24178-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1FB23-1216

Lab Sample ID: 320-24178-3

No Detections.

Client Sample ID: WI-CV-1RW24-1216

Lab Sample ID: 320-24178-4

No Detections.

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

No Detections.

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

No Detections.

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

No Detections.

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

No Detections.

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

No Detections.

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L	1		537	Total/NA

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

No Detections.

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

No Detections.

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 11:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130				12/09/16 18:59	12/15/16 11:30	1
13C2 PFDA	95		70 - 130				12/09/16 18:59	12/15/16 11:30	1

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.043	U M	0.054	0.014	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 12:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130				12/09/16 18:59	12/15/16 12:00	1
13C2 PFDA	110		70 - 130				12/09/16 18:59	12/15/16 12:00	1

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.015	ug/L		12/09/16 18:59	12/15/16 12:29	1
Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 12:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 12:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 12:29	1
13C2 PFDA	106		70 - 130				12/09/16 18:59	12/15/16 12:29	1

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.014	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0088	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 12:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				12/09/16 18:59	12/15/16 12:59	1
13C2 PFDA	91		70 - 130				12/09/16 18:59	12/15/16 12:59	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB24-1216

Date Collected: 12/06/16 09:44
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-5

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.048	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 13:29	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 13:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 13:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130				12/09/16 18:59	12/15/16 13:29	1
13C2 PFDA	85		70 - 130				12/09/16 18:59	12/15/16 13:29	1

Client Sample ID: WI-CV-1RW25-1216

Date Collected: 12/06/16 10:00
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-6

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 14:25	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L		12/09/16 18:59	12/15/16 14:25	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 14:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 14:25	1
13C2 PFDA	92		70 - 130				12/09/16 18:59	12/15/16 14:25	1

Client Sample ID: WI-CV-1FB25-1216

Date Collected: 12/06/16 09:58
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-7

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.049	U	0.061	0.016	ug/L		12/09/16 18:59	12/15/16 15:54	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		12/09/16 18:59	12/15/16 15:54	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/09/16 18:59	12/15/16 15:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 15:54	1
13C2 PFDA	93		70 - 130				12/09/16 18:59	12/15/16 15:54	1

Client Sample ID: WI-CV-1RW26-1216

Date Collected: 12/06/16 10:12
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-8

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 16:24	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L		12/09/16 18:59	12/15/16 16:24	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 16:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				12/09/16 18:59	12/15/16 16:24	1
13C2 PFDA	97		70 - 130				12/09/16 18:59	12/15/16 16:24	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB26-1216

Date Collected: 12/06/16 10:09
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-9

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 16:53	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 16:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 16:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 16:53	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 16:53	1

Client Sample ID: WI-CV-1RW27-1216

Date Collected: 12/06/16 10:24
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-10

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 17:23	1
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L		12/09/16 18:59	12/15/16 17:23	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		70 - 130				12/09/16 18:59	12/15/16 17:23	1
13C2 PFDA	112		70 - 130				12/09/16 18:59	12/15/16 17:23	1

Client Sample ID: WI-CV-1FB27-1216

Date Collected: 12/06/16 10:22
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-11

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L		12/09/16 18:59	12/15/16 17:53	1
Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.0091	ug/L		12/09/16 18:59	12/15/16 17:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.046	ug/L		12/09/16 18:59	12/15/16 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				12/09/16 18:59	12/15/16 17:53	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 17:53	1

Client Sample ID: WI-CV-1RW28-1216

Date Collected: 12/06/16 14:08
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-12

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U	0.054	0.014	ug/L		12/09/16 18:59	12/15/16 18:22	1
Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 18:22	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				12/09/16 18:59	12/15/16 18:22	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 18:22	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Matrix: Water

Date Collected: 12/06/16 14:05
Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 18:52	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 18:52	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 18:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130				12/09/16 18:59	12/15/16 18:52	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 18:52	1

Surrogate Summary

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

TestAmerica Job ID: 320-24178-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

3C2 PFHx 3C2 PFDA

(70-130) (70-130)

Lab Sample ID	Client Sample ID	3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-24178-1	WI-CV-1RW23-1216	93	95
320-24178-2	WI-CV-1RW23P-1216	101	110
320-24178-3	WI-CV-1FB23-1216	97	106
320-24178-4	WI-CV-1RW24-1216	94	91
320-24178-5	WI-CV-1FB24-1216	88	85
320-24178-6	WI-CV-1RW25-1216	97	92
320-24178-7	WI-CV-1FB25-1216	89	93
320-24178-8	WI-CV-1RW26-1216	100	97
320-24178-9	WI-CV-1FB26-1216	89	87
320-24178-10	WI-CV-1RW27-1216	114	112
320-24178-11	WI-CV-1FB27-1216	96	100
320-24178-12	WI-CV-1RW28-1216	86	87
320-24178-13	WI-CV-1FB28-1216	98	100
LLCS 320-141540/2-A	Lab Control Sample	93	90
LLCSD 320-141540/3-A	Lab Control Sample Dup	101	94
MB 320-141540/1-A	Method Blank	90	88

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-24178-1

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

Lab Sample ID: MB 320-141540/1-A

Matrix: Water

Analysis Batch: 142223

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 141540

Analyte	MB		LOQ	DL	Unit	D	Prepared		Analyzed	Dil Fac
	Result	Qualifier					Prepared	Analyzed		
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L		12/09/16 18:59	12/15/16 09:32		1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 09:32		1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/09/16 18:59	12/15/16 09:32		1

Surrogate	MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	90		70 - 130			
13C2 PFDA	88		70 - 130			

Lab Sample ID: LLCS 320-141540/2-A

Matrix: Water

Analysis Batch: 142223

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 141540

Analyte	Spike Added	LLCS		Unit	D	%Rec.	Limits
		Result	Qualifier				
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0277	J	ug/L		69	50 - 150
Perfluorooctanoic acid (PFOA)		0.0198	J M	ug/L		73	50 - 150
Perfluorobutanesulfonic acid (PFBS)		0.0898	J	ug/L		79	50 - 150

Surrogate	LLCS		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	93		70 - 130			
13C2 PFDA	90		70 - 130			

Lab Sample ID: LLCSD 320-141540/3-A

Matrix: Water

Analysis Batch: 142223

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 141540

Analyte	Spike Added	LLCSD		Unit	D	%Rec.	RPD	Limit
		Result	Qualifier					
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0278	J	ug/L		69	50 - 150	0.5
Perfluorooctanoic acid (PFOA)		0.0198	J M	ug/L		76	50 - 150	4
Perfluorobutanesulfonic acid (PFBS)		0.0898	J	ug/L		77	50 - 150	2

Surrogate	LLCSD		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	101		70 - 130			
13C2 PFDA	94		70 - 130			

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-24178-1

LCMS

Prep Batch: 141540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 142223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	141540
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	141540
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	141540
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	141540
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	141540
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	141540
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	141540
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	141540
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	141540

Analysis Batch: 142412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	141540
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	141540
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	141540
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	141540
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	141540
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	141540
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	141540

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			273.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 11:30	JRB	TAL SAC

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			277.5 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 12:00	JRB	TAL SAC

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			251.6 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 12:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			267.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 12:59	JRB	TAL SAC

Client Sample ID: WI-CV-1FB24-1216

Date Collected: 12/06/16 09:44

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			252.2 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 13:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW25-1216

Date Collected: 12/06/16 10:00

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			271.7 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142223	12/15/16 14:25	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB25-1216

Date Collected: 12/06/16 09:58
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			247.3 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 15:54	CBW	TAL SAC

Client Sample ID: WI-CV-1RW26-1216

Date Collected: 12/06/16 10:12
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			270.3 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 16:24	CBW	TAL SAC

Client Sample ID: WI-CV-1FB26-1216

Date Collected: 12/06/16 10:09
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			253.5 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 16:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW27-1216

Date Collected: 12/06/16 10:24
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			254.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 17:23	CBW	TAL SAC

Client Sample ID: WI-CV-1FB27-1216

Date Collected: 12/06/16 10:22
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			259.2 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 17:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW28-1216

Date Collected: 12/06/16 14:08
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			275.4 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 18:22	CBW	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Date Collected: 12/06/16 14:05

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			253.8 mL	1.00 mL	141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1			142412	12/15/16 18:52	CBW	TAL SAC

Laboratory References:

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

Certification Summary

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

TestAmerica Job ID: 320-24178-1

Laboratory: TestAmerica Sacramento

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

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

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TestAmerica Sacramento

Method Summary

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

TestAmerica Job ID: 320-24178-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

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Sample Summary

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

TestAmerica Job ID: 320-24178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24178-1	WI-CV-1RW23-1216	Water	12/06/16 09:21	12/08/16 10:00
320-24178-2	WI-CV-1RW23P-1216	Water	12/06/16 09:26	12/08/16 10:00
320-24178-3	WI-CV-1FB23-1216	Water	12/06/16 09:22	12/08/16 10:00
320-24178-4	WI-CV-1RW24-1216	Water	12/06/16 09:45	12/08/16 10:00
320-24178-5	WI-CV-1FB24-1216	Water	12/06/16 09:44	12/08/16 10:00
320-24178-6	WI-CV-1RW25-1216	Water	12/06/16 10:00	12/08/16 10:00
320-24178-7	WI-CV-1FB25-1216	Water	12/06/16 09:58	12/08/16 10:00
320-24178-8	WI-CV-1RW26-1216	Water	12/06/16 10:12	12/08/16 10:00
320-24178-9	WI-CV-1FB26-1216	Water	12/06/16 10:09	12/08/16 10:00
320-24178-10	WI-CV-1RW27-1216	Water	12/06/16 10:24	12/08/16 10:00
320-24178-11	WI-CV-1FB27-1216	Water	12/06/16 10:22	12/08/16 10:00
320-24178-12	WI-CV-1RW28-1216	Water	12/06/16 14:08	12/08/16 10:00
320-24178-13	WI-CV-1FB28-1216	Water	12/06/16 14:05	12/08/16 10:00

West Sacramento, CA 95605
Phone 916-373-5600 fax

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-24178-1

Login Number: 24178

List Source: TestAmerica Sacramento

List Number: 1

Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Temperature was -0.2 degrees, but the samples were not frozen
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

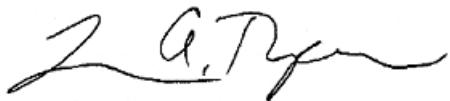
Job Number: 320-24178-1

Job Description: Whidbey Island

For:

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

Attention: Tiffany Hill



Approved for release.
Laura Turpen
Project Manager I
12/19/2016 8:54 AM

Laura Turpen, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4414
laura.turpen@testamericainc.com
12/19/2016

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Definitions/Glossary

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

TestAmerica Job ID: 320-24178-1

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.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: Whidbey Island

Report Number: 320-24178-1

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

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

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

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

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

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

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

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

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

RECEIPT

The samples were received on 12/08/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.2 C.

An extended TAT was requested by the client via an email on December 8. Samples received on December 8 and 9 were requested to have a due date of December 19, 2016.

PFOA/PFOS

Samples WI-CV-1RW23-1216 (320-24178-1), WI-CV-1RW23P-1216 (320-24178-2), WI-CV-1FB23-1216 (320-24178-3), WI-CV-1RW24-1216 (320-24178-4), WI-CV-1FB24-1216 (320-24178-5), WI-CV-1RW25-1216 (320-24178-6), WI-CV-1FB25-1216 (320-24178-7), WI-CV-1RW26-1216 (320-24178-8), WI-CV-1FB26-1216 (320-24178-9), WI-CV-1RW27-1216 (320-24178-10), WI-CV-1FB27-1216 (320-24178-11), WI-CV-1RW28-1216 (320-24178-12) and WI-CV-1FB28-1216 (320-24178-13) were analyzed for PFOA/PFOS in accordance with 537. The samples were prepared on 12/09/2016 and analyzed on 12/15/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-141540.

After concentration, the following sample had a lot of orange sediment on the bottom.
WI-CV-1RW28-1216 (320-24178-12)

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

Detection Summary

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Lab Sample ID: 320-24178-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L	1	537		Total/NA

Client Sample ID: WI-CV-1RW23P-1216

Lab Sample ID: 320-24178-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L	1	537		Total/NA

Client Sample ID: WI-CV-1FB23-1216

Lab Sample ID: 320-24178-3

No Detections.

Client Sample ID: WI-CV-1RW24-1216

Lab Sample ID: 320-24178-4

No Detections.

Client Sample ID: WI-CV-1FB24-1216

Lab Sample ID: 320-24178-5

No Detections.

Client Sample ID: WI-CV-1RW25-1216

Lab Sample ID: 320-24178-6

No Detections.

Client Sample ID: WI-CV-1FB25-1216

Lab Sample ID: 320-24178-7

No Detections.

Client Sample ID: WI-CV-1RW26-1216

Lab Sample ID: 320-24178-8

No Detections.

Client Sample ID: WI-CV-1FB26-1216

Lab Sample ID: 320-24178-9

No Detections.

Client Sample ID: WI-CV-1RW27-1216

Lab Sample ID: 320-24178-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L	1	537		Total/NA

Client Sample ID: WI-CV-1FB27-1216

Lab Sample ID: 320-24178-11

No Detections.

Client Sample ID: WI-CV-1RW28-1216

Lab Sample ID: 320-24178-12

No Detections.

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U M	0.055	0.014	ug/L	D	12/09/16 18:59	12/15/16 11:30	1
Perfluoroctanoic acid (PFOA)	0.055		0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 11:30	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 11:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		70 - 130				12/09/16 18:59	12/15/16 11:30	1
13C2 PFDA	95		70 - 130				12/09/16 18:59	12/15/16 11:30	1

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.043	U M	0.054	0.014	ug/L	D	12/09/16 18:59	12/15/16 12:00	1
Perfluoroctanoic acid (PFOA)	0.061		0.027	0.0085	ug/L		12/09/16 18:59	12/15/16 12:00	1
Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 12:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	101		70 - 130				12/09/16 18:59	12/15/16 12:00	1
13C2 PFDA	110		70 - 130				12/09/16 18:59	12/15/16 12:00	1

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.048	U	0.060	0.015	ug/L	D	12/09/16 18:59	12/15/16 12:29	1
Perfluoroctanoic acid (PFOA)	0.024	U M	0.030	0.0094	ug/L		12/09/16 18:59	12/15/16 12:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 12:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 12:29	1
13C2 PFDA	106		70 - 130				12/09/16 18:59	12/15/16 12:29	1

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.045	U	0.056	0.014	ug/L	D	12/09/16 18:59	12/15/16 12:59	1
Perfluoroctanoic acid (PFOA)	0.022	U	0.028	0.0088	ug/L		12/09/16 18:59	12/15/16 12:59	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 12:59	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		70 - 130				12/09/16 18:59	12/15/16 12:59	1
13C2 PFDA	91		70 - 130				12/09/16 18:59	12/15/16 12:59	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB24-1216

Date Collected: 12/06/16 09:44
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-5
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.048	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 13:29	1
Perfluoroctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 13:29	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 13:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	88		70 - 130				12/09/16 18:59	12/15/16 13:29	1
13C2 PFDA	85		70 - 130				12/09/16 18:59	12/15/16 13:29	1

Client Sample ID: WI-CV-1RW25-1216

Date Collected: 12/06/16 10:00
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-6
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 14:25	1
Perfluoroctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L		12/09/16 18:59	12/15/16 14:25	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 14:25	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	97		70 - 130				12/09/16 18:59	12/15/16 14:25	1
13C2 PFDA	92		70 - 130				12/09/16 18:59	12/15/16 14:25	1

Client Sample ID: WI-CV-1FB25-1216

Date Collected: 12/06/16 09:58
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-7
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.049	U	0.061	0.016	ug/L		12/09/16 18:59	12/15/16 15:54	1
Perfluoroctanoic acid (PFOA)	0.024	U	0.030	0.0095	ug/L		12/09/16 18:59	12/15/16 15:54	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L		12/09/16 18:59	12/15/16 15:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 15:54	1
13C2 PFDA	93		70 - 130				12/09/16 18:59	12/15/16 15:54	1

Client Sample ID: WI-CV-1RW26-1216

Date Collected: 12/06/16 10:12
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-8
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U	0.055	0.014	ug/L		12/09/16 18:59	12/15/16 16:24	1
Perfluoroctanoic acid (PFOA)	0.022	U	0.028	0.0087	ug/L		12/09/16 18:59	12/15/16 16:24	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.044	ug/L		12/09/16 18:59	12/15/16 16:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	100		70 - 130				12/09/16 18:59	12/15/16 16:24	1
13C2 PFDA	97		70 - 130				12/09/16 18:59	12/15/16 16:24	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB26-1216

Date Collected: 12/06/16 10:09
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-9
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 16:53	1
Perfluoroctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 16:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 16:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	89		70 - 130				12/09/16 18:59	12/15/16 16:53	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 16:53	1

Client Sample ID: WI-CV-1RW27-1216

Date Collected: 12/06/16 10:24
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-10
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 17:23	1
Perfluoroctanoic acid (PFOA)	0.038		0.029	0.0093	ug/L		12/09/16 18:59	12/15/16 17:23	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 17:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	114		70 - 130				12/09/16 18:59	12/15/16 17:23	1
13C2 PFDA	112		70 - 130				12/09/16 18:59	12/15/16 17:23	1

Client Sample ID: WI-CV-1FB27-1216

Date Collected: 12/06/16 10:22
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-11
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.046	U	0.058	0.015	ug/L		12/09/16 18:59	12/15/16 17:53	1
Perfluoroctanoic acid (PFOA)	0.023	U	0.029	0.0091	ug/L		12/09/16 18:59	12/15/16 17:53	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.046	ug/L		12/09/16 18:59	12/15/16 17:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	96		70 - 130				12/09/16 18:59	12/15/16 17:53	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 17:53	1

Client Sample ID: WI-CV-1RW28-1216

Date Collected: 12/06/16 14:08
Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-12
Matrix: Water

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroctanesulfonic acid (PFOS)	0.044	U	0.054	0.014	ug/L		12/09/16 18:59	12/15/16 18:22	1
Perfluoroctanoic acid (PFOA)	0.022	U	0.027	0.0086	ug/L		12/09/16 18:59	12/15/16 18:22	1
Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.043	ug/L		12/09/16 18:59	12/15/16 18:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	86		70 - 130				12/09/16 18:59	12/15/16 18:22	1
13C2 PFDA	87		70 - 130				12/09/16 18:59	12/15/16 18:22	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Date Collected: 12/06/16 14:05

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.015	ug/L		12/09/16 18:59	12/15/16 18:52	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0093	ug/L		12/09/16 18:59	12/15/16 18:52	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.047	ug/L		12/09/16 18:59	12/15/16 18:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxA	98		70 - 130				12/09/16 18:59	12/15/16 18:52	1
13C2 PFDA	100		70 - 130				12/09/16 18:59	12/15/16 18:52	1

Default Detection Limits

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

TestAmerica Job ID: 320-24178-1

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

Prep: 537

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

Surrogate Summary

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

TestAmerica Job ID: 320-24178-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

3C2 PFHx 3C2 PFDA

(70-130) (70-130)

Lab Sample ID	Client Sample ID	3C2 PFHx (70-130)	3C2 PFDA (70-130)
320-24178-1	WI-CV-1RW23-1216	93	95
320-24178-2	WI-CV-1RW23P-1216	101	110
320-24178-3	WI-CV-1FB23-1216	97	106
320-24178-4	WI-CV-1RW24-1216	94	91
320-24178-5	WI-CV-1FB24-1216	88	85
320-24178-6	WI-CV-1RW25-1216	97	92
320-24178-7	WI-CV-1FB25-1216	89	93
320-24178-8	WI-CV-1RW26-1216	100	97
320-24178-9	WI-CV-1FB26-1216	89	87
320-24178-10	WI-CV-1RW27-1216	114	112
320-24178-11	WI-CV-1FB27-1216	96	100
320-24178-12	WI-CV-1RW28-1216	86	87
320-24178-13	WI-CV-1FB28-1216	98	100
LLCS 320-141540/2-A	Lab Control Sample	93	90
LLCSD 320-141540/3-A	Lab Control Sample Dup	101	94
MB 320-141540/1-A	Method Blank	90	88

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

QC Sample Results

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

TestAmerica Job ID: 320-24178-1

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

Lab Sample ID: MB 320-141540/1-A

Matrix: Water

Analysis Batch: 142223

Analyte	MB		MB		D	Prepared	Analyzed	Dil Fac
	Result	Qualifier	LOQ	DL				
Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.016	ug/L	12/09/16 18:59	12/15/16 09:32	1
Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.0094	ug/L	12/09/16 18:59	12/15/16 09:32	1
Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.048	ug/L	12/09/16 18:59	12/15/16 09:32	1

Surrogate	MB		MB		D	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier	Limits					
13C2 PFHxA	90		70 - 130			12/09/16 18:59	12/15/16 09:32	1
13C2 PFDA	88		70 - 130			12/09/16 18:59	12/15/16 09:32	1

Lab Sample ID: LLCS 320-141540/2-A

Matrix: Water

Analysis Batch: 142223

Analyte	Spike		LLCS		Unit	D	%Rec	%Rec.	Limits
	Added	Result	LLCS	Qualifier					
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0277	J		ug/L	69	50 - 150		
Perfluorooctanoic acid (PFOA)		0.0198	0.0144	J M	ug/L		73	50 - 150	
Perfluorobutanesulfonic acid (PFBS)		0.0898	0.0705	J	ug/L		79	50 - 150	

Surrogate	LLCS		LLCS		D	%Rec	Limits	RPD
	%Recovery	Qualifier	Limits					
13C2 PFHxA	93		70 - 130					
13C2 PFDA	90		70 - 130					

Lab Sample ID: LLCSD 320-141540/3-A

Matrix: Water

Analysis Batch: 142223

Analyte	Spike		LLCSD		Unit	D	%Rec	Limits	RPD	Limit
	Added	Result	LLCSD	Qualifier						
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0278	J		ug/L	69	50 - 150	0.5	50	
Perfluorooctanoic acid (PFOA)		0.0198	0.0150	J M	ug/L		76	50 - 150	4	50
Perfluorobutanesulfonic acid (PFBS)		0.0898	0.0694	J	ug/L		77	50 - 150	2	50

Surrogate	LLCSD		LLCSD		D	%Rec	Limits	RPD
	%Recovery	Qualifier	Limits					
13C2 PFHxA	101		70 - 130					
13C2 PFDA	94		70 - 130					

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 141540

QC Association Summary

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

TestAmerica Job ID: 320-24178-1

LCMS

Prep Batch: 141540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	

Analysis Batch: 142223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-1	WI-CV-1RW23-1216	Total/NA	Water	537	141540
320-24178-2	WI-CV-1RW23P-1216	Total/NA	Water	537	141540
320-24178-3	WI-CV-1FB23-1216	Total/NA	Water	537	141540
320-24178-4	WI-CV-1RW24-1216	Total/NA	Water	537	141540
320-24178-5	WI-CV-1FB24-1216	Total/NA	Water	537	141540
320-24178-6	WI-CV-1RW25-1216	Total/NA	Water	537	141540
MB 320-141540/1-A	Method Blank	Total/NA	Water	537	141540
LLCS 320-141540/2-A	Lab Control Sample	Total/NA	Water	537	141540
LLCSD 320-141540/3-A	Lab Control Sample Dup	Total/NA	Water	537	141540

Analysis Batch: 142412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24178-7	WI-CV-1FB25-1216	Total/NA	Water	537	141540
320-24178-8	WI-CV-1RW26-1216	Total/NA	Water	537	141540
320-24178-9	WI-CV-1FB26-1216	Total/NA	Water	537	141540
320-24178-10	WI-CV-1RW27-1216	Total/NA	Water	537	141540
320-24178-11	WI-CV-1FB27-1216	Total/NA	Water	537	141540
320-24178-12	WI-CV-1RW28-1216	Total/NA	Water	537	141540
320-24178-13	WI-CV-1FB28-1216	Total/NA	Water	537	141540

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Collected: 12/06/16 09:21

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 11:30	JRB	TAL SAC

Client Sample ID: WI-CV-1RW23P-1216

Date Collected: 12/06/16 09:26

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 12:00	JRB	TAL SAC

Client Sample ID: WI-CV-1FB23-1216

Date Collected: 12/06/16 09:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 12:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW24-1216

Date Collected: 12/06/16 09:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 12:59	JRB	TAL SAC

Client Sample ID: WI-CV-1FB24-1216

Date Collected: 12/06/16 09:44

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 13:29	JRB	TAL SAC

Client Sample ID: WI-CV-1RW25-1216

Date Collected: 12/06/16 10:00

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142223	12/15/16 14:25	JRB	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB25-1216

Date Collected: 12/06/16 09:58

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 15:54	CBW	TAL SAC

Client Sample ID: WI-CV-1RW26-1216

Date Collected: 12/06/16 10:12

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 16:24	CBW	TAL SAC

Client Sample ID: WI-CV-1FB26-1216

Date Collected: 12/06/16 10:09

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 16:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW27-1216

Date Collected: 12/06/16 10:24

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 17:23	CBW	TAL SAC

Client Sample ID: WI-CV-1FB27-1216

Date Collected: 12/06/16 10:22

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 17:53	CBW	TAL SAC

Client Sample ID: WI-CV-1RW28-1216

Date Collected: 12/06/16 14:08

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24178-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 18:22	CBW	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-24178-1

Client Sample ID: WI-CV-1FB28-1216

Lab Sample ID: 320-24178-13

Matrix: Water

Date Collected: 12/06/16 14:05
Date Received: 12/08/16 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537			141540	12/09/16 18:59	JER	TAL SAC
Total/NA	Analysis	537		1	142412	12/15/16 18:52	CBW	TAL SAC

Laboratory References:

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

Certification Summary

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

TestAmerica Job ID: 320-24178-1

Laboratory: TestAmerica Sacramento

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

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

Method Summary

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

TestAmerica Job ID: 320-24178-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

TestAmerica Job ID: 320-24178-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24178-1	WI-CV-1RW23-1216	Water	12/06/16 09:21	12/08/16 10:00
320-24178-2	WI-CV-1RW23P-1216	Water	12/06/16 09:26	12/08/16 10:00
320-24178-3	WI-CV-1FB23-1216	Water	12/06/16 09:22	12/08/16 10:00
320-24178-4	WI-CV-1RW24-1216	Water	12/06/16 09:45	12/08/16 10:00
320-24178-5	WI-CV-1FB24-1216	Water	12/06/16 09:44	12/08/16 10:00
320-24178-6	WI-CV-1RW25-1216	Water	12/06/16 10:00	12/08/16 10:00
320-24178-7	WI-CV-1FB25-1216	Water	12/06/16 09:58	12/08/16 10:00
320-24178-8	WI-CV-1RW26-1216	Water	12/06/16 10:12	12/08/16 10:00
320-24178-9	WI-CV-1FB26-1216	Water	12/06/16 10:09	12/08/16 10:00
320-24178-10	WI-CV-1RW27-1216	Water	12/06/16 10:24	12/08/16 10:00
320-24178-11	WI-CV-1FB27-1216	Water	12/06/16 10:22	12/08/16 10:00
320-24178-12	WI-CV-1RW28-1216	Water	12/06/16 14:08	12/08/16 10:00
320-24178-13	WI-CV-1FB28-1216	Water	12/06/16 14:05	12/08/16 10:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica SacramentoJob No.: 320-24178-1

SDG No.: _____

Instrument ID: A6Analysis Batch Number: 140688Lab Sample ID: STD 320-140688/2 IC

Client Sample ID: _____

Date Analyzed: 12/05/16 17:26Lab File ID: 05DEC2016A6A_004.dGC Column: Acquity ID: 2.1(mm)

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

Lab Sample ID: STD 320-140688/3 IC

Client Sample ID: _____

Date Analyzed: 12/05/16 17:55Lab File ID: 05DEC2016A6A_005.dGC Column: Acquity ID: 2.1(mm)

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

Lab Sample ID: CCV 320-140688/9 CCVL

Client Sample ID: _____

Date Analyzed: 12/05/16 20:53Lab File ID: 05DEC2016A6A_011.dGC Column: Acquity ID: 2.1(mm)

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

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6

Analysis Batch Number: 142223

Lab Sample ID: CCV 320-142223/2 CCVL

Client Sample ID: _____

Date Analyzed: 12/15/16 08:03

Lab File ID: 15DEC2016A6A_002.d

GC Column: Acquity

ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	19.38	Split Peak	barnettj	12/15/16 15:05
Perfluorooctanoic acid (PFOA)	20.05	Split Peak	barnettj	12/15/16 15:05

Lab Sample ID: LLCS 320-141540/2-A

Client Sample ID: _____

Date Analyzed: 12/15/16 10:02

Lab File ID: 15DEC2016A6A_006.d

GC Column: Acquity

ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.04	Split Peak	barnettj	12/15/16 15:14

Lab Sample ID: LLCSD 320-141540/3-A

Client Sample ID: _____

Date Analyzed: 12/15/16 10:31

Lab File ID: 15DEC2016A6A_007.d

GC Column: Acquity

ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.04	Split Peak	barnettj	12/15/16 15:15

Lab Sample ID: 320-24178-1

Client Sample ID: WI-CV-1RW23-1216

Date Analyzed: 12/15/16 11:30

Lab File ID: 15DEC2016A6A_009.d

GC Column: Acquity

ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	20.38	Missed Peak	barnettj	12/15/16 15:18

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica SacramentoJob No.: 320-24178-1

SDG No.: _____

Instrument ID: A6Analysis Batch Number: 142223Lab Sample ID: 320-24178-2Client Sample ID: WI-CV-1RW23P-1216Date Analyzed: 12/15/16 12:00Lab File ID: 15DEC2016A6A_010.dGC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	20.41	Missed Peak	barnettj	12/15/16 15:19

Lab Sample ID: 320-24178-3Client Sample ID: WI-CV-1FB23-1216Date Analyzed: 12/15/16 12:29Lab File ID: 15DEC2016A6A_011.dGC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	20.04	Split Peak	barnettj	12/15/16 15:20

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-ICV_00017	01/13/17	08/09/16	MeOH/H ₂ O, Lot 067374	10 mL	LC537-IS_00018	200 uL	13C2-PFOA	10 ng/mL
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	28.68 ng/mL
.LCMPFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	0.5 ug/mL
.LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	1.434 ug/mL
LC537-ICV_00017	01/13/17	08/09/16	MeOH/H ₂ O, Lot 067374	10 mL	LC537-SU_00017	500 uL	13C2 PFDA	10 ng/mL
					13C2 PFHxA		13C2 PFHxA	10 ng/mL
					LC537ICIM_00013	25 uL	Perfluorobutanesulfonic acid (PFBS)	114.77 ng/mL
							Perfluoroctanoic acid (PFOA)	25.0965 ng/mL
							Perfluoroctanesulfonic acid (PFOS)	27.2389 ng/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
.LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LC537ICIM_00013	02/05/17	08/09/16	Methanol, Lot 090285	25 mL	LC537-PFBS2_00005	0.5 mL	Perfluorobutanesulfonic acid (PFBS)	45.908 ug/mL
					LC537-PFOA2_00007	0.13 mL	Perfluoroctanoic acid (PFOA)	10.0386 ug/mL
					LC537-PFOS2_00005	0.22 mL	Perfluoroctanesulfonic acid (PFOS)	10.8956 ug/mL
.LC537-PFBS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537_PFBS2_00001	0.023 g	Perfluorobutanesulfonic acid (PFBS)	2295.4 ug/mL
...LC537_PFBS2_00001	08/09/17	Santa Cruz Biotechnology, Lot H0112			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.998 g/g
.LC537-PFOA2_00007	07/25/17	08/05/16	Methanol, Lot 090285	10 mL	LC537_PFOA2_00001	0.0195 g	Perfluoroctanoic acid (PFOA)	1930.5 ug/mL
...LC537_PFOA2_00001	07/25/17	Afla Aesar, Lot D24Y026			(Purchased Reagent)		Perfluoroctanoic acid (PFOA)	0.99 g/g
.LC537-PFOS2_00005	03/01/17	02/29/16	Methanol, Lot 090285	10 mL	LC537_PFOS2_00001	0.0159 g	Perfluoroctanesulfonic acid (PFOS)	1238.13 ug/mL
...LC537_PFOS2_00001	07/26/17	Sigma, Lot BCBF5116V			(Purchased Reagent)		Perfluoroctanesulfonic acid (PFOS)	0.7787 g/g
LC537-IS_00026	03/19/17	12/05/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00018	300 uL	13C4 PFOS	1.434 ug/mL
.LCM2PFOA_00003	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-L1_00015	01/13/17	07/28/16	MeOH/H ₂ O, Lot 090285	5 mL	LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
					13C4 PFOS		13C4 PFOS	28.68 ng/mL
					LC537-MSP_00012	24.4 uL	Perfluorobutanesulfonic acid (PFBS)	8.76058 ng/mL
							Perfluoroheptanoic acid	0.993847 ng/mL
							Perfluorohexanesulfonic acid	2.9532 ng/mL
							Perfluorononanoic acid	1.91737 ng/mL
							Perfluoroctanoic acid (PFOA)	1.9793 ng/mL
							Perfluoroctanesulfonic acid (PFOS)	3.91048 ng/mL
					LC537-SU_00017	250 uL	13C2 PFDA	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2_PFHxA	10 ng/mL
					LCMPFOS_00013	300 uL	13C2-PFOA	0.5 ug/mL
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312		(Purchased Reagent)		13C4_PFOS	1.434 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LC537-MSP_00012	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	200 uL	Perfluorobutanesulfonic acid (PFBS)	47.8 ug/mL
							Perfluoroheptanoic acid	1795.2 ng/mL
							Perfluorohexanesulfonic acid	203.657 ng/mL
							Perfluorononanoic acid	605.164 ng/mL
							Perfluoroctanoic acid (PFOA)	392.904 ng/mL
							Perfluoroctanesulfonic acid (PFOS)	405.594 ng/mL
							Perfluoroctanesulfonic acid (PFOS)	801.328 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
					LC537-PFHxA_00010	0.1 mL	Perfluoroheptanoic acid	10.1829 ug/mL
					LC537-PFHxS_00008	0.3 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL
					LC537-PFNA_00008	0.2 mL	Perfluorononanoic acid	19.6452 ug/mL
					LC537-PFOA_00009	0.098 mL	Perfluoroctanoic acid (PFOA)	20.2797 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluoroctanesulfonic acid (PFOS)	40.0664 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1 g/g
...LC537-PFHxA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHxA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537_PFHxA_00002	04/01/18		Aldrich, Lot BCBM2579V		(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V		(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537_PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537_PFNA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorononanoic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluoroctanoic acid (PFOA)	2069.36 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV		(Purchased Reagent)		Perfluoroctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluoroctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV		(Purchased Reagent)		Perfluoroctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2_PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2_PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2_PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2_PFHxA	50 ug/mL
LC537-L2_00014	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	34 uL	Perfluorobutanesulfonic acid (PFBS)	22.8888 ng/mL
							Perfluoroheptanoic acid	2.59663 ng/mL
							Perfluorohexanesulfonic acid	7.71585 ng/mL
							Perfluorononanoic acid	5.00953 ng/mL
							Perfluoroctanoic acid (PFOA)	5.17132 ng/mL
							Perfluoroctanesulfonic acid (PFOS)	10.2169 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537-IS_00018	100 uL	13C2-PFOA	10 ng/mL
					LC537-SU_00017	250 uL	13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
							13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorohexanesulfonic acid	1134.68 ng/mL
					LC537-PFHxA_00010	0.1 mL	Perfluorononanoic acid	736.695 ng/mL
					LC537-PFHxS_00008	0.3 mL	Perfluoroctanoic acid (PFOA)	760.489 ng/mL
					LC537-PFNA_00008	0.2 mL	Perfluoroctanesulfonic acid (PFOS)	1502.49 ng/mL
					LC537-PFOA_00009	0.098 mL	Perfluorobutanesulfonic acid	89.76 ug/mL
					LC537-PFOS_00006	0.4 mL	Perfluoroheptanoic acid	10.1829 ug/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorohexanesulfonic acid	30.2582 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorononanoic acid	19.6452 ug/mL
...LC537-PFHxA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHxA_00002	0.0072 g	Perfluoroctanoic acid	20.2797 ug/mL
....LC537_PFHxA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)		Perfluorobutanesulfonic acid	40.0664 ug/mL
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorobutanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g
...LC537-PFNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)		Perfluorobutanesulfonic acid	0.963 g/g
...LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluoroctanoic acid (PFOA)	2069.36 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)		Perfluoroctanoic acid (PFOA)	0.999 g/g
...LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluoroctanesulfonic acid	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)		Perfluoroctanesulfonic acid	0.9106 g/g (PFOS)
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537-L3_00016	01/28/17	11/07/16	MeOH/H ₂ O, Lot 090285	5 mL	LC537-HSP_00010	67 uL	Perfluorobutanesulfonic acid (PFBS)	45.1044 ng/mL
							Perfluoroheptanoic acid	5.11689 ng/mL
							Perfluorohexanesulfonic acid	15.2048 ng/mL
							Perfluorononanoic acid	9.87171 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluorooctanoic acid (PFOA)	10.1905 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	20.1334 ng/mL
							13C2-PFOA	10 ng/mL
							13C4 PFOS	28.68 ng/mL
							13C2 PFDA	10 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	13C2 PFHxA	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluorooctanoic acid (PFOA)	760.489 ng/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
							Perfluoroheptanoic acid	10.1829 ug/mL
							Perfluorohexanesulfonic acid	30.2582 ug/mL
							Perfluorononanoic acid	19.6452 ug/mL
							Perfluorooctanoic acid (PFOA)	20.2797 ug/mL
....LC537_PFBS_00002	04/01/18		Sigma, Lot MKBP8842V		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFBS)	40.0664 ug/mL
							Perfluorobutanesulfonic acid	2040 ug/mL
							Perfluoroheptanoic acid	1 g/g
							Perfluoroheptanoic acid	0.99 g/g
							Perfluorohexanesulfonic acid	1008.61 ug/mL
							Perfluorohexanesulfonic acid	0.9094 g/g
....LC537_PFHxA_00002	04/01/18		Sigma, Lot BCBL3545V	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorononanoic acid	982.26 ug/mL
							Perfluoromonanoic acid	0.963 g/g
							Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
							Perfluorooctanoic acid (PFOA)	0.999 g/g
							Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.9106 g/g
....LC537_PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
							Perfluoroheptanoic acid	0.99 g/g
							Perfluorohexanesulfonic acid	1008.61 ug/mL
							Perfluorohexanesulfonic acid	0.9094 g/g
							Perfluorononanoic acid	982.26 ug/mL
							Perfluoromonanoic acid	0.963 g/g
....LC537_PFOA_00002	04/01/18		TCI America, Lot QN44F		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	2069.36 ug/mL
							Perfluoromonanoic acid	0.963 g/g
							Perfluorooctanoic acid (PFOA)	0.999 g/g
							Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.9106 g/g
							Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
....LC537_IS_00024	03/19/17	11/03/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
							13C4 PFOS	1.434 ug/mL
							13C2-PFOA	50 ug/mL
							13C4 PFOS	47.8 ug/mL
							13C2 PFDA	0.2 ug/mL
							13C2 PFHxA	0.2 ug/mL
....LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
							13C2 PFHxA	50 ug/mL
....LCMPFHxA_00009	04/09/20		Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
							13C2 PFHxA	50 ug/mL
LC537-L4_00015	01/13/17	07/28/16	MeOH/H ₂ O, Lot 090285	5 mL	LC537-HSP_00010	135 uL	Perfluorobutanesulfonic acid (PFBS)	90.882 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluoroheptanoic acid	10.3101 ng/mL
							Perfluorohexanesulfonic acid	30.6364 ng/mL
							Perfluorononanoic acid	19.8908 ng/mL
							Perfluoroctanoic acid (PFOA)	20.5332 ng/mL
							Perfluoroctanesulfonic acid (PFOS)	40.5672 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluoroctanoic acid (PFOA)	760.489 ng/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBs_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL
							Perfluoroheptanoic acid	2040 ug/mL
							Perfluorohexanesulfonic acid	1 g/g (PFBS)
							Perfluorononanoic acid	0.99 g/g
							Perfluoroctanoic acid (PFOA)	0.9094 g/g
...LC537-PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHxS_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537_PFHxS_00002	04/01/18		Aldrich, Lot BCBM2579V			(Purchased Reagent)	Perfluoroheptanoic acid	0.99 g/g
....LC537_PFHxS_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxS_00002	04/01/18		Sigma, Lot BCBL3545V			(Purchased Reagent)	Perfluorohexanesulfonic acid	0.9094 g/g
....LC537_PFNNA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNNA_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537_PFNNA_00002	04/01/18		TCI America, Lot QN44F			(Purchased Reagent)	Perfluorononanoic acid	0.963 g/g
....LC537_PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluoroctanoic acid (PFOA)	2069.36 ug/mL
....LC537_PFOA_00002	11/04/18		Fluka, Lot SZBD308XV			(Purchased Reagent)	Perfluoroctanoic acid (PFOA)	0.999 g/g
....LC537_PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluoroctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17		Fluka, Lot SZBC222XV			(Purchased Reagent)	Perfluoroctanesulfonic acid (PFOS)	0.9106 g/g
.LC537-IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL
					LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL
..LCM2PFOA_00004	03/19/17		Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)	13C2-PFOA	50 ug/mL
..LCMPFOS_00013	01/22/21		Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
.LC537-SU_00017	01/19/17	07/19/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL
..LCMPFDA_00008	08/19/20		Wellington Laboratories, Lot MFDA0815			(Purchased Reagent)	13C2 PFDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415		(Purchased Reagent)		13C2_PFHxA		50 ug/mL
LC537-L5_00017	01/28/17	11/07/16	MeOH/H ₂ O, Lot 090285	5 mL	LC537-HSP_00010	200 uL	Perfluorobutanesulfonic acid (PFBS)	134.64 ng/mL
					LC537-IS_00024	100 uL	Perfluoroheptanoic acid	15.2743 ng/mL
					LC537-SU_00020	250 uL	Perfluorohexanesulfonic acid	45.3873 ng/mL
							Perfluorononanoic acid	29.4678 ng/mL
LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	Perfluoroheptanoic acid (PFOA)	30.4196 ng/mL
							Perfluorooctanoic acid (PFOS)	60.0996 ng/mL
							13C2-PFOA	10 ng/mL
							13C4_PFOS	28.68 ng/mL
							13C2_PFDA	10 ng/mL
							13C2_PFHxA	10 ng/mL
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL
							Perfluoroheptanoic acid	381.857 ng/mL
							Perfluorohexanesulfonic acid	1134.68 ng/mL
							Perfluorononanoic acid	736.695 ng/mL
							Perfluoroctanoic acid (PFOA)	760.489 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	1502.49 ng/mL
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFBS_00002	0.0102 g	Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL
....LC537_PFBS_00002	04/01/18	Sigma, Lot MKBP8842V		(Purchased Reagent)			Perfluorobutanesulfonic acid (PFBS)	1 g/g
....LC537-PFHxA_00010	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHxA_00002	0.0072 g	Perfluoroheptanoic acid	1018.29 ug/mL
....LC537_PFHxA_00002	04/01/18	Aldrich, Lot BCBM2579V		(Purchased Reagent)			Perfluoroheptanoic acid	0.99 g/g
....LC537_PFHxA_00008	07/28/17	07/28/16	Methanol, Lot 090285	5.5 mL	LC537_PFHxA_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL
....LC537_PFHxA_00002	04/01/18	Sigma, Lot BCBL3545V		(Purchased Reagent)			Perfluorohexanesulfonic acid	0.9094 g/g
....LC537_PFNAs_00008	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537_PFNAs_00002	0.0051 g	Perfluorononanoic acid	982.26 ug/mL
....LC537_PFNAs_00002	04/01/18	TCI America, Lot QN44F		(Purchased Reagent)			Perfluorononanoic acid	0.963 g/g
....LC537-PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluoroctanoic acid (PFOA)	2069.36 ug/mL
....LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV		(Purchased Reagent)			Perfluoroctanoic acid (PFOA)	0.999 g/g
....LC537-PFOS_00006	07/28/17	07/28/16	Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluorooctanesulfonic acid (PFOS)	1001.66 ug/mL
....LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV		(Purchased Reagent)			Perfluorooctanesulfonic acid (PFOS)	0.9106 g/g
..LC537-IS_00024	03/19/17	11/03/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00003	100 uL	13C2-PFOA	0.5 ug/mL
..LCM2PFOA_00003	03/19/17	Wellington Laboratories, Lot M2PFOA0312		(Purchased Reagent)			13C4_PFOS	1.434 ug/mL
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)			13C2-PFOA	50 ug/mL
..LCMPFOS_00018	08/03/21	Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)			13C4_PFOS	47.8 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration			
					Reagent ID	Volume Added					
.LC537-SU_00020	04/07/17	10/07/16	Methanol, Lot 104453	25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL			
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL			
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL			
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL			
LC537-L6_00014	01/13/17	07/28/16	MeOH/H2O, Lot 090285	5 mL	LC537-HSP_00010	265 uL	Perfluorobutanesulfonic acid (PFBS)	178.398 ng/mL			
							Perfluoroheptanoic acid	20.2384 ng/mL			
							Perfluorohexanesulfonic acid	60.1382 ng/mL			
					LC537-IS_00018	100 uL	Perfluorononanoic acid	39.0448 ng/mL			
							Perfluoroctanoic acid (PFOA)	40.3059 ng/mL			
					LC537-SU_00017	250 uL	Perfluoroctanesulfonic acid (PFOS)	79.632 ng/mL			
LC537-HSP_00010	01/28/17	07/28/16	Methanol, Lot 090285	10000 uL	LC537SPIM_00012	375 uL	13C2-PFOA	10 ng/mL			
							13C4 PFOS	28.68 ng/mL			
							13C2 PFDA	10 ng/mL			
					LC537-SU_00017	250 uL	13C2 PFHxA	10 ng/mL			
							Perfluorobutanesulfonic acid (PFBS)	3366 ng/mL			
							Perfluoroheptanoic acid	381.857 ng/mL			
..LC537SPIM_00012	01/28/17	07/28/16	Methanol, Lot 104453	10 mL	LC537-PFBS_00006	0.44 mL	Perfluorohexanesulfonic acid	1134.68 ng/mL			
							Perfluorononanoic acid	736.695 ng/mL			
							Perfluoroctanoic acid (PFOA)	760.489 ng/mL			
					LC537-PFOS_00006	0.4 mL	Perfluoroctanesulfonic acid (PFOS)	1502.49 ng/mL			
							Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL			
							Perfluoroheptanoic acid	10.1829 ug/mL			
...LC537-PFBS_00006	07/28/17	07/28/16	Methanol, Lot 090285	5 mL	LC537-PFHxA_00010	0.1 mL	Perfluorohexanesulfonic acid	30.2582 ug/mL			
							Perfluorononanoic acid	19.6452 ug/mL			
							Perfluoroctanoic acid (PFOA)	20.2797 ug/mL			
					LC537-PFNA_00009	0.098 mL	Perfluoroctanesulfonic acid (PFOS)	40.0664 ug/mL			
							Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL			
							Perfluoroheptanoic acid	0.99 g/g			
....LC537_PFBs_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1018.29 ug/mL			
					(Purchased Reagent)		Perfluoroheptanoic acid	0.99 g/g			
					(Purchased Reagent)		Perfluorohexanesulfonic acid	1008.61 ug/mL			
					(Purchased Reagent)		Perfluorohexanesulfonic acid	0.9094 g/g			
					(Purchased Reagent)		Perfluorononanoic acid	982.26 ug/mL			
					(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	0.963 g/g			
....LC537_PFHxA_00002	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFHxA_00010	0.0072 g	Perfluoroctanoic acid (PFOA)	2069.36 ug/mL			
							Perfluoroheptanoic acid	0.999 g/g			
							Perfluorohexanesulfonic acid	1001.66 ug/mL			
					LC537_PFNA_00009	0.0145 g	Perfluorobutanesulfonic acid (PFOS)	0.9106 g/g			
							Perfluoroheptanoic acid (PFOA)	0.5 ug/mL			
							Perfluoroctanoic acid (PFOA)	0.999 g/g			
....LC537_PFNA_00008	04/01/18	Aldrich, Lot BCBM2579V		5.5 mL	LC537_PFHxA_S_00008	0.0061 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
					LC537_PFNA_00002	0.0051 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
....LC537_PFNA_00002	04/01/18	Sigma, Lot BCBL3545V		5 mL	LC537_PFHxA_S_00002	0.0051 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
					LC537_PFNA_00008	0.0051 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
....LC537_PFOA_00009	07/28/17	07/28/16	Methanol, Lot 090285	7 mL	LC537_PFOA_00002	0.0145 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
					LC537_PFOA_00002	0.0145 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
....LC537_PFOS_00006	11/04/18	Fluka, Lot SZBD308XV		6 mL	LC537_PFOS_00002	0.0066 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
					LC537_PFOS_00002	0.0066 g	Perfluorobutanesulfonic acid (PFBS)	0.999 g/g			
							Perfluoroheptanoic acid (PFOA)	0.999 g/g			
							Perfluorohexanesulfonic acid (PFOS)	0.999 g/g			
....LC537_IS_00018	01/13/17	07/13/16	Methanol, Lot 090285	10000 uL	LCM2PFOA_00004	100 uL	13C2-PFOA	0.5 ug/mL			
							13C2-PFHxA	0.5 ug/mL			
							13C2-PFNA	0.5 ug/mL			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
					LCMPFOS_00013	300 uL	13C4 PFOS	1.434 ug/mL		
..LCM2PFOA_00004	03/19/17	Wellington Laboratories, Lot M2PFOA0312			(Purchased Reagent)		13C2-PFOA	50 ug/mL		
..LCMPFOS_00013	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL		
.LC537-SU_00017	01/19/17	07/19/16 Methanol, Lot 104453		25000 uL	LCMPFDA_00008	100 uL	13C2 PFDA	0.2 ug/mL		
					LCMPFHxA_00009	100 uL	13C2 PFHxA	0.2 ug/mL		
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL		
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)		13C2 PFHxA	50 ug/mL		
LC537-LSP_00016	05/04/17	11/04/16 Methanol, Lot 090285	10000 uL	LC537SPIM_00015	50 uL	Perfluorobutane Sulfonate	448.8 ng/mL			
						Perfluorobutanesulfonic acid (PFBS)	448.8 ng/mL			
						Perfluoroheptanoic acid	53.7429 ng/mL			
						Perfluorohexanesulfonic acid	151.291 ng/mL			
						Perfluorononanoic acid	101.553 ng/mL			
						Perfluoroctanoic acid (PFOA)	99.234 ng/mL			
						Perfluoroctanesulfonic acid (PFOS)	200.332 ng/mL			
.LC537SPIM_00015	05/04/17	11/04/16 Methanol, Lot 104453	10000 uL	LC537-PFBS_00006	440 uL	Perfluorobutane Sulfonate	89.76 ug/mL			
						Perfluorobutanesulfonic acid (PFBS)	89.76 ug/mL			
						Perfluoroheptanoic acid	10.7486 ug/mL			
						Perfluorohexanesulfonic acid	30.2582 ug/mL			
						Perfluorononanoic acid	20.3105 ug/mL			
						Perfluoroctanoic acid (PFOA)	19.8468 ug/mL			
..LC537-PFBS_00006	07/28/17	07/28/16 Methanol, Lot 090285	5 mL	LC537_PFBs_00002	0.0102 g	Perfluorobutane Sulfonate	2040 ug/mL			
						Perfluorobutanesulfonic acid (PFBS)	2040 ug/mL			
...LC537_PFBs_00002	04/01/18	Sigma, Lot MKBP8842V			(Purchased Reagent)		Perfluorobutane Sulfonate	1 g/g		
							Perfluorobutanesulfonic acid (PFBS)	1 g/g		
..LC537-PFHxA_00011	11/04/17	11/04/16 Methanol, Lot 090285	7 mL	LC537_PFHxA_00002	0.0076 g	Perfluoroheptanoic acid	1074.86 ug/mL			
...LC537_PFHxA_00002	04/01/18	Aldrich, Lot BCBM2579V			(Purchased Reagent)	Perfluoroheptanoic acid	0.99 g/g			
..LC537-PFHxS_00008	07/28/17	07/28/16 Methanol, Lot 090285	5.5 mL	LC537_PFHxS_00002	0.0061 g	Perfluorohexanesulfonic acid	1008.61 ug/mL			
...LC537_PFHxS_00002	04/01/18	Sigma, Lot BCBL3545V			(Purchased Reagent)	Perfluorohexanesulfonic acid	0.9094 g/g			
..LC537-PFNA_00009	11/04/17	11/04/16 Methanol, Lot 090285	5.5 mL	LC537_PFNA_00002	0.0058 g	Perfluorononanoic acid	1015.53 ug/mL			
...LC537_PFNA_00002	04/01/18	TCI America, Lot QN44F			(Purchased Reagent)	Perfluorononanoic acid	0.963 g/g			
..LC537-PFOA_00010	11/04/17	11/04/16 Methanol, Lot 090285	7.5 mL	LC537_PFOA_00002	0.0149 g	Perfluoroctanoic acid (PFOA)	1984.68 ug/mL			
...LC537_PFOA_00002	11/04/18	Fluka, Lot SZBD308XV			(Purchased Reagent)	Perfluoroctanoic acid (PFOA)	0.999 g/g			
..LC537-PFOS_00006	07/28/17	07/28/16 Methanol, Lot 090285	6 mL	LC537_PFOS_00002	0.0066 g	Perfluoroctanesulfonic acid (PFOS)	1001.66 ug/mL			
...LC537_PFOS_00002	08/09/17	Fluka, Lot SZBC222XV			(Purchased Reagent)	Perfluoroctanesulfonic acid (PFOS)	0.9106 g/g			
LC537-SU_00024	06/05/17	12/05/16 Methanol, Lot 104453	20000 uL	LCMPFDA_00008	80 uL	13C2 PFDA	0.2 ug/mL			
				LCMPFHxA_00009	80 uL	13C2 PFHxA	0.2 ug/mL			
..LCMPFDA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)	13C2 PFDA	50 ug/mL			
..LCMPFHxA_00009	04/09/20	Wellington Laboratories, Lot MPFHxA0415			(Purchased Reagent)	13C2 PFHxA	50 ug/mL			

Reagent

LC537_PFBS_00002

C: 4/1/15 SPV

SIGMA-ALDRICH®

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

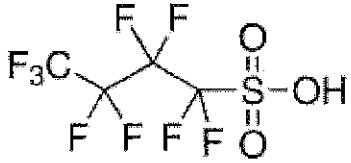
Outside USA: eurtechserv@sial.com

Product Name:

Certificate of Analysis

Nonafluorobutane-1-sulfonic acid - 97%

Product Number: 562629
Batch Number: MKBP8842V
Brand: ALDRICH
CAS Number: 375-73-5
MDL Number: MFCD01320794
Formula: C₄H₉O₃S
Formula Weight: 300.10 g/mol
Storage Temperature: Store at 2 - 8 °C
Quality Release Date: 11 OCT 2013



PFBS

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

Jamie Gleason

Jamie Gleason, Manager
 Quality Control
 Milwaukee, Wisconsin US

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_PFB2_00001



The Power to Question

CERTIFICATE OF ANALYSIS

Catalog Number: sc-236187
Product Name: Nonanfluorobutane-1-sulfonic acid
CAS Number: 375-73-5
Molecular Formula: C₄H₉F₉O₃S
Molecular Weight: 300.10
Lot Number: H0112

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

Test Conditions: Refractive Index: n_{20/D}

Reagent

LC537_PFHpA_00002

R: 4/1/15 SV

SIGMA-ALDRICH®

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

Certificate of Analysis

Product Name: PERFLUOROHEPTANOIC ACID
99 %
Product Number: 342041
Batch Number: BCBM2579V
Brand: Aldrich
CAS Number: 375-85-9
Formula: $\text{CF}_3(\text{CF}_2)_5\text{CO}_2\text{H}$
Formula Weight: 364.06
Quality Release Date: 06 DEC 2013
Recommended Retest Date: OCT 2018

PFH₇A

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



Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

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

Reagent

LC537_PFHxS_00002

R: 4/11/15 SW

SIGMA-ALDRICH®

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

Certificate of Analysis

Product Name: TRIDECAFLUOROHEXANE-1-SULFONIC ACID POTASSIUM SALT
Spec: >= 98.0 % T
Product Number: 50929
Batch Number: BCBL3545V
Brand: Aldrich
CAS Number: 3871-99-6
Formula: C₆F₁₃KO₃S
Formula Weight: 438.20
Quality Release Date: 20 JUN 2013

PFH_xS-K

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

Dr. Claudia Geitner
 Manager Quality Control
 Buchs, Switzerland

$$\text{MW corr} = \frac{(k_{\text{form}}) - (k) + (n)}{(438.20 - 391.0 + 1.0)} = 0.91307 \text{ (anion form)}$$

Purity = 90.94 % w/m.w correction

SW 4/11/15

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

Reagent

LC537_PFNA_00002

R: 4/1/15 SKV



Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

Customer service:

TCI AMERICA
Tel: +1-800-423-8616 / +1-503-283-1681
Fax: +1-866-520-1075 / +1-503-283-1987
E-mail: Sales-US@TCIchemicals.com

PFNA

Reagent

LC537_PFOA_00002

13/21/15 PV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.11.2013/505378/13/24029

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 04.Nov.2013

Expiry Date: 04.Nov.2018

Article/Product: 33824

Batch : SZBD308XV

Pentadecafluorooctanoic acid OEKANAL®

PFCA

Reference Material (RM)

1. General Information

Formula: C₈HF₁₅O₂

Molar mass: 414.07 g/Mole

CAS-No.: [335-67-1]

Recomm. storage temp.: roomtemp.

Usage : PFOA

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

2. Batch Analysis

Identify (GC-MS)

complying

Assay (GCMS)

99.4 %

Date of Analysis

13.Nov.2013

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

GC/MS-Method**Analytical Department****Article:** Pentadecafluoroctanoic acid OEKANAL**Article-No.:** 33824**Batch:** SZBD308XV

Column: XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df

Injector: Split mode

Injection: approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)

Inj.-temp.: 280°C

Oven-temp.: 40°C (for 2 min) to 320°C (6°C/min) hold for 2 min

Split: 1:100

Flow: 1 ml He/min (Constant flow mode)

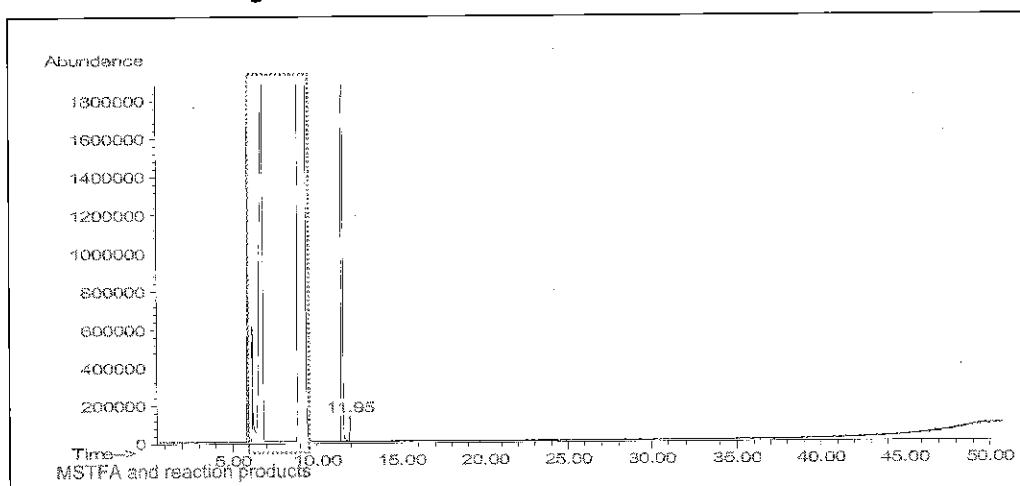
Detector: MSD

Mass range: 10-600 amu (Scan mode)

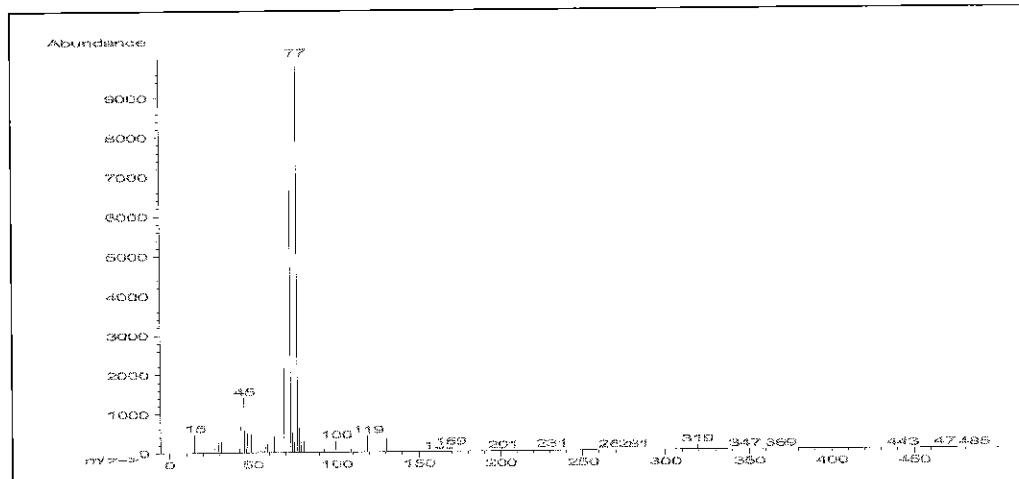
Evaluation: Purity: Total Ion Chromatogram
(MSTFA and reaction products blinded out in report)

Identity: Mass spectrum complies

Operator: Ahrens / 2013-11-13

Total Ion Chromatogram:

Ret.time Area Area-% Com

11.54 565.1670 99.4 Pentadecafluoroctanoic acid (as TMS-ester)
11.95 3.6792 0.64**Mass spectrum (rt = 11.54 min):**

Reagent

LC537_PFOA2_00001

Certificate of Analysis

Alfa Aesar®
A Johnson Matthey Company

Product No.: L08862

Product: Perfluorooctanoic acid, 95%

PFOA

Lot No.: D24Y026

Appearance White solid

Melting point 58 - 60°C

Assay 99 %

Identity Matches reference

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www.alfa.com

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

Reagent

LC537_PFOS_00002

F: 4/115 SV

SIGMA-ALDRICH®

CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 09.Aug.2012

Expiry Date: 09.Aug.2017 - ~~exp date~~

Article/Product: 33829

Batch : SZBC222XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

PFOS-K+

Reference Material (RM)

1. General Information

Formula: C₈F₁₇KO₃S

Molar mass: 538.22 g/Mole

CAS-No.: [2795-39-3]

Recomm. storage temp.: roomtemp.

Usage : PFOS

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

2. Batch Analysis

Identity

complying

Assay (LC-MS)

98 %

Date of Analysis

10.Aug.2012

W-Correction: $\frac{538.22 - 39.10 + 1.01}{538.22} = \frac{500.13}{538.22} = 0.92923$

Purity: 91.06 %

3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH
Quality Management SA-LC

Reagent

LC537_PFOS2_00001

Certificate of Analysis

Inv 820
12LCMS 0579

Product Name: HEPTADECAFLUOROOCTANESULFONIC ACID TETRAETHYLMAMMONIUM SALT
98 %

Product Number: 365289

Product Brand: Aldrich

Molecular Formula: C₁₆H₂₀F₁₇NO₃S

Molecular Mass: 629.37

CAS Number: 56773-42-3

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

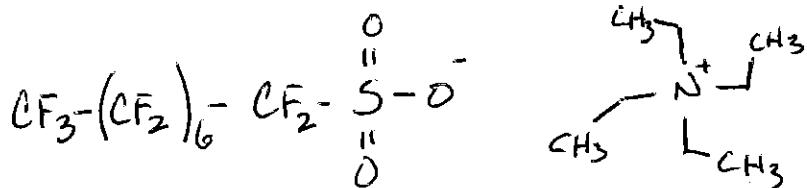
QC RELEASE DATE 13/APR/11

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

= 79.46% 04/11/12

Purity + MW Correction = 77.87%

E. Schwärzler
Edeltraud Schwärzler, Manager
Quality Control
Buchs, Switzerland



<u>C₈F₁₇SO₃H</u>		<u>C₈H₂₀N</u>
C = 12.011	96.088	96.088
F = 18.998	322.966	-
S = 32.066	32.066	-
O = 15.999	47.997	-
H = 1.008	1.008	20.160
N = 14.007	-	14.007
	<u>500.125</u>	<u>130.255</u> →

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Certificate of Origin

Product Name: Heptadecafluoroctanesulfonic acid tetraethylammonium salt
98 %

Product Number: 365289

Product Brand: Aldrich

Lot: BCBF5116V

Molecular Formula: C₁₆H₂₀F₁₇NO₃S

Molecular Mass: 629.37

CAS Number: 56773-42-3

Date of Issue: 30-MAR-11

Country of Origin China

product is of synthetic origin yes

only synthetic materials used in the manufacturing process yes

compounds of animal origin used no

genetically modified organisms used no

allergenic materials used no

procedures in place to avoid cross contamination with residue of animal, human, GMO or allergenes in manufacturing process yes

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

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

Reagent

LCM2PFOA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFOA

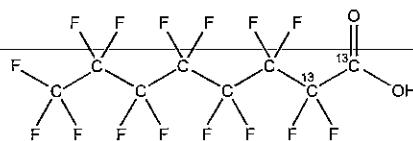
LOT NUMBER: M2PFOA0312

COMPOUND:

Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:

¹³C₂¹²C₆HF₁₅O₂

MOLECULAR WEIGHT: 416.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY: >99% ¹³C

LAST TESTED: (mm/dd/yyyy)

03/19/2012

(^{1,2-13}C₂)

EXPIRY DATE: (mm/dd/yyyy)

03/19/2017

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/09/2013

(mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

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

TRACEABILITY:

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LIMITED WARRANTY:

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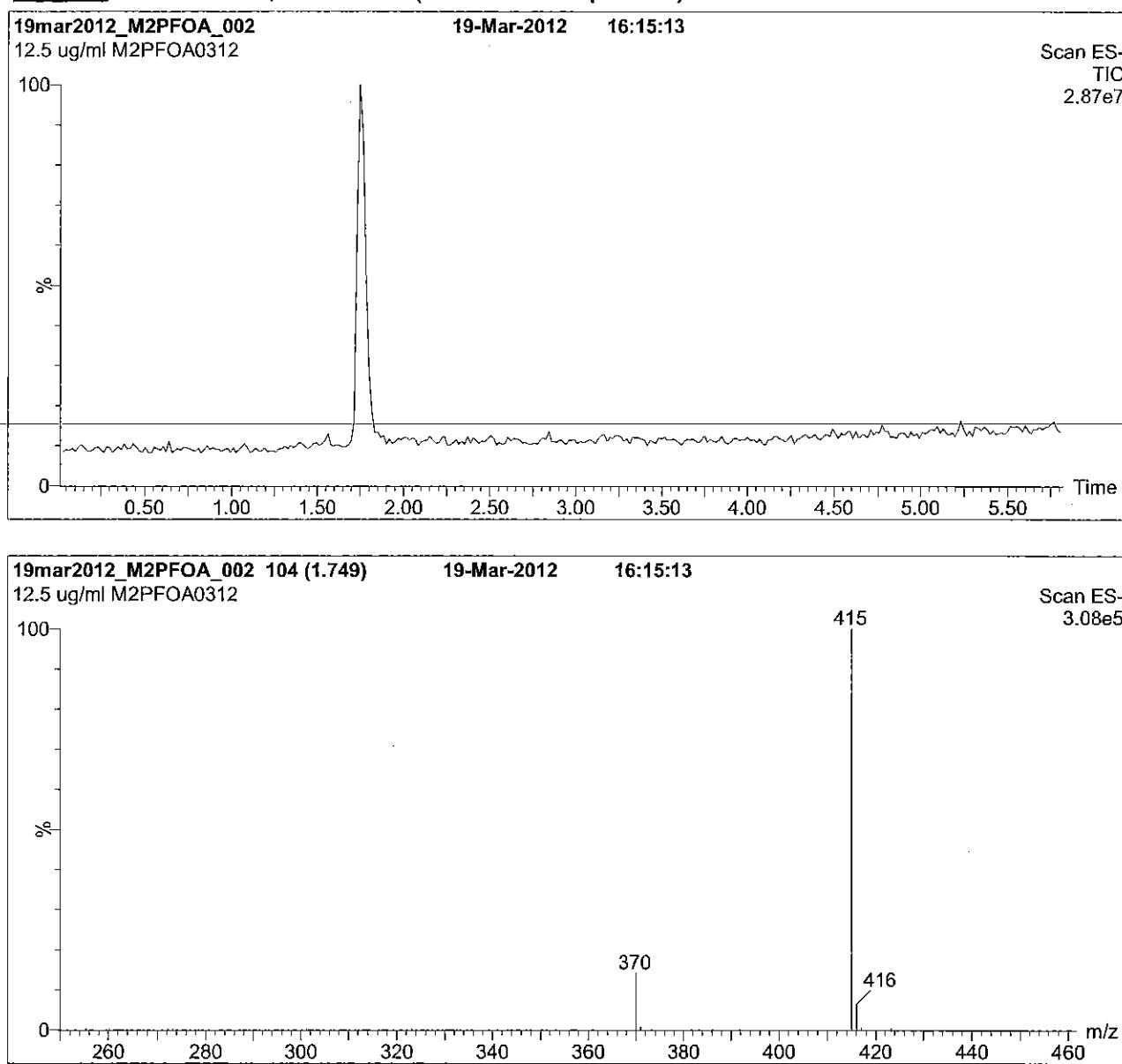
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 6.5 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

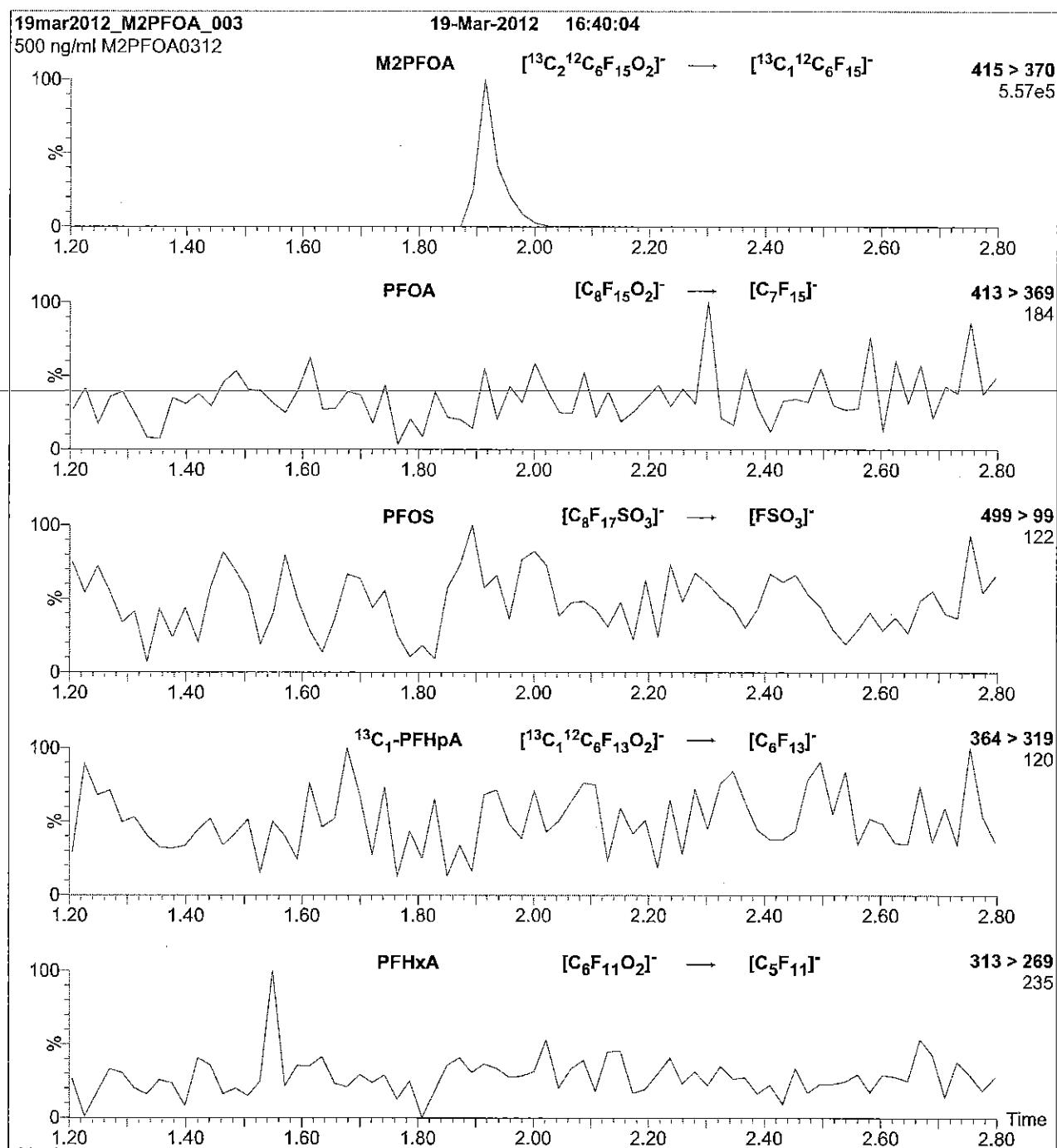
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

MS Parameters

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

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

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

Reagent

LCM2PFOA_00004



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFOA

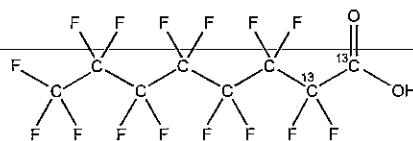
LOT NUMBER: M2PFOA0312

COMPOUND:

Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:

¹³C₂¹²C₆HF₁₅O₂

MOLECULAR WEIGHT: 416.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY: >99% ¹³C

LAST TESTED: (mm/dd/yyyy)

03/19/2012

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

03/19/2017

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/09/2013

(mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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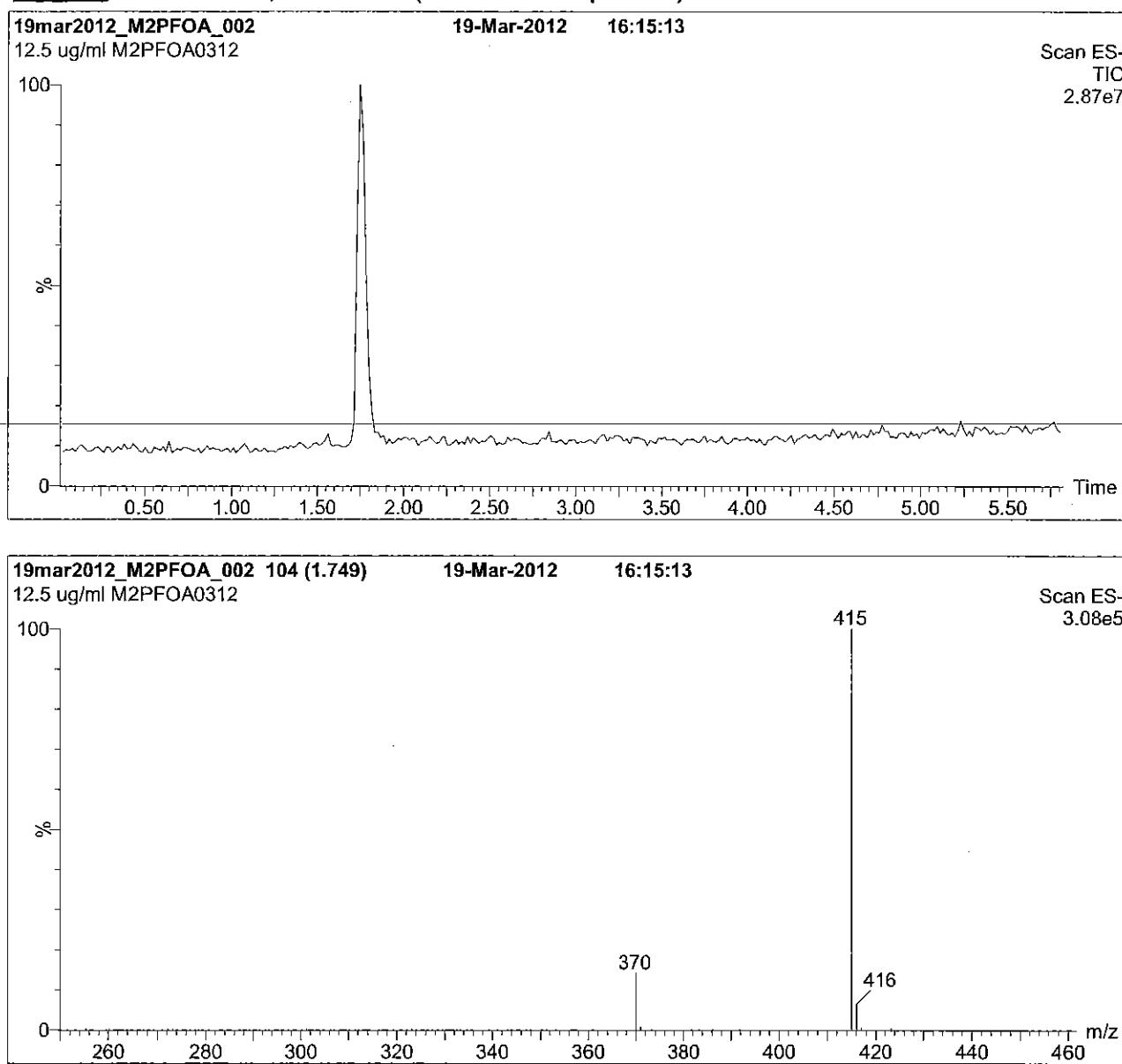
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 6.5 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

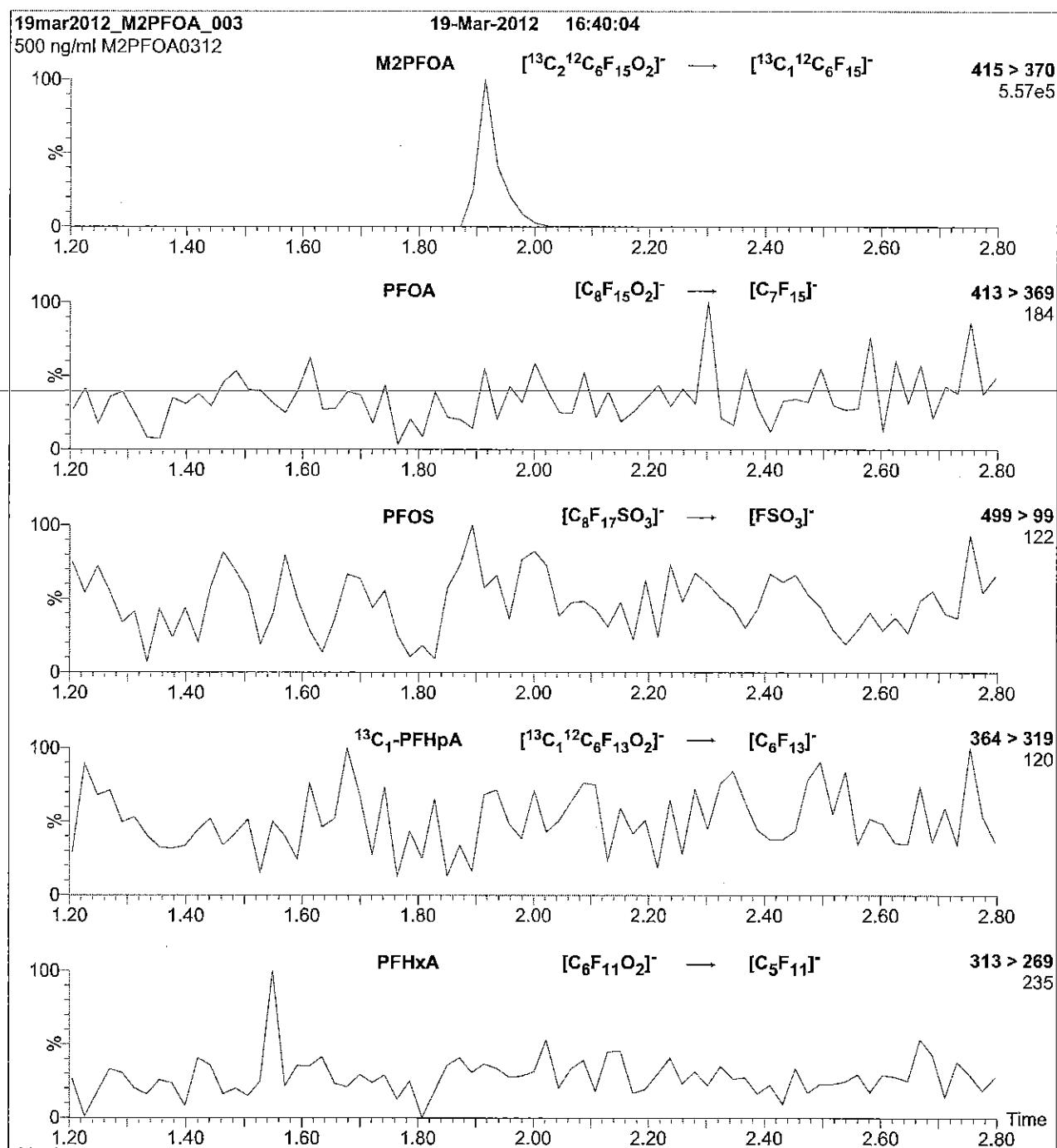
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

MS Parameters

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

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

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

Reagent

LCMPFDA_00008



605243

ID: LCMPFDA_00008

Exp: 08/19/20 Prod: CBW

13C2-Perfluorodecanoic a

Rec. 3/29/16 JEB ✓



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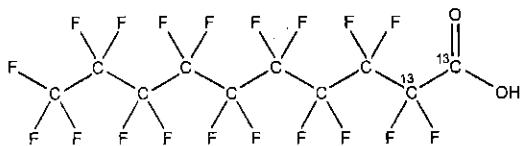
**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE:

MPFDA

LOT NUMBER: MPFDA0815**COMPOUND:**Perfluoro-n-[1,2-¹³C₂]decanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₈HF₁₉O₂**MOLECULAR WEIGHT:** 516.07**CONCENTRATION:**

50 ± 2.5 µg/ml

SOLVENT(S): Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

08/19/2015

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

08/19/2020

RECOMMENDED STORAGE: Store ampoule in a cool, dark place**DOCUMENTATION/ DATA ATTACHED:**

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/21/2015

(mm/dd/yyyy)

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

INTENDED USE:

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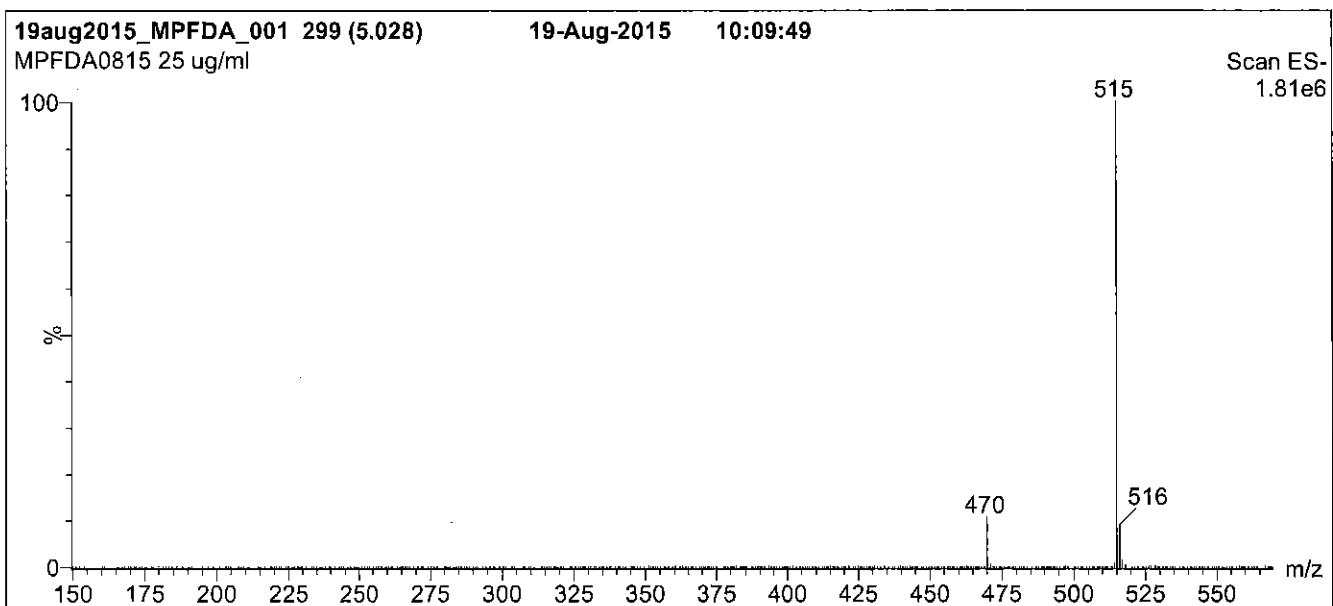
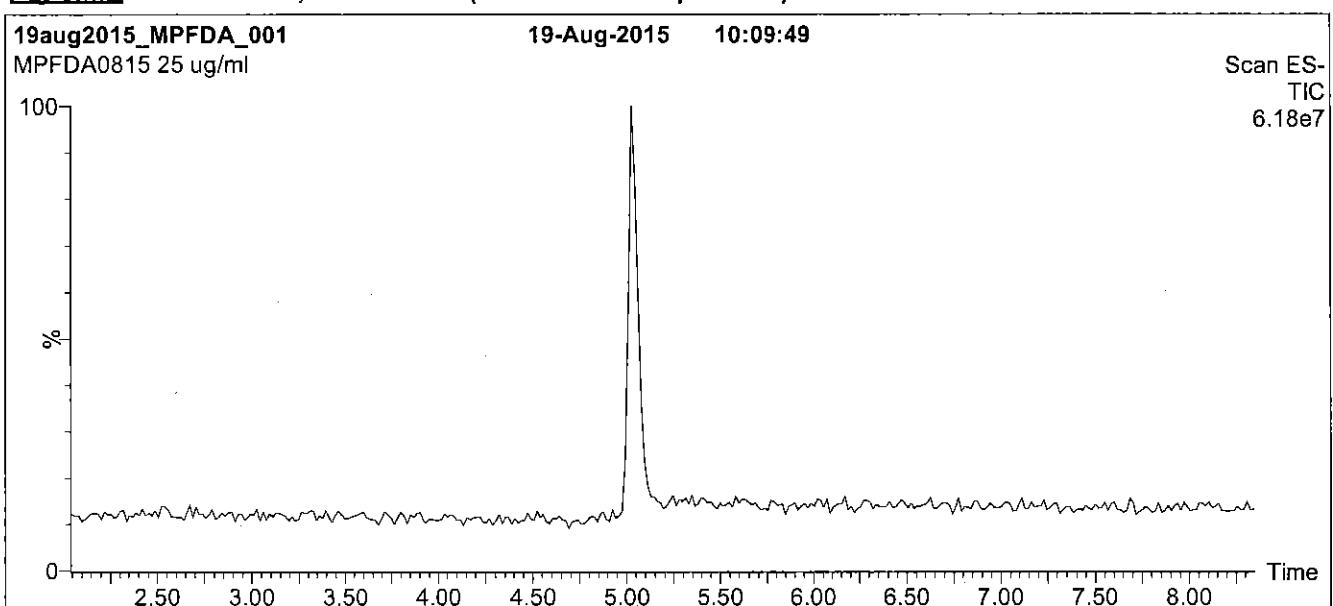
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acuity UPLC BEH Shield RP₁₈
1.7 µm, 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

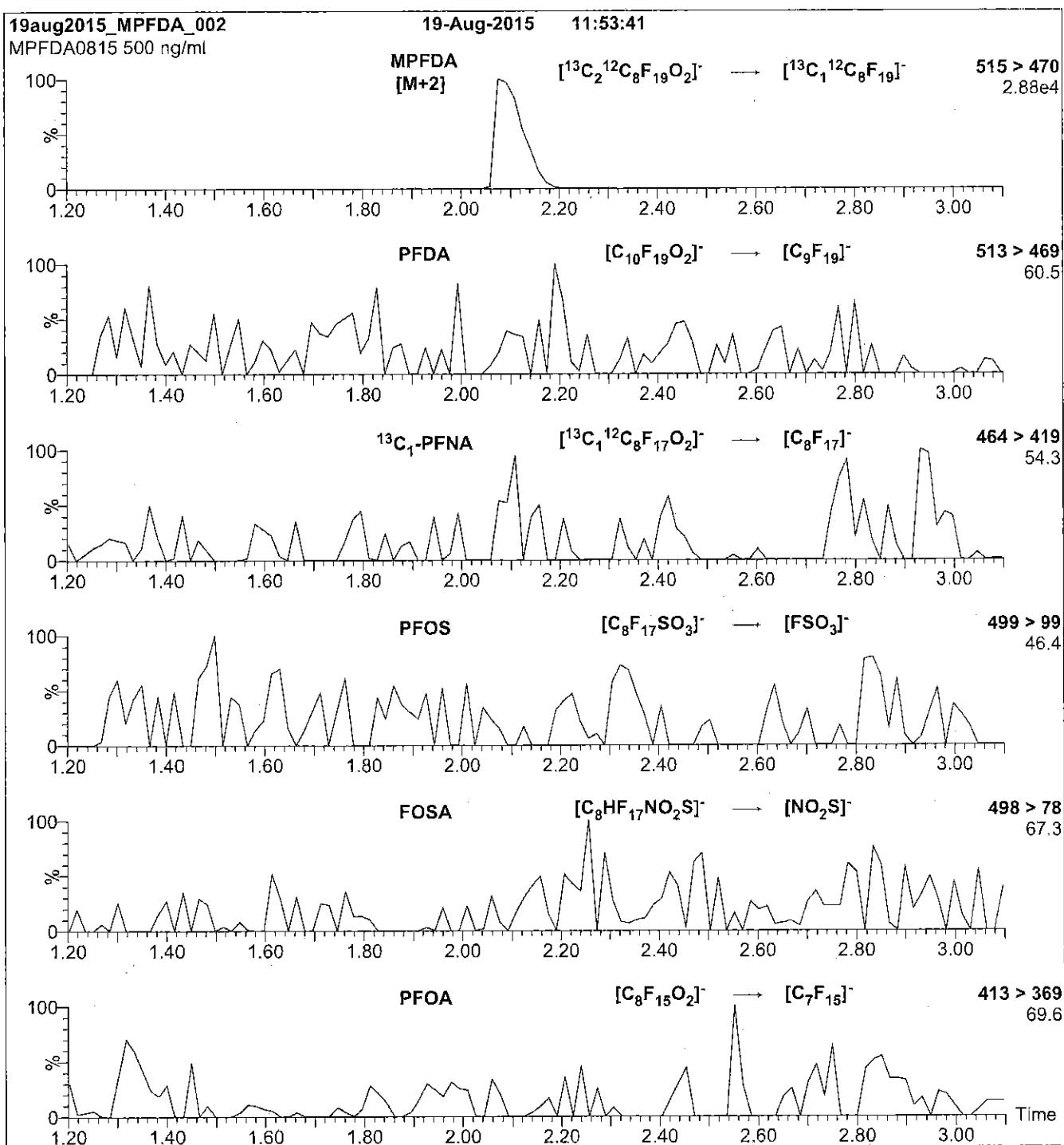
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

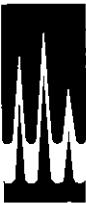
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 13

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

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

Reagent

LCMPFHxA_00009



WELLINGTON
LABORATORIES



605244

ID: LCMPFHxA_00009

Exp: 04/09/20 Prp: CBW

13C2-Perfluorohexanoic ac

Rec. 3/29/16 JRB ✓

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

MPFHxA

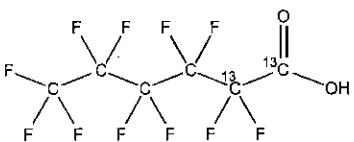
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]hexanoic acid

LOT NUMBER: MPFHxA0415

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:

¹³C₂¹²C₄HF₁₁O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04

CHEMICAL PURITY:

>98%

SOLVENT(S): Methanol

LAST TESTED: (mm/dd/yyyy)

04/09/2015

Water (<1%)

EXPIRY DATE: (mm/dd/yyyy)

04/09/2020

ISOTOPIC PURITY: >99%¹³C

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2-¹³C₂)

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/14/2015

(mm/dd/yyyy)

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

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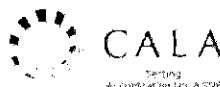
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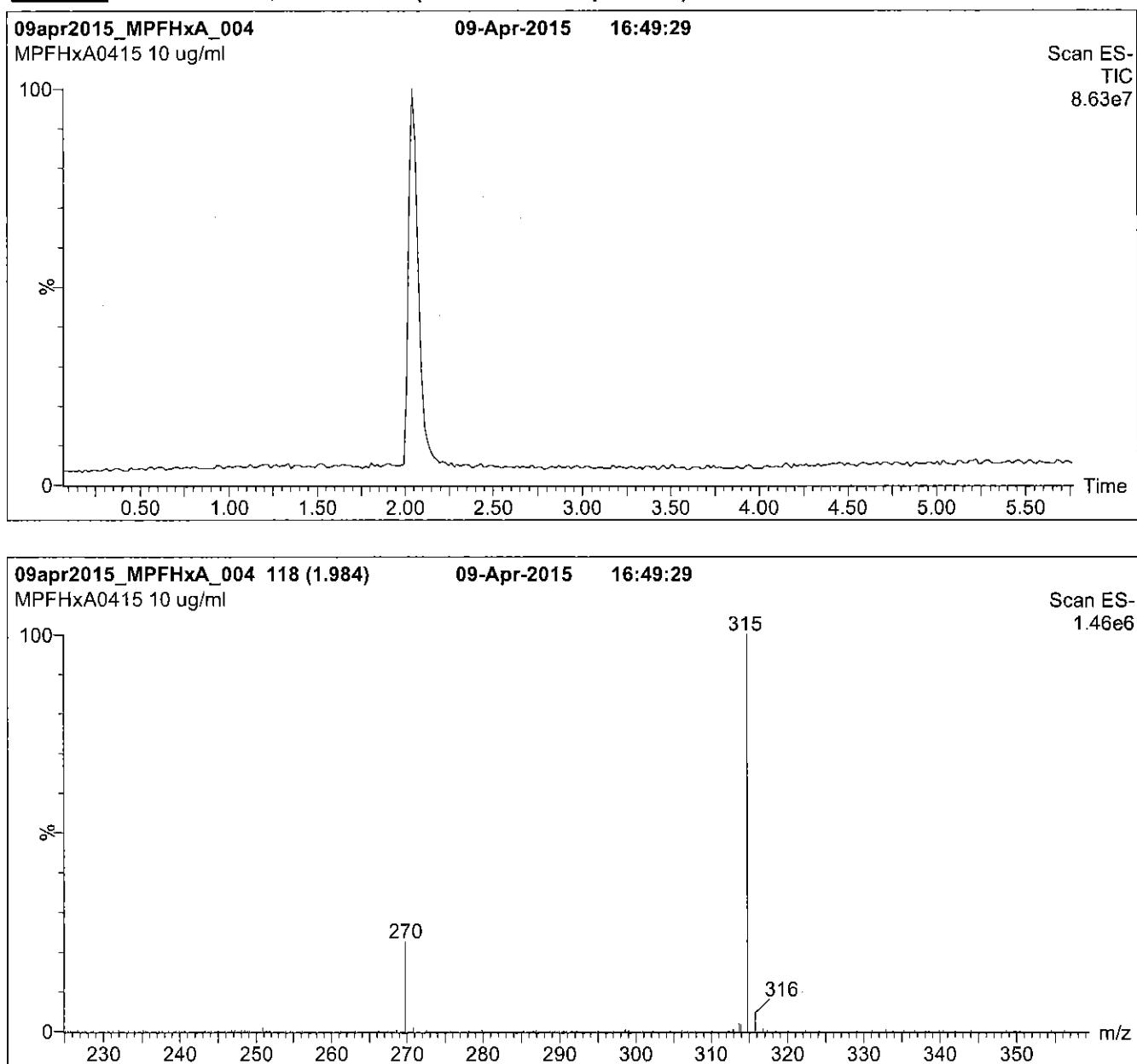
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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

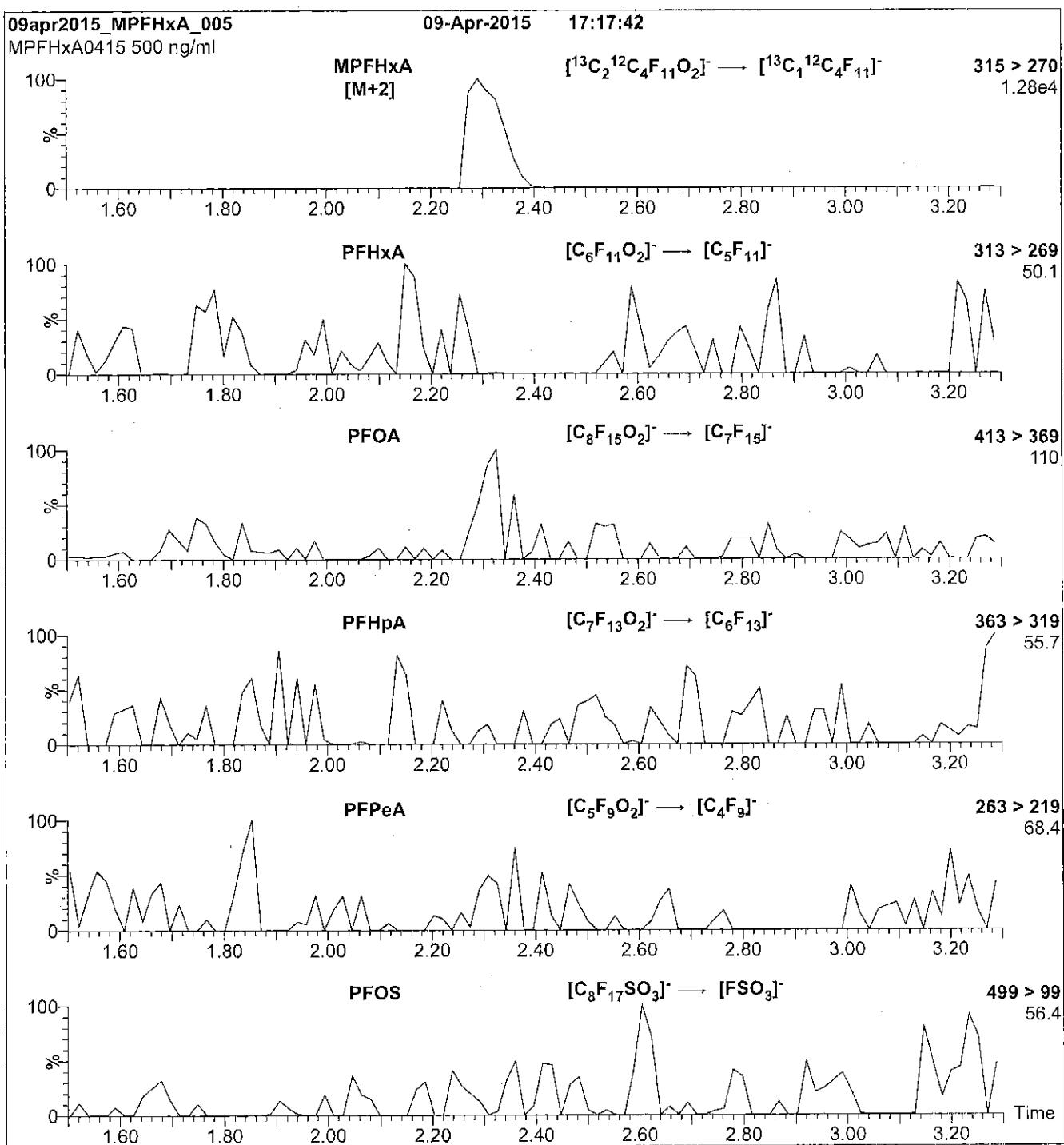
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

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

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

Reagent

LCMPFOS_00013



WELLINGTON LABORATORIES



606227

ID: LCMPFOS_00012
Exp: 01/22/21 Prd: CBW
13C4-Perfluoroctanesulfonate

606228

ID: LCMPFOS_00013
Exp: 01/22/21 Prd: CBW
13C4-Perfluoroctanesulfonate

CERTIFICATE OF ANALYSIS DOCUMENTATION

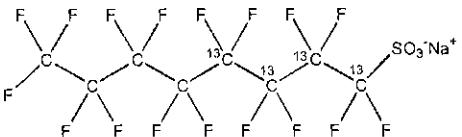
Rec. 3/29/16 JRB ✓

PRODUCT CODE:

MPFOS

COMPOUND:Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonateLOT NUMBER: MPFOS0116STRUCTURE:CAS #:

Not available

MOLECULAR FORMULA:¹³C₄¹²C₄F₁₇SO₃NaCONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)

47.8 ± 2.4 µg/ml (MPFOS anion)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 526.08SOLVENT(S): MethanolISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/01/2016

(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

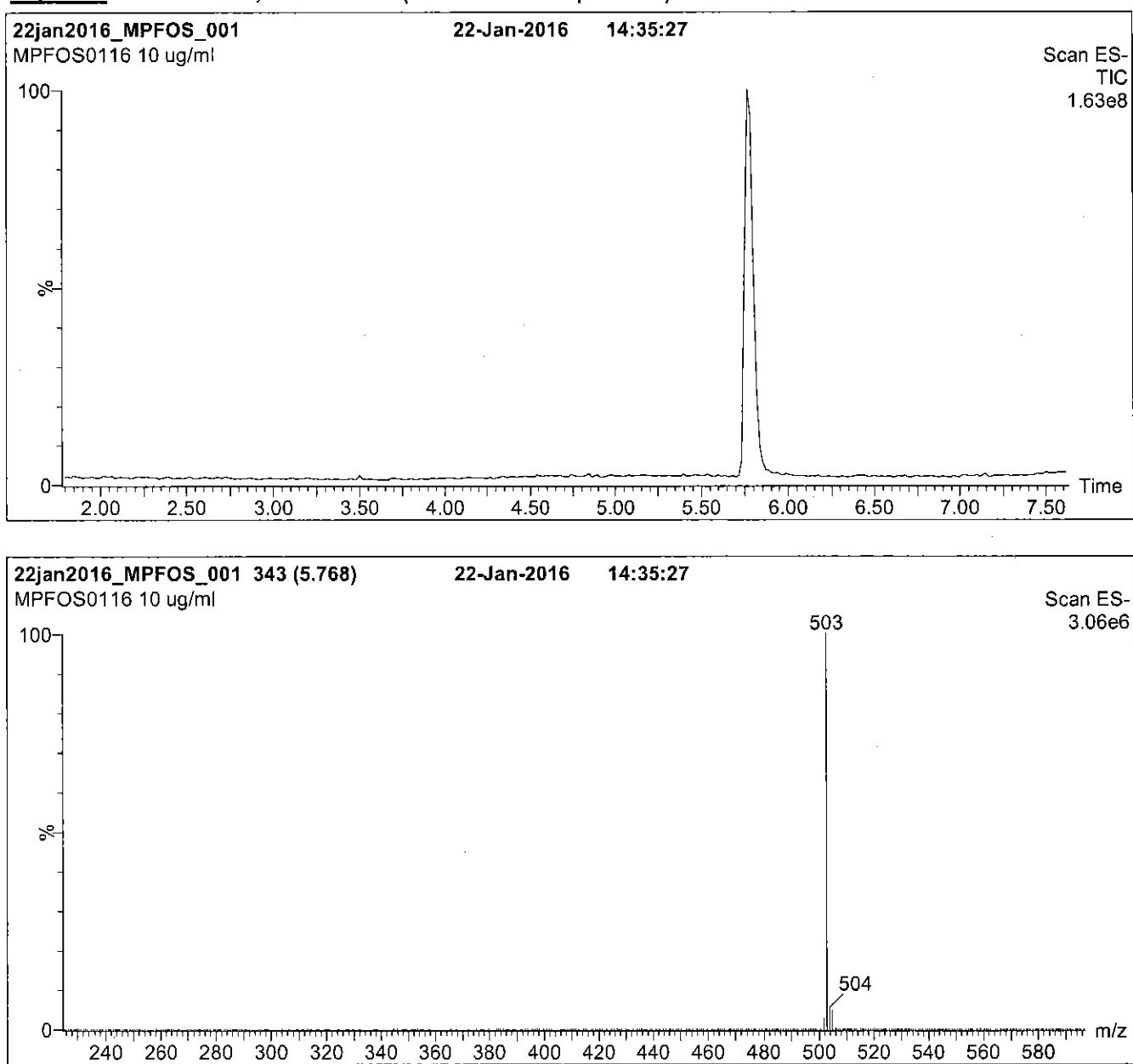
QUALITY MANAGEMENT:

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



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

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acuity UPLC BEH Shield RP₁₈
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient

Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

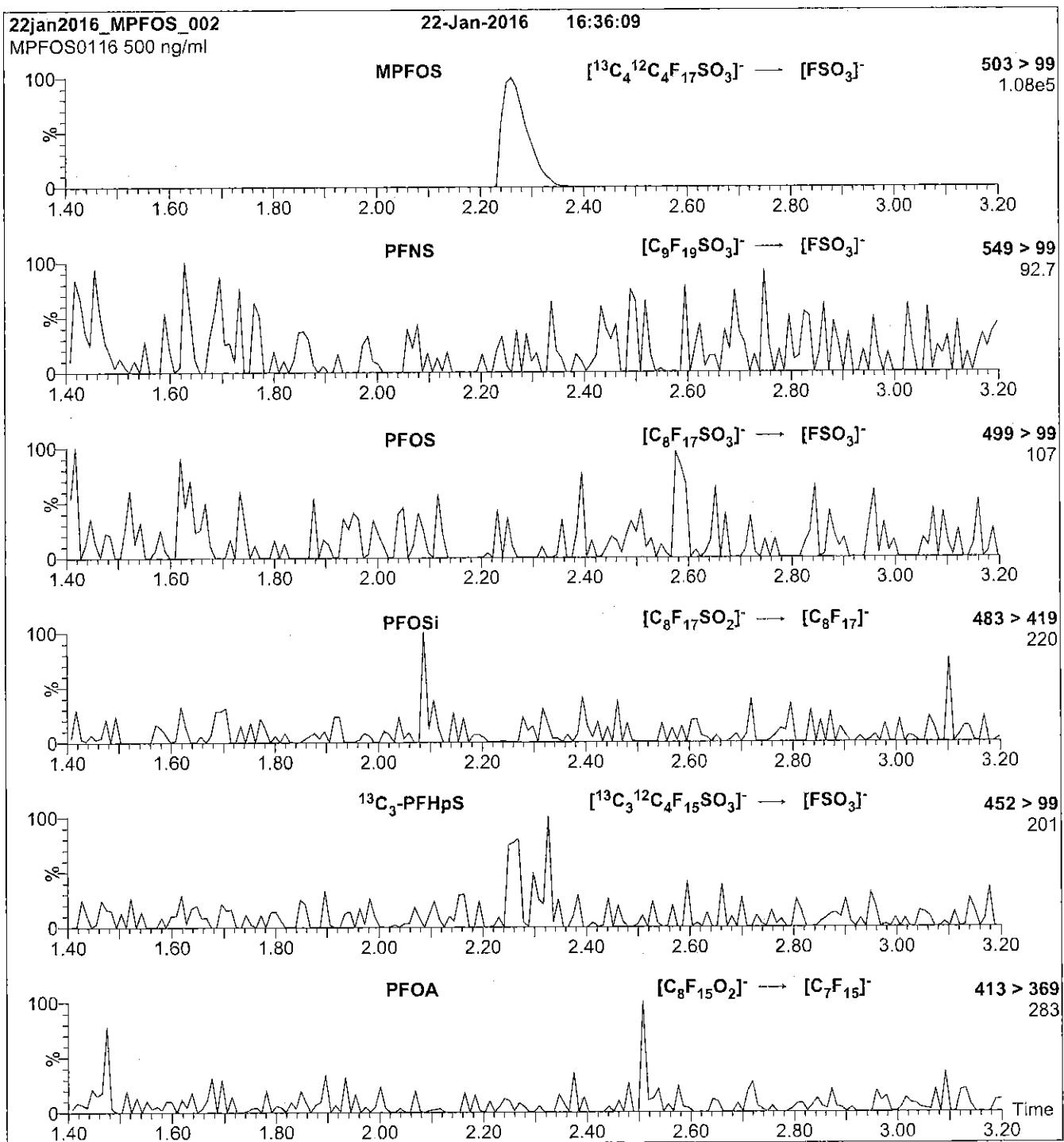
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

MS Parameters

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

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

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

Reagent

LCMPFOS_00018

R: SBe 9/22/16



738686
ID: LCMPFOS_00018
Exp: 08/03/21 Ppd: SBC
13C4-Perfluorooctanesulfonate

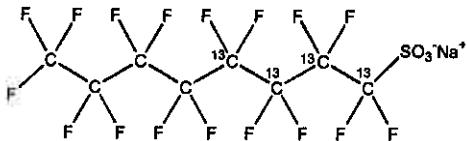


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS LOT NUMBER: MPFOS0816
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na MOLECULAR WEIGHT: 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) SOLVENT(S): Methanol
47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% ISOTOPIC PURITY: ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 08/03/2016 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 08/03/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2016

(mm/dd/yyyy)

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

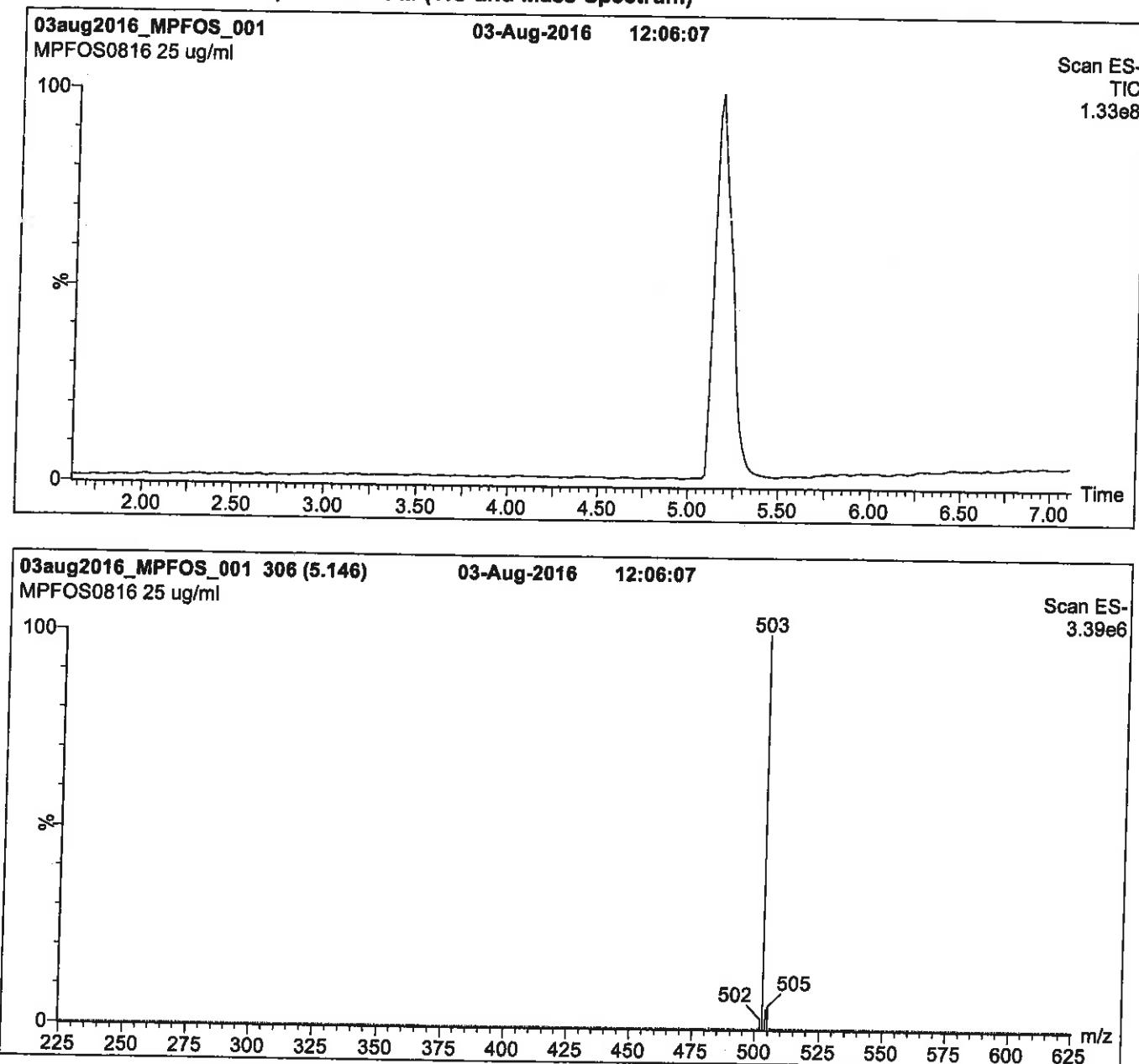
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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



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 μm, 2.1 x 100 mm

Mobile phase: Gradient

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

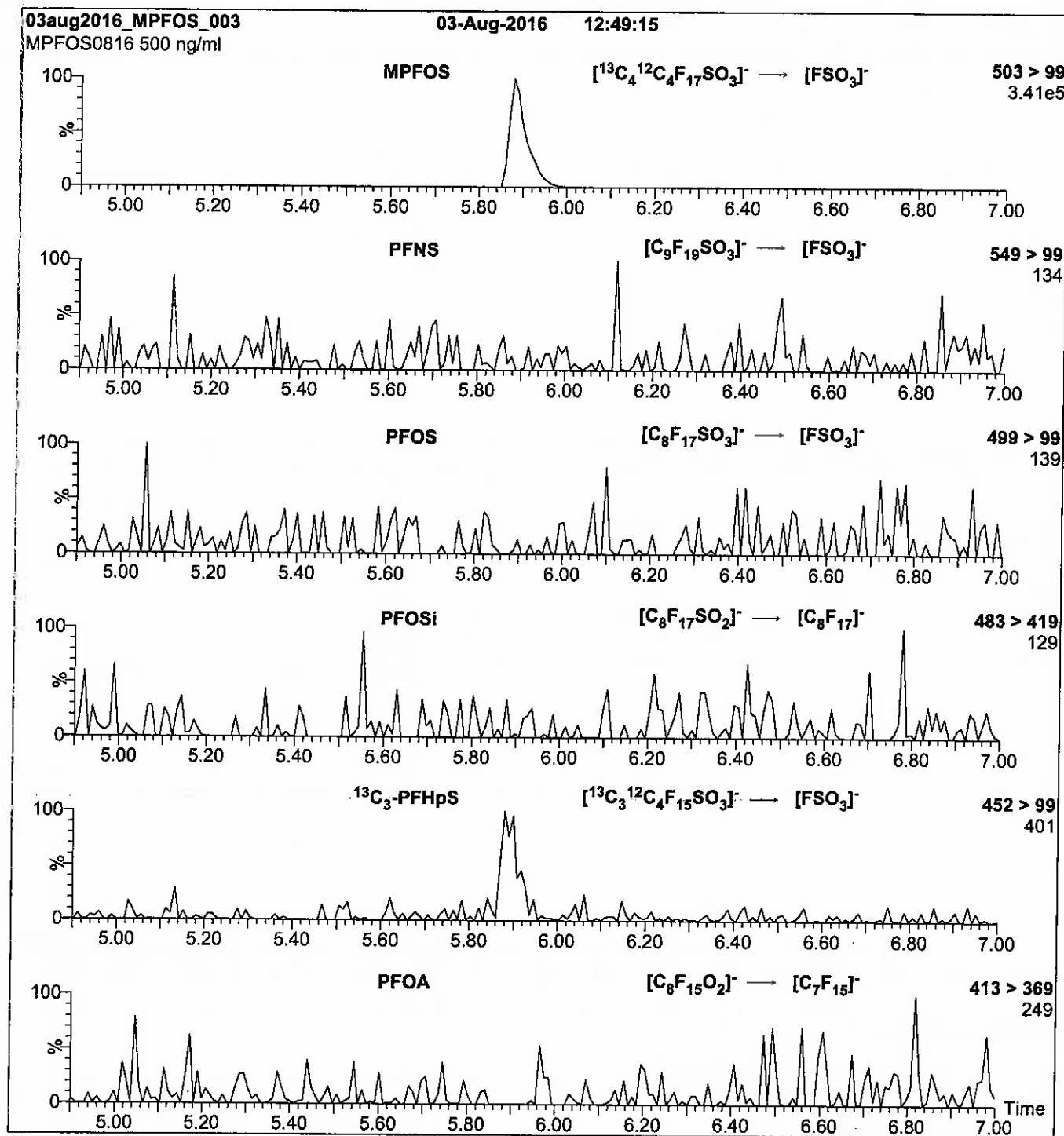
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

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

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

Method 537 DOD

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Matrix: Water Level: Low
GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
WI-CV-1RW23-1216	320-24178-1	93	95
WI-CV-1RW23P-1216	320-24178-2	101	110
WI-CV-1FB23-1216	320-24178-3	97	106
WI-CV-1RW24-1216	320-24178-4	94	91
WI-CV-1FB24-1216	320-24178-5	88	85
WI-CV-1RW25-1216	320-24178-6	97	92
WI-CV-1FB25-1216	320-24178-7	89	93
WI-CV-1RW26-1216	320-24178-8	100	97
WI-CV-1FB26-1216	320-24178-9	89	87
WI-CV-1RW27-1216	320-24178-10	114	112
WI-CV-1FB27-1216	320-24178-11	96	100
WI-CV-1RW28-1216	320-24178-12	86	87
WI-CV-1FB28-1216	320-24178-13	98	100
	MB 320-141540/1-A	90	88
	LLCS 320-141540/2-A	93	90
	LLCSD 320-141540/3-A	101	94

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.: 320-24178-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 15DEC2016A6A_006.d

Lab ID: LLCS 320-141540/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LLCS CONCENTRATION (ug/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0277 J	69	50-150	
Perfluorooctanoic acid (PFOA)	0.0198	0.0144 J	73	50-150	M
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0705 J	79	50-150	

Column to be used to flag recovery and RPD values

FORM III 537

FORM III
LCMS LOW LEVEL CONTROL STANDARD DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 15DEC2016A6A_007.d

Lab ID: LLCSD 320-141540/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LLCSD CONCENTRATION (ug/L)	% REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorooctanesulfonic acid (PFOS)	0.0401	0.0278 J	69	0.5	50	50-150	
Perfluorooctanoic acid (PFOA)	0.0198	0.0150 J	76	4	50	50-150	M
Perfluorobutanesulfonic acid (PFBS)	0.0898	0.0694 J	77	2	50	50-150	

Column to be used to flag recovery and RPD values

FORM III 537

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab File ID: 15DEC2016A6A_005.d Lab Sample ID: MB 320-141540/1-A
Matrix: Water Date Extracted: 12/09/2016 18:59
Instrument ID: A6 Date Analyzed: 12/15/2016 09:32
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-141540/2-A	15DEC2016A6 A 006.d	12/15/2016 10:02
	LLCSD 320-141540/3-A	15DEC2016A6 A 007.d	12/15/2016 10:31
WI-CV-1RW23-1216	320-24178-1	15DEC2016A6 A 009.d	12/15/2016 11:30
WI-CV-1RW23P-1216	320-24178-2	15DEC2016A6 A 010.d	12/15/2016 12:00
WI-CV-1FB23-1216	320-24178-3	15DEC2016A6 A 011.d	12/15/2016 12:29
WI-CV-1RW24-1216	320-24178-4	15DEC2016A6 A 012.d	12/15/2016 12:59
WI-CV-1FB24-1216	320-24178-5	15DEC2016A6 A 013.d	12/15/2016 13:29
WI-CV-1RW25-1216	320-24178-6	15DEC2016A6 A 014.d	12/15/2016 14:25
WI-CV-1FB25-1216	320-24178-7	15DEC2016A6 A 017.d	12/15/2016 15:54
WI-CV-1RW26-1216	320-24178-8	15DEC2016A6 A 018.d	12/15/2016 16:24
WI-CV-1FB26-1216	320-24178-9	15DEC2016A6 A 019.d	12/15/2016 16:53
WI-CV-1RW27-1216	320-24178-10	15DEC2016A6 A 020.d	12/15/2016 17:23
WI-CV-1FB27-1216	320-24178-11	15DEC2016A6 A 021.d	12/15/2016 17:53
WI-CV-1RW28-1216	320-24178-12	15DEC2016A6 A 022.d	12/15/2016 18:22
WI-CV-1FB28-1216	320-24178-13	15DEC2016A6 A 023.d	12/15/2016 18:52

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Instrument ID: A6 Calibration Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.1 (mm) Calibration End Date: 12/05/2016 19:54
Calibration ID: 26888

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		965911	20.05	2046916	20.67		
UPPER LIMIT		1448867	20.55	3070374	21.17		
LOWER LIMIT		482956	19.55	1023458	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCV 320-140688/9 CCVL		1025187	20.05	2358079	20.67		
ICV 320-140688/11		877210	20.05	2015178	20.67		
CCV 320-142223/2 CCVL		615516	20.04	1606471	20.67		
CCV 320-142223/3 CCVIS		768124	20.05	1696317	20.67		
MB 320-141540/1-A		791353	20.04	2025210	20.66		
LLCS 320-141540/2-A		735245	20.04	1927844	20.66		
LLCSD 320-141540/3-A		753724	20.04	2032622	20.66		
320-24178-1	WI-CV-1RW23-1216	708289	20.04	2008620	20.66		
320-24178-2	WI-CV-1RW23P-1216	640073	20.04	1855559	20.66		
320-24178-3	WI-CV-1FB23-1216	727192	20.04	2021177	20.66		
320-24178-4	WI-CV-1RW24-1216	724333	20.04	1867227	20.66		
320-24178-5	WI-CV-1FB24-1216	822534	20.04	1961736	20.66		
320-24178-6	WI-CV-1RW25-1216	807448	20.05	2247292	20.68		
CCV 320-142223/15 CCVIS		852323	20.04	1761780	20.67		
320-24178-7	WI-CV-1FB25-1216	847354	20.04	2055054	20.66		
320-24178-8	WI-CV-1RW26-1216	723560	20.02	1923184	20.66		
320-24178-9	WI-CV-1FB26-1216	841147	20.02	2039505	20.66		
320-24178-10	WI-CV-1RW27-1216	603893	20.02	1676042	20.64		
320-24178-11	WI-CV-1FB27-1216	788429	20.02	2023279	20.66		
320-24178-12	WI-CV-1RW28-1216	773727	20.02	1952960	20.64		
320-24178-13	WI-CV-1FB28-1216	697853	20.02	1703380	20.64		
CCV 320-142412/24 CCVIS		767144	20.02	1643264	20.66		

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.: 320-24178-1
SDG No.: _____
Sample No.: CCV 320-142223/3 Date Analyzed: 12/15/2016 08:33
Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
Lab File ID (Standard): 15DEC2016A6A_003.d Heated Purge: (Y/N) N
Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	768124	20.05	1696317	20.67		
UPPER LIMIT	1075374	20.55	2374844	21.17		
LOWER LIMIT	537687	19.55	1187422	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
MB 320-141540/1-A		791353	20.04	2025210	20.66	
LLCS 320-141540/2-A		735245	20.04	1927844	20.66	
LLCSD 320-141540/3-A		753724	20.04	2032622	20.66	
320-24178-1	WI-CV-1RW23-1216	708289	20.04	2008620	20.66	
320-24178-2	WI-CV-1RW23P-1216	640073	20.04	1855559	20.66	
320-24178-3	WI-CV-1FB23-1216	727192	20.04	2021177	20.66	
320-24178-4	WI-CV-1RW24-1216	724333	20.04	1867227	20.66	
320-24178-5	WI-CV-1FB24-1216	822534	20.04	1961736	20.66	
320-24178-6	WI-CV-1RW25-1216	807448	20.05	2247292	20.68	

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.: 320-24178-1
SDG No.: _____
Sample No.: CCV 320-142223/15 Date Analyzed: 12/15/2016 14:55
Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
Lab File ID (Standard): 15DEC2016A6A_015.d Heated Purge: (Y/N) N
Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	852323	20.04	1761780	20.67		
UPPER LIMIT	1193252	20.54	2466492	21.17		
LOWER LIMIT	596626	19.54	1233246	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
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Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Sample No.: CCV 320-142412/15 Date Analyzed: 12/15/2016 14:55
Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
Lab File ID (Standard): 15DEC2016A6A_015.d Heated Purge: (Y/N) N
Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	852323	20.04	1761780	20.67		
UPPER LIMIT	1193252	20.54	2466492	21.17		
LOWER LIMIT	596626	19.54	1233246	20.17		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-24178-7	WI-CV-1FB25-1216	847354	20.04	2055054	20.66	
320-24178-8	WI-CV-1RW26-1216	723560	20.02	1923184	20.66	
320-24178-9	WI-CV-1FB26-1216	841147	20.02	2039505	20.66	
320-24178-10	WI-CV-1RW27-1216	603893	20.02	1676042	20.64	
320-24178-11	WI-CV-1FB27-1216	788429	20.02	2023279	20.66	
320-24178-12	WI-CV-1RW28-1216	773727	20.02	1952960	20.64	
320-24178-13	WI-CV-1FB28-1216	697853	20.02	1703380	20.64	

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.: 320-24178-1
SDG No.: _____
Sample No.: CCV 320-142412/24 Date Analyzed: 12/15/2016 19:21
Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm)
Lab File ID (Standard): 15DEC2016A6A_024.d Heated Purge: (Y/N) N
Calibration ID: 26888

	13PFOA		PFOS		AREA #	RT #
	AREA #	RT #	AREA #	RT #		
12/24 HOUR STD	767144	20.02	1643264	20.66		
UPPER LIMIT	1074002	20.52	2300570	21.16		
LOWER LIMIT	537001	19.52	1150285	20.16		
LAB SAMPLE ID	CLIENT SAMPLE ID					
320-24178-7	WI-CV-1FB25-1216	847354	20.04	2055054	20.66	
320-24178-8	WI-CV-1RW26-1216	723560	20.02	1923184	20.66	
320-24178-9	WI-CV-1FB26-1216	841147	20.02	2039505	20.66	
320-24178-10	WI-CV-1RW27-1216	603893	20.02	1676042	20.64	
320-24178-11	WI-CV-1FB27-1216	788429	20.02	2023279	20.66	
320-24178-12	WI-CV-1RW28-1216	773727	20.02	1952960	20.64	
320-24178-13	WI-CV-1FB28-1216	697853	20.02	1703380	20.64	

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.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1RW23-1216 Lab Sample ID: 320-24178-1
 Matrix: Water Lab File ID: 15DEC2016A6A_009.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:21
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 273.4 (mL) Date Analyzed: 12/15/2016 11:30
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142223 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.055		0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	95		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_009.d
 Lims ID: 320-24178-A-1-A
 Client ID: WI-CV-1RW23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 11:30:45 ALS Bottle#: 5 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:18:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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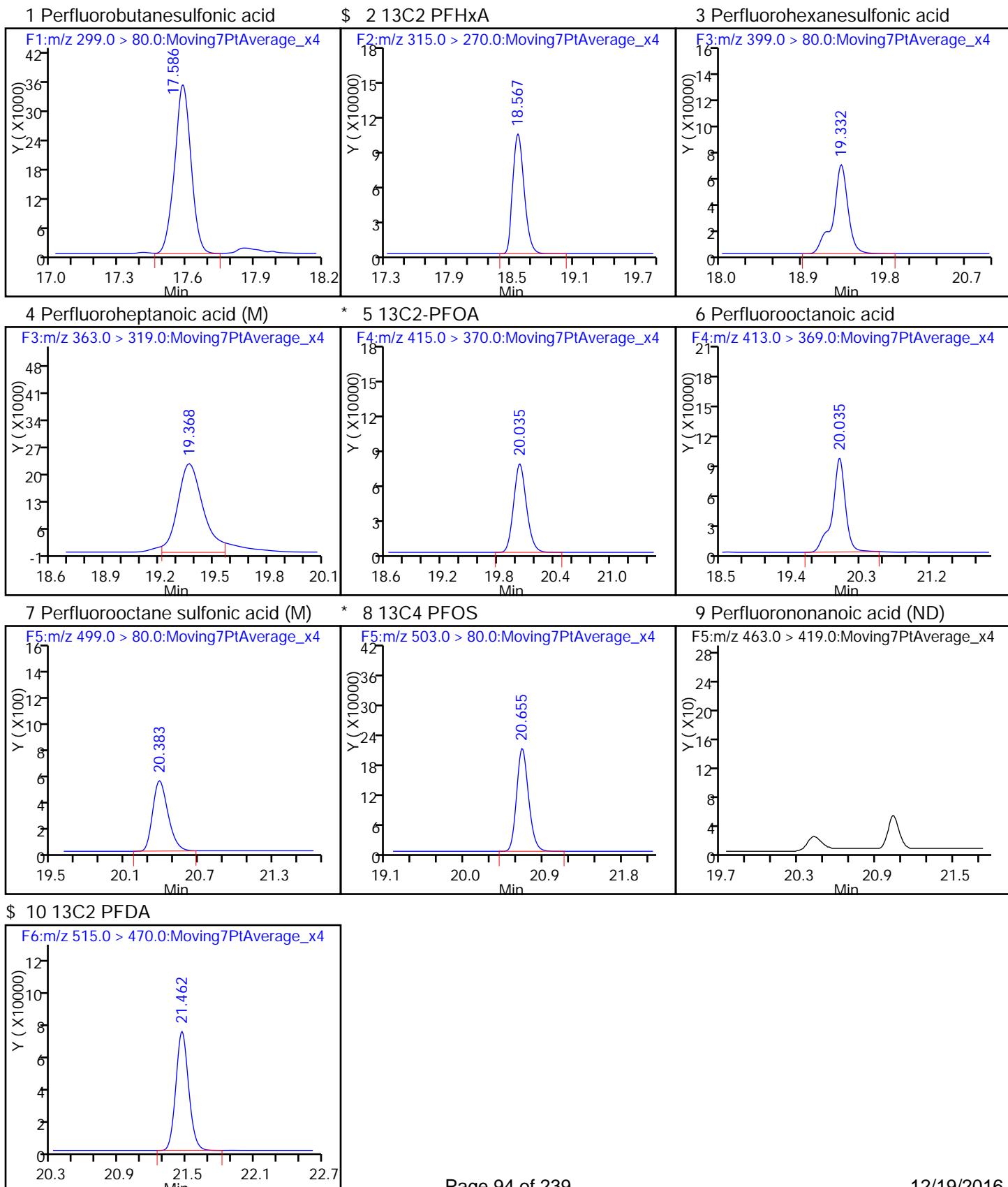
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.599	-0.013	1.000	176599	3.59	156
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	764708	9.26	24887
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.356	-0.024	1.000	769859	12.2	16584
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.380	-0.012	1.000	221243	2.57	76.7 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		708289	10.0	18373
6 Perfluoroctanoic acid	413.0 > 369.0	20.035	20.047	-0.012	1.000	1101780	15.0	714
7 Perfluoroctane sulfonic acid	499.0 > 80.0	20.383	20.620	-0.237	1.000	4767	0.0652	137 M
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		2008620	28.7	41915
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	589071	9.49	18555

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_009.d
 Injection Date: 15-Dec-2016 11:30:45 Instrument ID: A6
 Lims ID: 320-24178-A-1-A Lab Sample ID: 320-24178-1
 Client ID: WI-CV-1RW23-1216
 Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_009.d
 Lims ID: 320-24178-A-1-A
 Client ID: WI-CV-1RW23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 11:30:45 ALS Bottle#: 5 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-1-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:18:42

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.26	92.55
\$ 10 13C2 PFDA	10.0	9.49	94.91

TestAmerica Sacramento

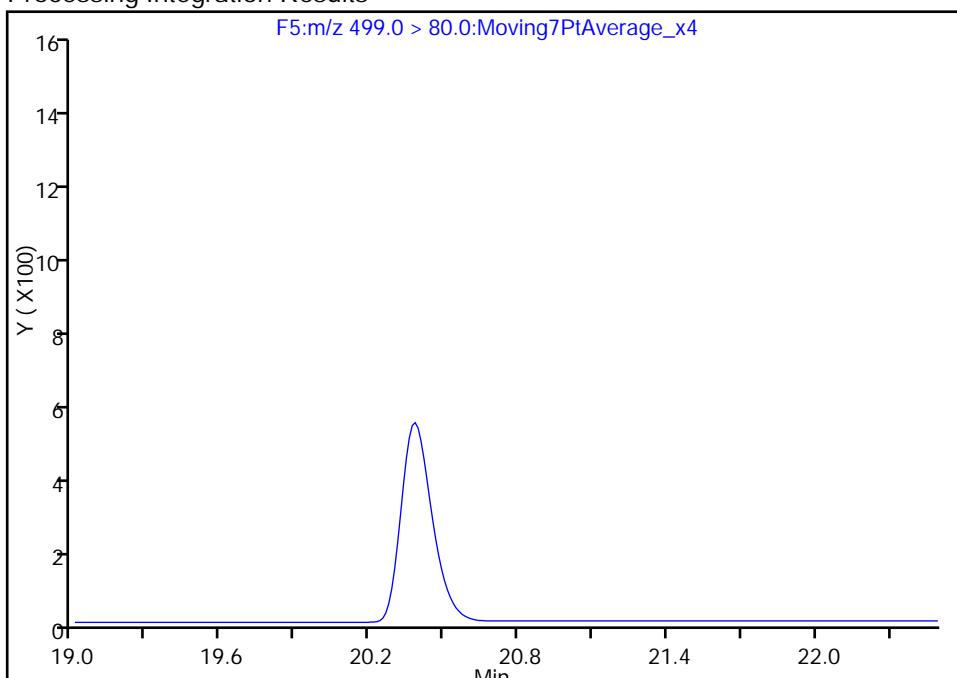
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_009.d
 Injection Date: 15-Dec-2016 11:30:45 Instrument ID: A6
 Lims ID: 320-24178-A-1-A Lab Sample ID: 320-24178-1
 Client ID: WI-CV-1RW23-1216
 Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F5:MRM

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

Signal: 1

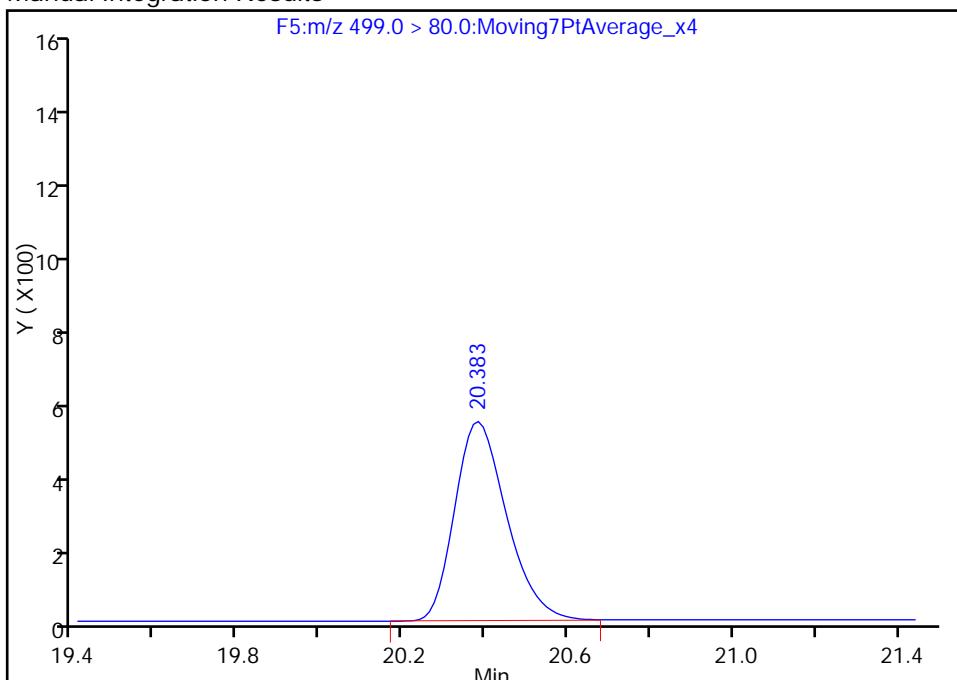
Not Detected
 Expected RT: 20.62

Processing Integration Results



RT: 20.38
 Area: 4767
 Amount: 0.065197
 Amount Units: ng/ml

Manual Integration Results



Reviewer: barnettj, 15-Dec-2016 15:18:42

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1RW23P-1216 Lab Sample ID: 320-24178-2
 Matrix: Water Lab File ID: 15DEC2016A6A_010.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:26
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 277.5 (mL) Date Analyzed: 12/15/2016 12:00
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142223 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U M	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.061		0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	110		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_010.d
 Lims ID: 320-24178-A-2-A
 Client ID: WI-CV-1RW23P-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:00:21 ALS Bottle#: 6 Worklist Smp#: 10
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:19:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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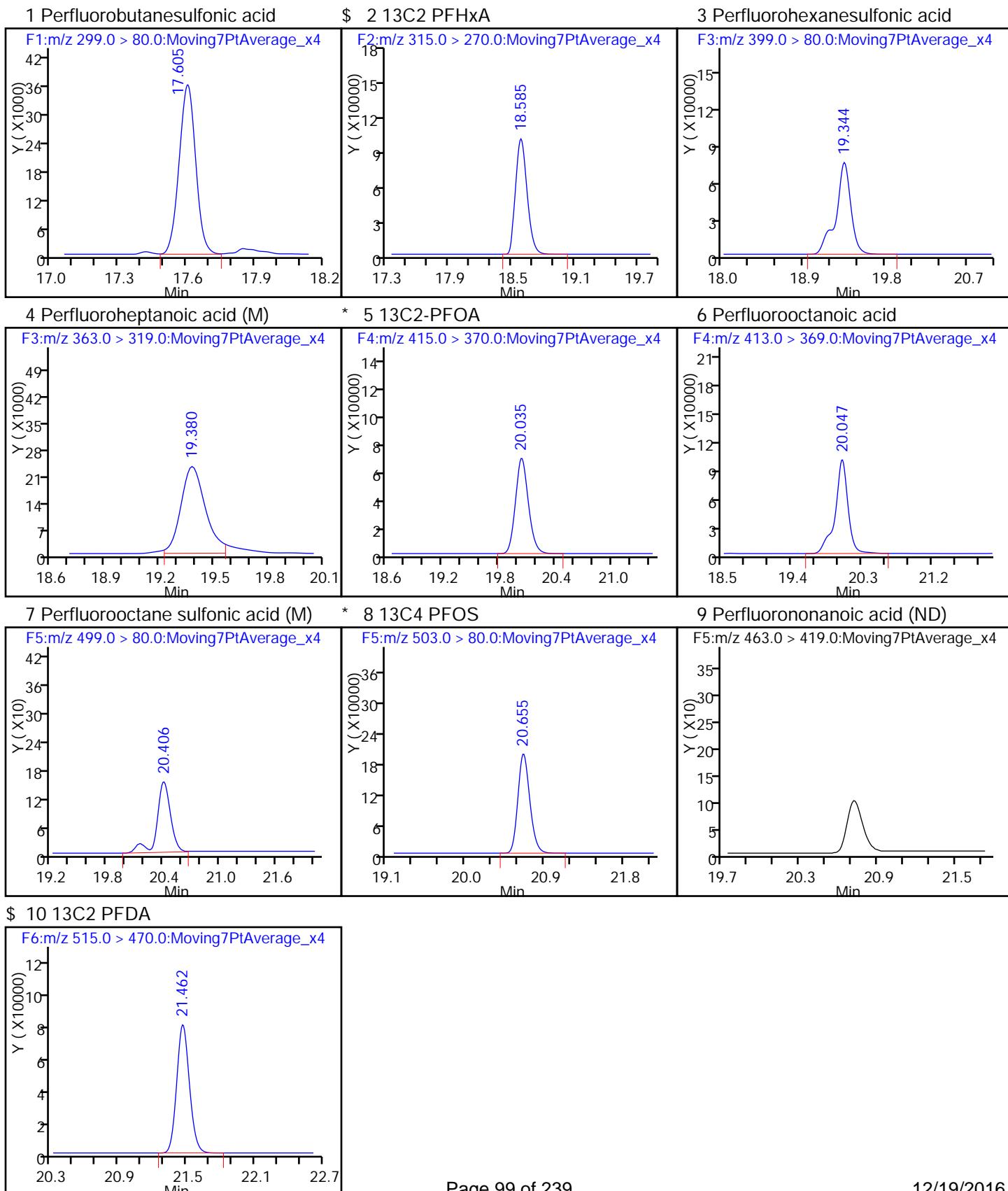
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.605	17.599	0.006	1.000	183231	4.04	160	
\$ 2 13C2 PFHxA								
315.0 > 270.0	18.585	18.585	0.0	1.000	751766	10.1	24127	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.344	19.356	-0.012	1.000	830948	14.3	17929	
4 Perfluoroheptanoic acid								M
363.0 > 319.0	19.380	19.380	0.0	1.000	215591	2.77	78.5	M
* 5 13C2-PFOA								
415.0 > 370.0	20.035	20.047	-0.012		640073	10.0	16504	
6 Perfluoroctanoic acid								
413.0 > 369.0	20.047	20.047	0.0	1.000	1132351	17.0	1619	
7 Perfluoroctane sulfonic acid								M
499.0 > 80.0	20.406	20.620	-0.214	1.000	1523	0.0225	37.5	M
* 8 13C4 PFOS								
503.0 > 80.0	20.655	20.667	-0.012		1855559	28.7	48380	
\$ 10 13C2 PFDA								
515.0 > 470.0	21.462	21.471	-0.009	1.000	616910	11.0	19524	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_010.d
 Injection Date: 15-Dec-2016 12:00:21 Instrument ID: A6
 Lims ID: 320-24178-A-2-A Lab Sample ID: 320-24178-2
 Client ID: WI-CV-1RW23P-1216
 Operator ID: CBW ALS Bottle#: 6 Worklist Smp#: 10
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_010.d
 Lims ID: 320-24178-A-2-A
 Client ID: WI-CV-1RW23P-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:00:21 ALS Bottle#: 6 Worklist Smp#: 10
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:19:26

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	100.68
\$ 10 13C2 PFDA	10.0	11.0	109.99

TestAmerica Sacramento

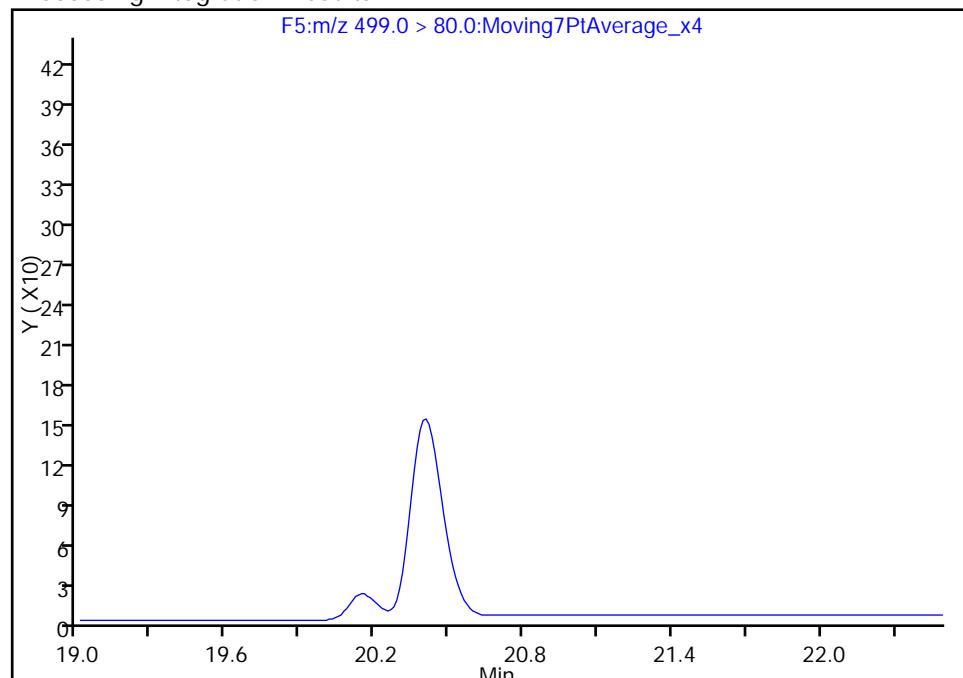
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_010.d
 Injection Date: 15-Dec-2016 12:00:21 Instrument ID: A6
 Lims ID: 320-24178-A-2-A Lab Sample ID: 320-24178-2
 Client ID: WI-CV-1RW23P-1216
 Operator ID: CBW ALS Bottle#: 6 Worklist Smp#: 10
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F5:MRM

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

Signal: 1

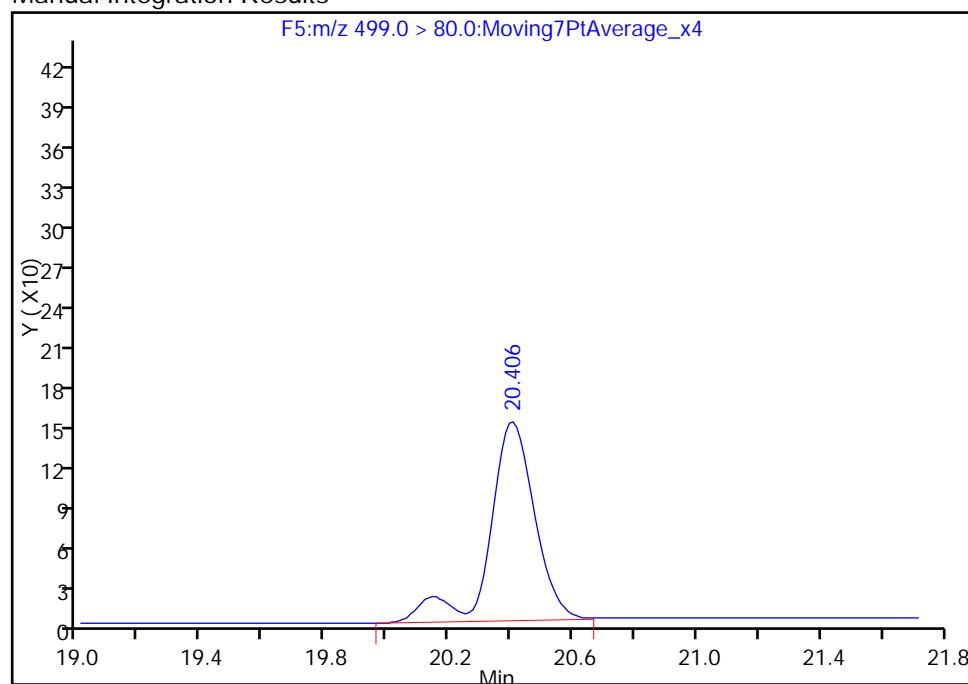
Processing Integration Results

Not Detected
 Expected RT: 20.62



Manual Integration Results

RT: 20.41
 Area: 1523
 Amount: 0.022548
 Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:19:26

Audit Action: Manually Integrated

Audit Reason: Missed Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1FB23-1216 Lab Sample ID: 320-24178-3
 Matrix: Water Lab File ID: 15DEC2016A6A_011.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:22
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 251.6 (mL) Date Analyzed: 12/15/2016 12:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142223 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.048	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U M	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	106		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_011.d
 Lims ID: 320-24178-A-3-A
 Client ID: WI-CV-1FB23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:29:58 ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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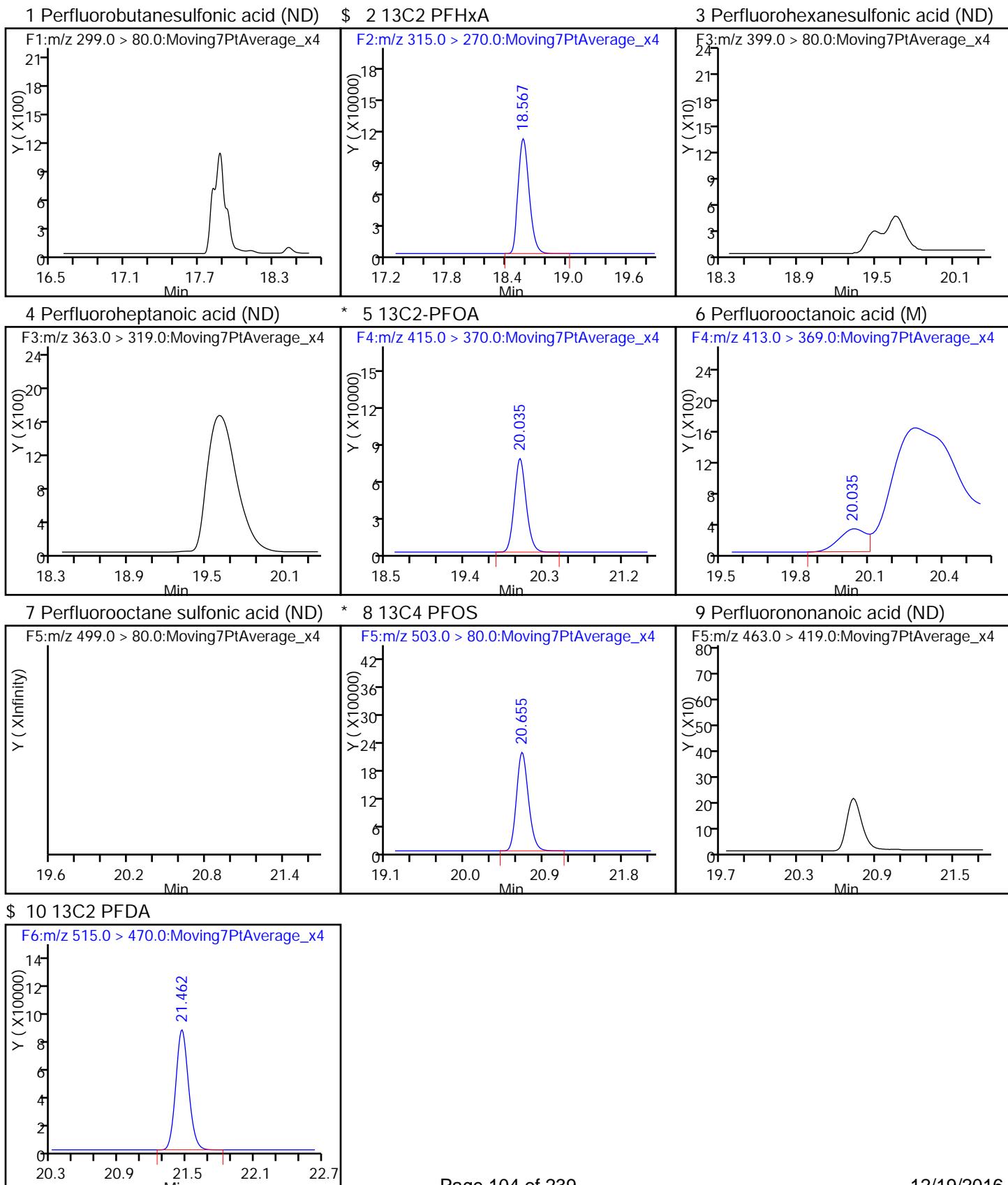
\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.585 -0.018 1.000 824561 9.72 26636
 * 5 13C2-PFOA
 415.0 > 370.0 20.035 20.047 -0.012 727192 10.0 19089
 6 Perfluorooctanoic acid M
 413.0 > 369.0 20.035 20.047 -0.012 1.000 2322 0.0307 1.0 M
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 2021177 28.7 21130
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.462 21.471 -0.009 1.000 677218 10.6 21359

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_011.d
 Injection Date: 15-Dec-2016 12:29:58 Instrument ID: A6
 Lims ID: 320-24178-A-3-A Lab Sample ID: 320-24178-3
 Client ID: WI-CV-1FB23-1216
 Operator ID: CBW ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_011.d
 Lims ID: 320-24178-A-3-A
 Client ID: WI-CV-1FB23-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:29:58 ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:12

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.72	97.20
\$ 10 13C2 PFDA	10.0	10.6	106.28

TestAmerica Sacramento

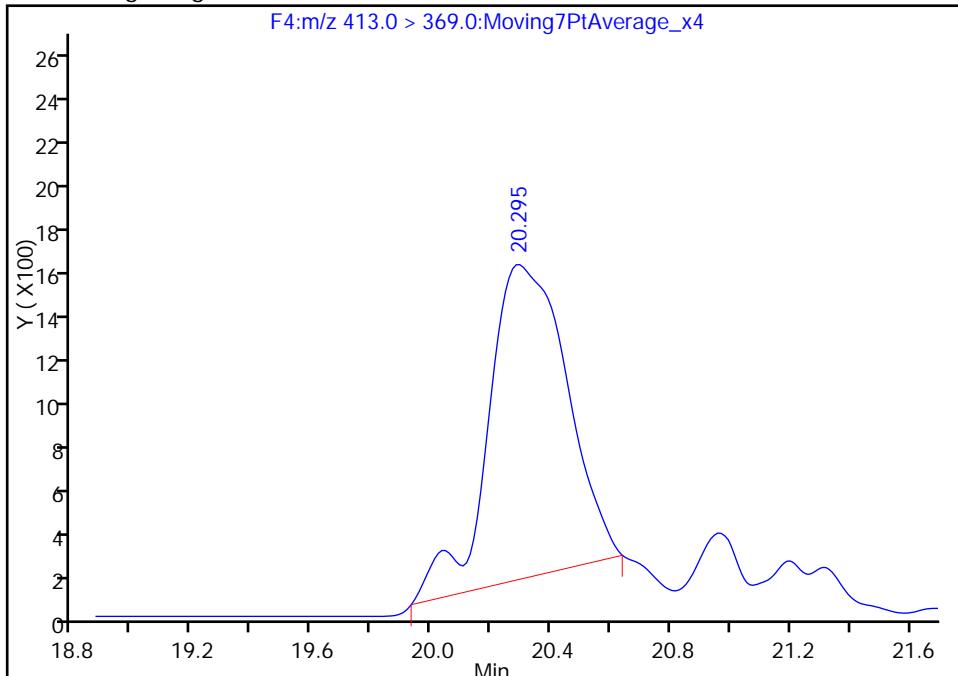
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_011.d
 Injection Date: 15-Dec-2016 12:29:58 Instrument ID: A6
 Lims ID: 320-24178-A-3-A Lab Sample ID: 320-24178-3
 Client ID: WI-CV-1FB23-1216
 Operator ID: CBW ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

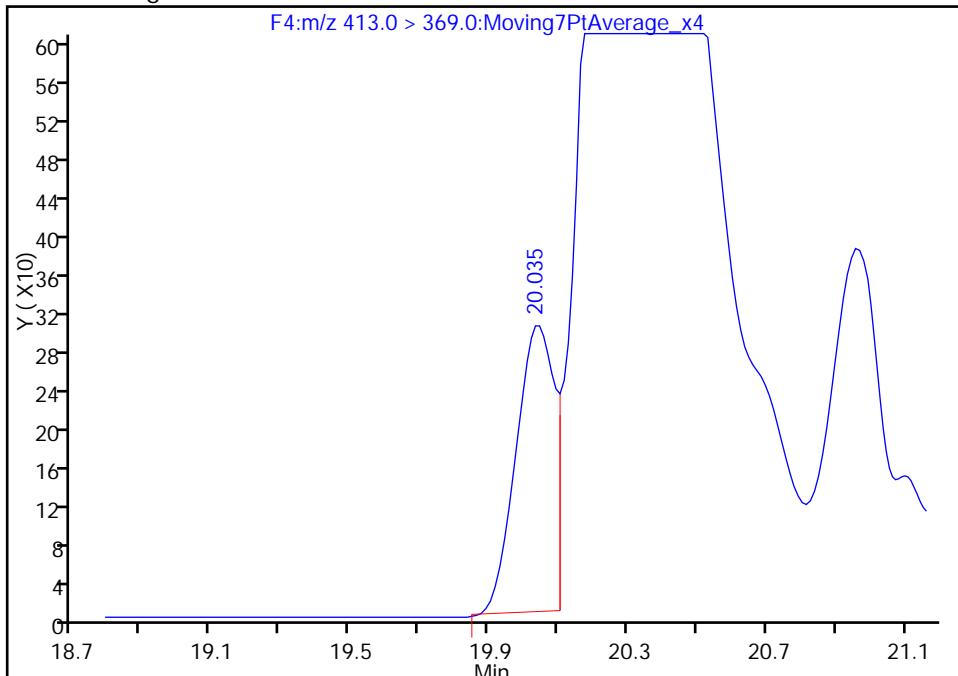
Processing Integration Results

RT: 20.30
 Area: 26777
 Amount: 0.353918
 Amount Units: ng/ml



Manual Integration Results

RT: 20.03
 Area: 2322
 Amount: 0.030690
 Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:20:12

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1RW24-1216 Lab Sample ID: 320-24178-4
 Matrix: Water Lab File ID: 15DEC2016A6A_012.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:45
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 267.4 (mL) Date Analyzed: 12/15/2016 12:59
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142223 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.045	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0088
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	91		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

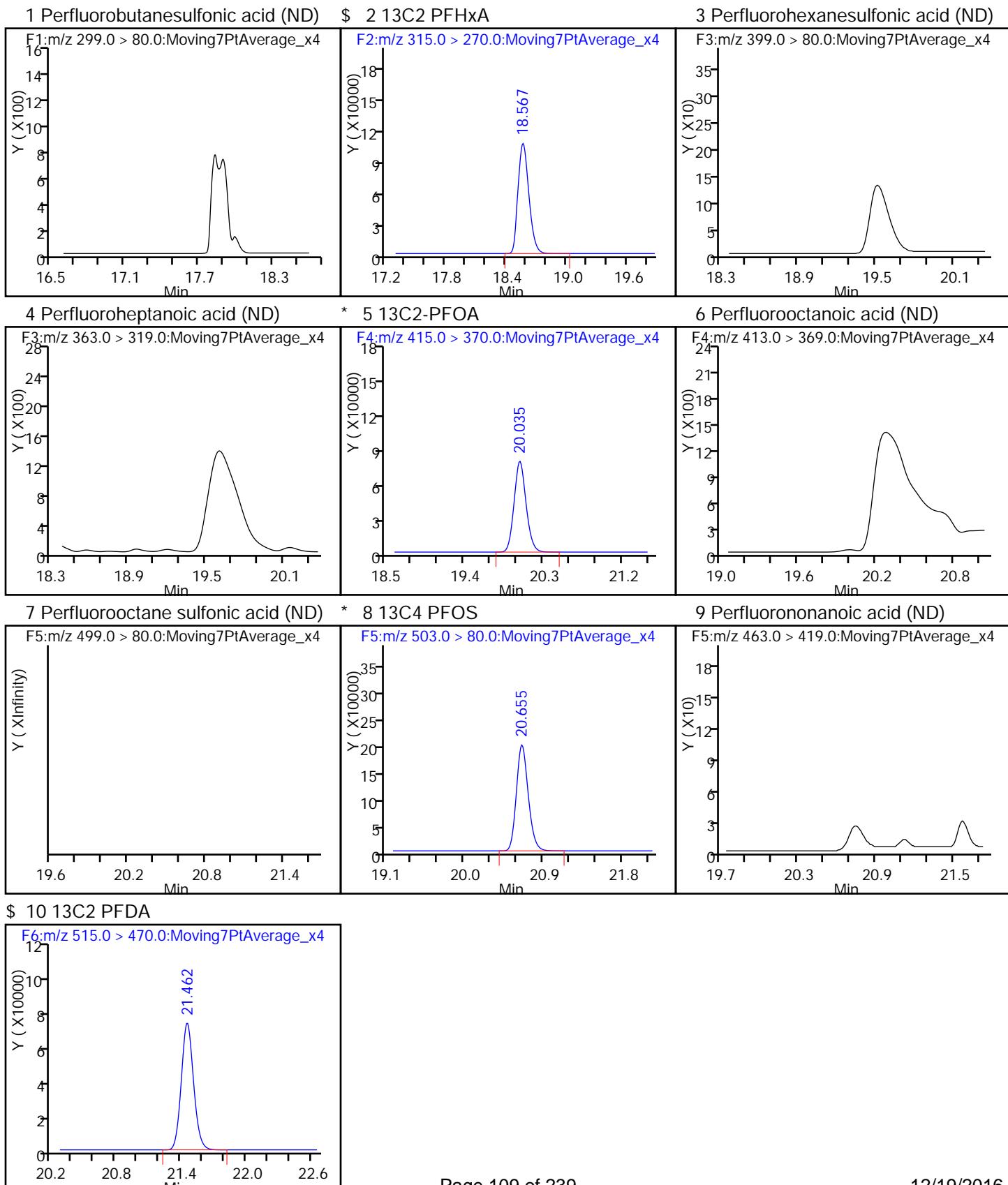
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_012.d
 Lims ID: 320-24178-A-4-A
 Client ID: WI-CV-1RW24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:59:35 ALS Bottle#: 8 Worklist Smp#: 12
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.585 -0.018 1.000 791967 9.37 26082
 * 5 13C2-PFOA
 415.0 > 370.0 20.035 20.047 -0.012 724333 10.0 18836
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 1867227 28.7 32722
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.462 21.471 -0.009 1.000 576467 9.08 18141

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_012.d
 Injection Date: 15-Dec-2016 12:59:35 Instrument ID: A6
 Lims ID: 320-24178-A-4-A Lab Sample ID: 320-24178-4
 Client ID: WI-CV-1RW24-1216
 Operator ID: CBW ALS Bottle#: 8 Worklist Smp#: 12
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_012.d
 Lims ID: 320-24178-A-4-A
 Client ID: WI-CV-1RW24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 12:59:35 ALS Bottle#: 8 Worklist Smp#: 12
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-4-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:20:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.37	93.73
\$ 10 13C2 PFDA	10.0	9.08	90.82

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1FB24-1216 Lab Sample ID: 320-24178-5
 Matrix: Water Lab File ID: 15DEC2016A6A_013.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:44
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 252.2 (mL) Date Analyzed: 12/15/2016 13:29
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142223 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.059	0.048	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

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

TestAmerica Sacramento
Target Compound Quantitation Report

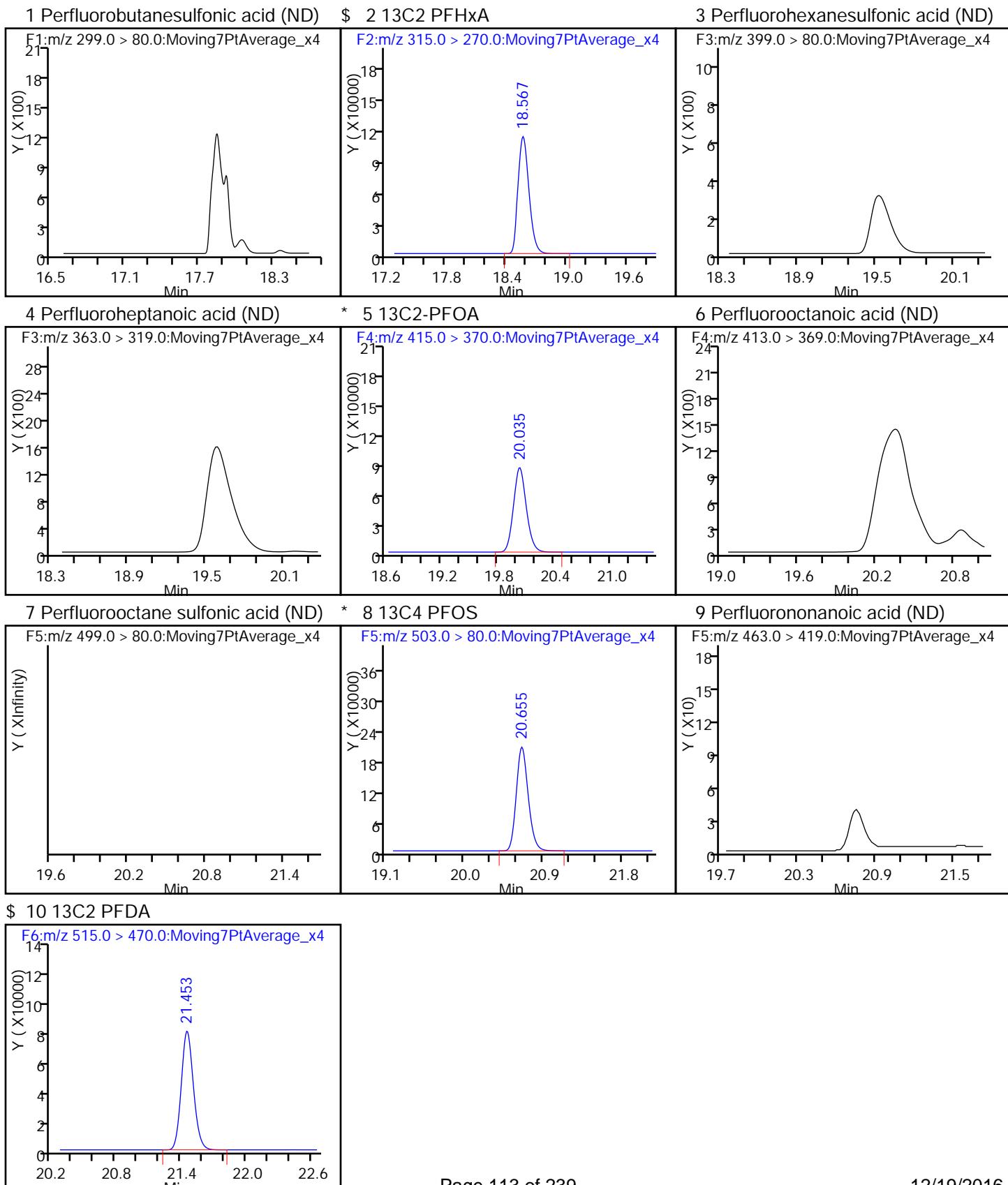
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_013.d
 Lims ID: 320-24178-A-5-A
 Client ID: WI-CV-1FB24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 13:29:12 ALS Bottle#: 9 Worklist Smp#: 13
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 09:59:29 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 09:59:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.585 -0.018 1.000 841627 8.77 27509
 * 5 13C2-PFOA
 415.0 > 370.0 20.035 20.047 -0.012 822534 10.0 21391
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 1961736 28.7 51295
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.453 21.471 -0.018 1.000 613763 8.52 19497

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_013.d
 Injection Date: 15-Dec-2016 13:29:12 Instrument ID: A6
 Lims ID: 320-24178-A-5-A Lab Sample ID: 320-24178-5
 Client ID: WI-CV-1FB24-1216
 Operator ID: CBW ALS Bottle#: 9 Worklist Smp#: 13
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_013.d
 Lims ID: 320-24178-A-5-A
 Client ID: WI-CV-1FB24-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 13:29:12 ALS Bottle#: 9 Worklist Smp#: 13
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-5-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 09:59:29 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 09:59:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.77	87.71
\$ 10 13C2 PFDA	10.0	8.52	85.15

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW25-1216 Lab Sample ID: 320-24178-6
 Matrix: Water Lab File ID: 15DEC2016A6A_014.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:00
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 271.7 (mL) Date Analyzed: 12/15/2016 14:25
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	92		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

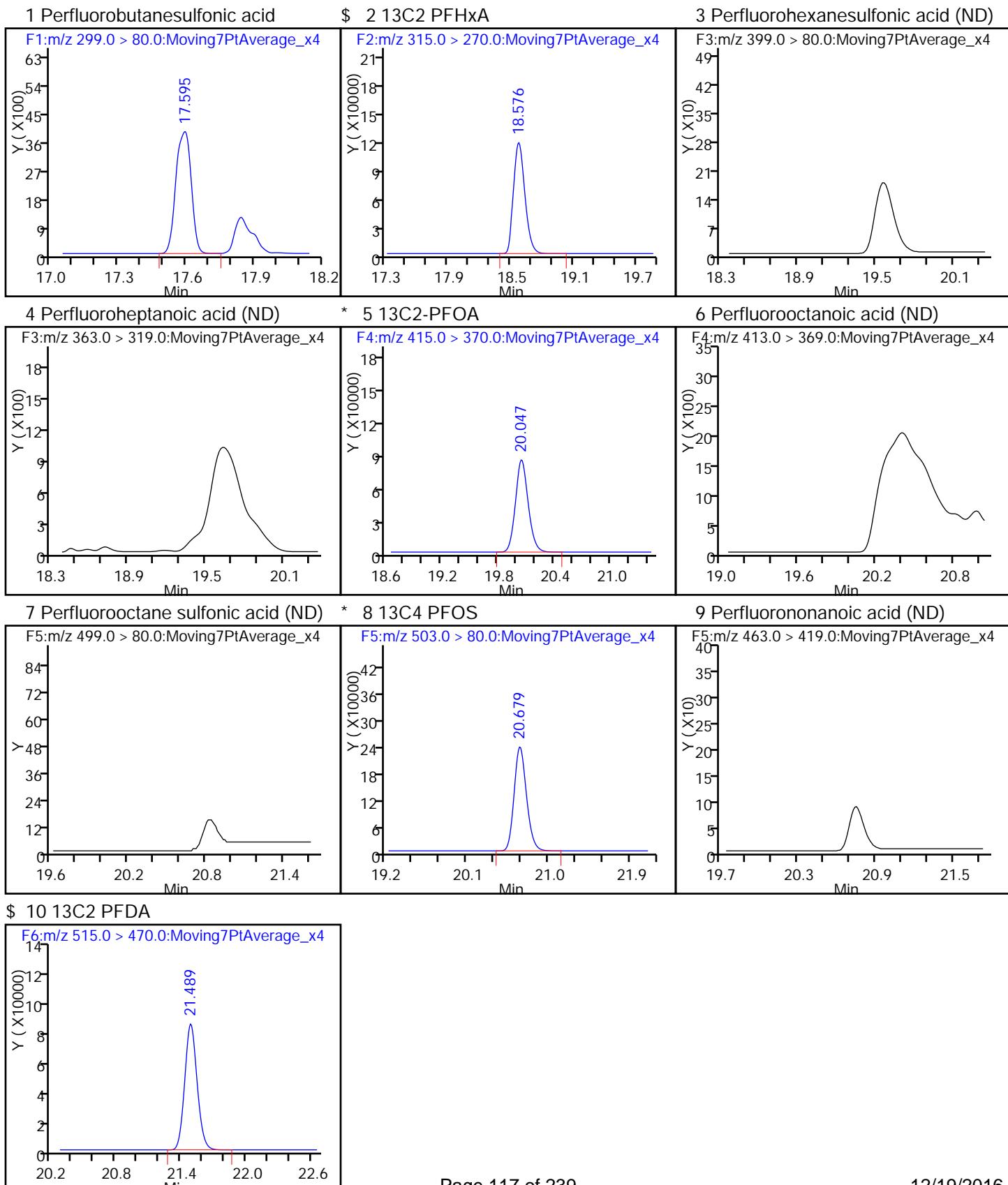
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_014.d
 Lims ID: 320-24178-A-6-A
 Client ID: WI-CV-1RW25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 14:25:41 ALS Bottle#: 10 Worklist Smp#: 14
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:21:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid
 299.0 > 80.0 17.595 17.599 -0.004 1.000 18591 0.3382 24.4
 \$ 2 13C2 PFHxA
 315.0 > 270.0 18.576 18.585 -0.009 1.000 910111 9.66 29636
 * 5 13C2-PFOA
 415.0 > 370.0 20.047 20.047 0.0 807448 10.0 21181
 * 8 13C4 PFOS
 503.0 > 80.0 20.679 20.667 0.012 2247292 28.7 58486
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.489 21.471 0.018 1.000 649187 9.18 20286

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_014.d
 Injection Date: 15-Dec-2016 14:25:41 Instrument ID: A6
 Lims ID: 320-24178-A-6-A Lab Sample ID: 320-24178-6
 Client ID: WI-CV-1RW25-1216
 Operator ID: CBW ALS Bottle#: 10 Worklist Smp#: 14
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_014.d
 Lims ID: 320-24178-A-6-A
 Client ID: WI-CV-1RW25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 14:25:41 ALS Bottle#: 10 Worklist Smp#: 14
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-6-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:21:04

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.66	96.62
\$ 10 13C2 PFDA	10.0	9.18	91.75

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1FB25-1216 Lab Sample ID: 320-24178-7
 Matrix: Water Lab File ID: 15DEC2016A6A_017.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:58
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 247.3 (mL) Date Analyzed: 12/15/2016 15:54
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.049	U	0.061	0.049	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	93		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

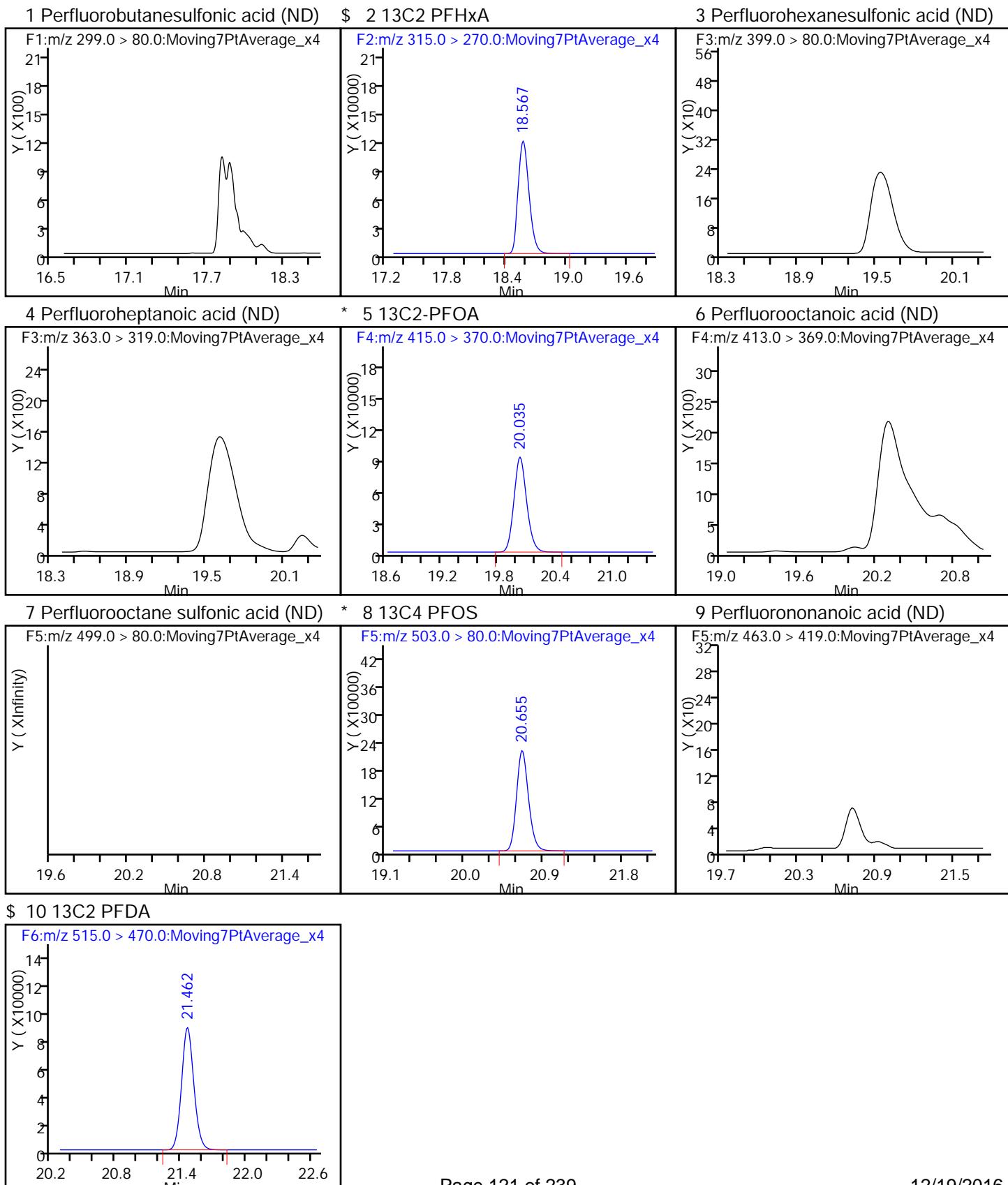
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_017.d
 Lims ID: 320-24178-A-7-A
 Client ID: WI-CV-1FB25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 15:54:38 ALS Bottle#: 11 Worklist Smp#: 17
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-7-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.576 -0.009 1.000 880754 8.91 19158
 * 5 13C2-PFOA
 415.0 > 370.0 20.035 20.035 0.0 847354 10.0 12663
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 2055054 28.7 53638
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.462 21.471 -0.009 1.000 688438 9.27 21647

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_017.d
 Injection Date: 15-Dec-2016 15:54:38 Instrument ID: A6
 Lims ID: 320-24178-A-7-A Lab Sample ID: 320-24178-7
 Client ID: WI-CV-1FB25-1216
 Operator ID: CBW ALS Bottle#: 11 Worklist Smp#: 17
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_017.d
 Lims ID: 320-24178-A-7-A
 Client ID: WI-CV-1FB25-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 15:54:38 ALS Bottle#: 11 Worklist Smp#: 17
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-7-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:32

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.91	89.10
\$ 10 13C2 PFDA	10.0	9.27	92.72

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1RW26-1216 Lab Sample ID: 320-24178-8
 Matrix: Water Lab File ID: 15DEC2016A6A_018.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:12
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 270.3 (mL) Date Analyzed: 12/15/2016 16:24
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	97		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

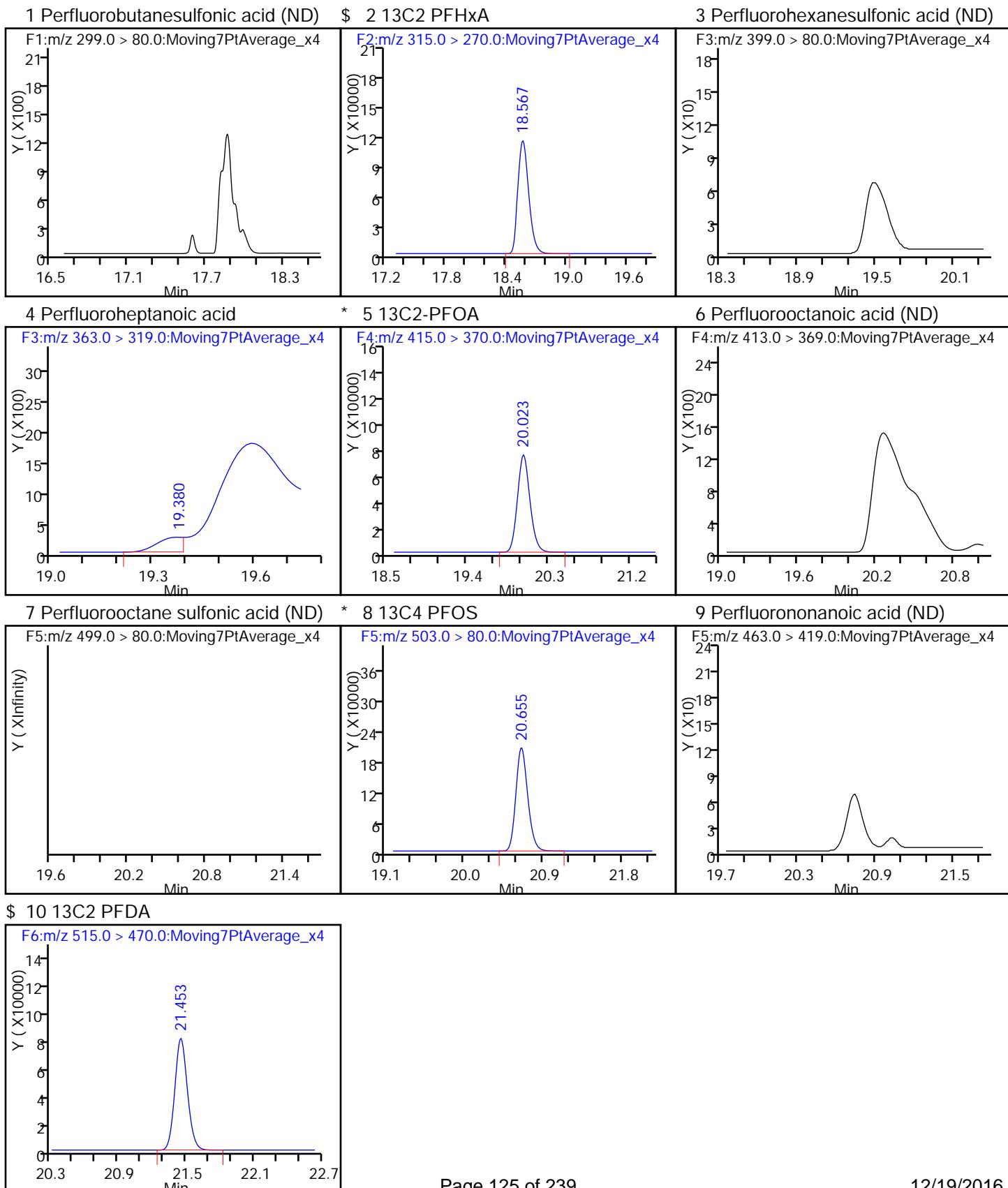
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_018.d
 Lims ID: 320-24178-A-8-A
 Client ID: WI-CV-1RW26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:24:14 ALS Bottle#: 12 Worklist Smp#: 18
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-8-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.576 -0.009 1.000 846893 10.0 27861
 4 Perfluoroheptanoic acid
 363.0 > 319.0 19.380 19.380 0.0 1.000 1245 0.0142 1.1
 * 5 13C2-PFOA
 415.0 > 370.0 20.023 20.035 -0.012 723560 10.0 18634
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 1923184 28.7 50369
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.453 21.471 -0.018 1.000 616749 9.73 19704

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_018.d
 Injection Date: 15-Dec-2016 16:24:14 Instrument ID: A6
 Lims ID: 320-24178-A-8-A Lab Sample ID: 320-24178-8
 Client ID: WI-CV-1RW26-1216
 Operator ID: CBW ALS Bottle#: 12 Worklist Smp#: 18
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_018.d
 Lims ID: 320-24178-A-8-A
 Client ID: WI-CV-1RW26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:24:14 ALS Bottle#: 12 Worklist Smp#: 18
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-8-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:37:55

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.0	100.34
\$ 10 13C2 PFDA	10.0	9.73	97.27

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1FB26-1216 Lab Sample ID: 320-24178-9
 Matrix: Water Lab File ID: 15DEC2016A6A_019.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:09
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.5 (mL) Date Analyzed: 12/15/2016 16:53
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

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

TestAmerica Sacramento
Target Compound Quantitation Report

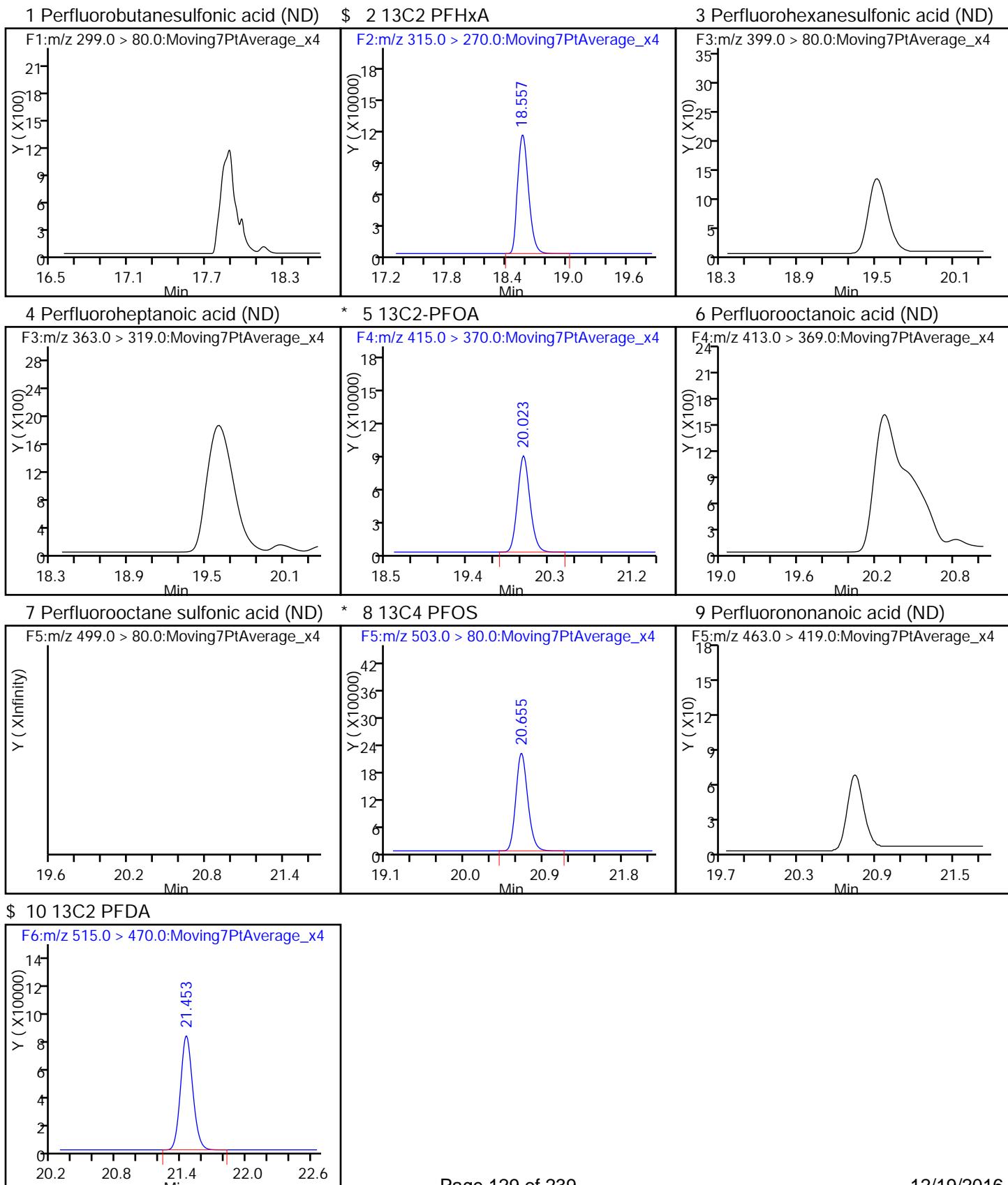
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_019.d
 Lims ID: 320-24178-A-9-A
 Client ID: WI-CV-1FB26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:53:50 ALS Bottle#: 13 Worklist Smp#: 19
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-9-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:38:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.557 18.576 -0.019 1.000 876288 8.93 28590
 * 5 13C2-PFOA
 415.0 > 370.0 20.023 20.035 -0.012 841147 10.0 21818
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 2039505 28.7 53332
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.453 21.471 -0.018 1.000 643680 8.73 20360

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_019.d
 Injection Date: 15-Dec-2016 16:53:50 Instrument ID: A6
 Lims ID: 320-24178-A-9-A Lab Sample ID: 320-24178-9
 Client ID: WI-CV-1FB26-1216
 Operator ID: CBW ALS Bottle#: 13 Worklist Smp#: 19
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_019.d
 Lims ID: 320-24178-A-9-A
 Client ID: WI-CV-1FB26-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 16:53:50 ALS Bottle#: 13 Worklist Smp#: 19
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-9-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:38:10

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.93	89.31
\$ 10 13C2 PFDA	10.0	8.73	87.33

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1RW27-1216 Lab Sample ID: 320-24178-10
 Matrix: Water Lab File ID: 15DEC2016A6A_020.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:24
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 254.4 (mL) Date Analyzed: 12/15/2016 17:23
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.038		0.029	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	114		70-130
STL00996	13C2 PFDA	112		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_020.d
 Lims ID: 320-24178-A-10-A
 Client ID: WI-CV-1RW27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:23:27 ALS Bottle#: 14 Worklist Smp#: 20
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-10-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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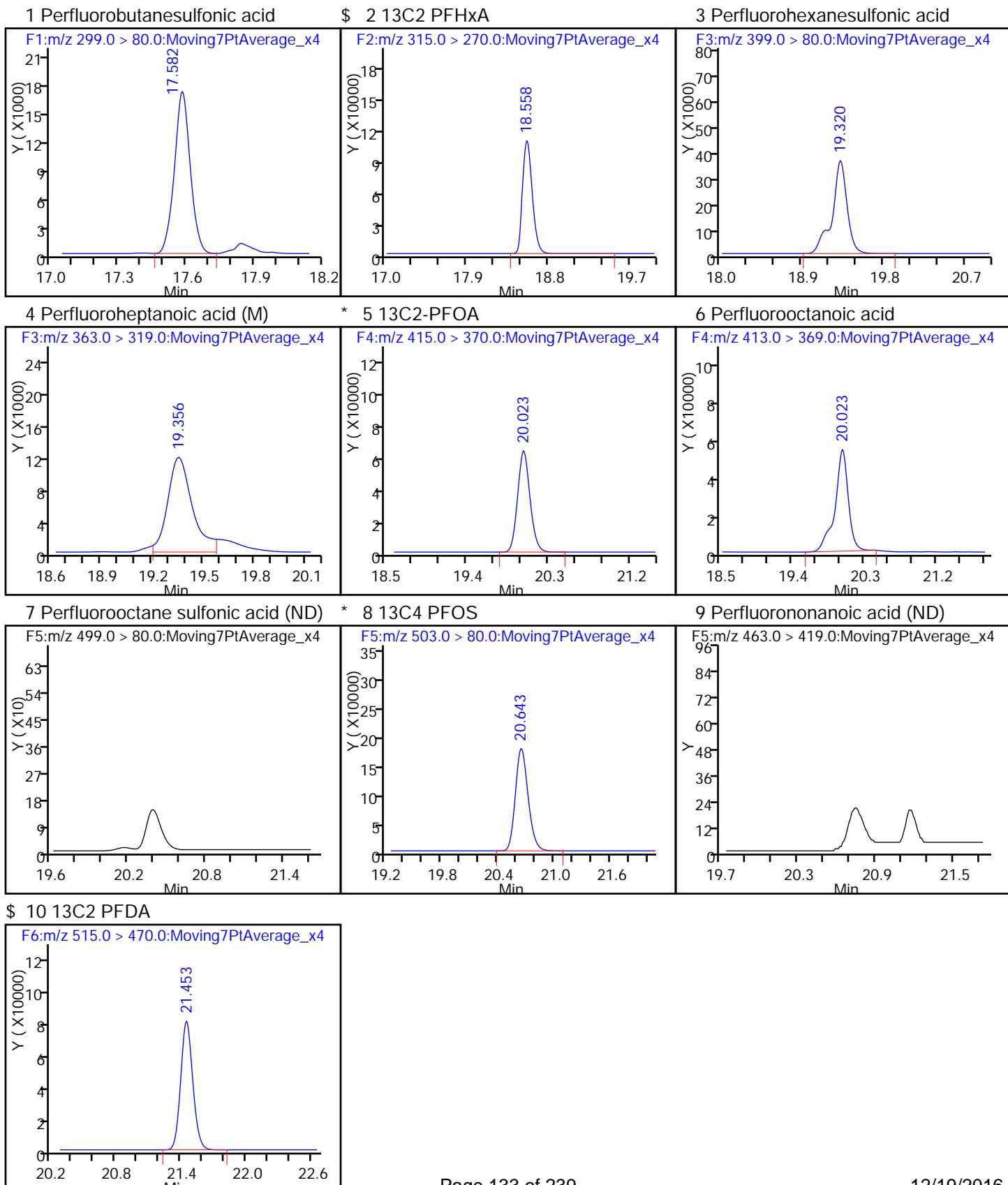
1 Perfluorobutanesulfonic acid
 299.0 > 80.0 17.582 17.595 -0.013 1.000 84010 2.05 275
 \$ 2 13C2 PFHxA
 315.0 > 270.0 18.558 18.576 -0.018 1.000 801467 11.4 26402
 3 Perfluorohexanesulfonic acid
 399.0 > 80.0 19.320 19.344 -0.024 1.000 417773 7.96 9040
 4 Perfluoroheptanoic acid
 363.0 > 319.0 19.356 19.380 -0.024 1.000 119195 1.62 79.7 M
 * 5 13C2-PFOA
 415.0 > 370.0 20.023 20.035 -0.012 1.000 603893 10.0 15696
 6 Perfluoroctanoic acid
 413.0 > 369.0 20.023 20.035 -0.012 1.000 607569 9.67 455
 * 8 13C4 PFOS
 503.0 > 80.0 20.643 20.667 -0.024 1.000 1676042 28.7 43801
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.453 21.471 -0.018 1.000 595050 11.2 19030

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_020.d
 Injection Date: 15-Dec-2016 17:23:27 Instrument ID: A6
 Lims ID: 320-24178-A-10-A Lab Sample ID: 320-24178-10
 Client ID: WI-CV-1RW27-1216
 Operator ID: CBW ALS Bottle#: 14 Worklist Smp#: 20
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_020.d
 Lims ID: 320-24178-A-10-A
 Client ID: WI-CV-1RW27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:23:27 ALS Bottle#: 14 Worklist Smp#: 20
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-10-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:23

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	11.4	113.77
\$ 10 13C2 PFDA	10.0	11.2	112.45

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1FB27-1216 Lab Sample ID: 320-24178-11
 Matrix: Water Lab File ID: 15DEC2016A6A_021.d
 Analysis Method: 537 Date Collected: 12/06/2016 10:22
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 259.2 (mL) Date Analyzed: 12/15/2016 17:53
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0091
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

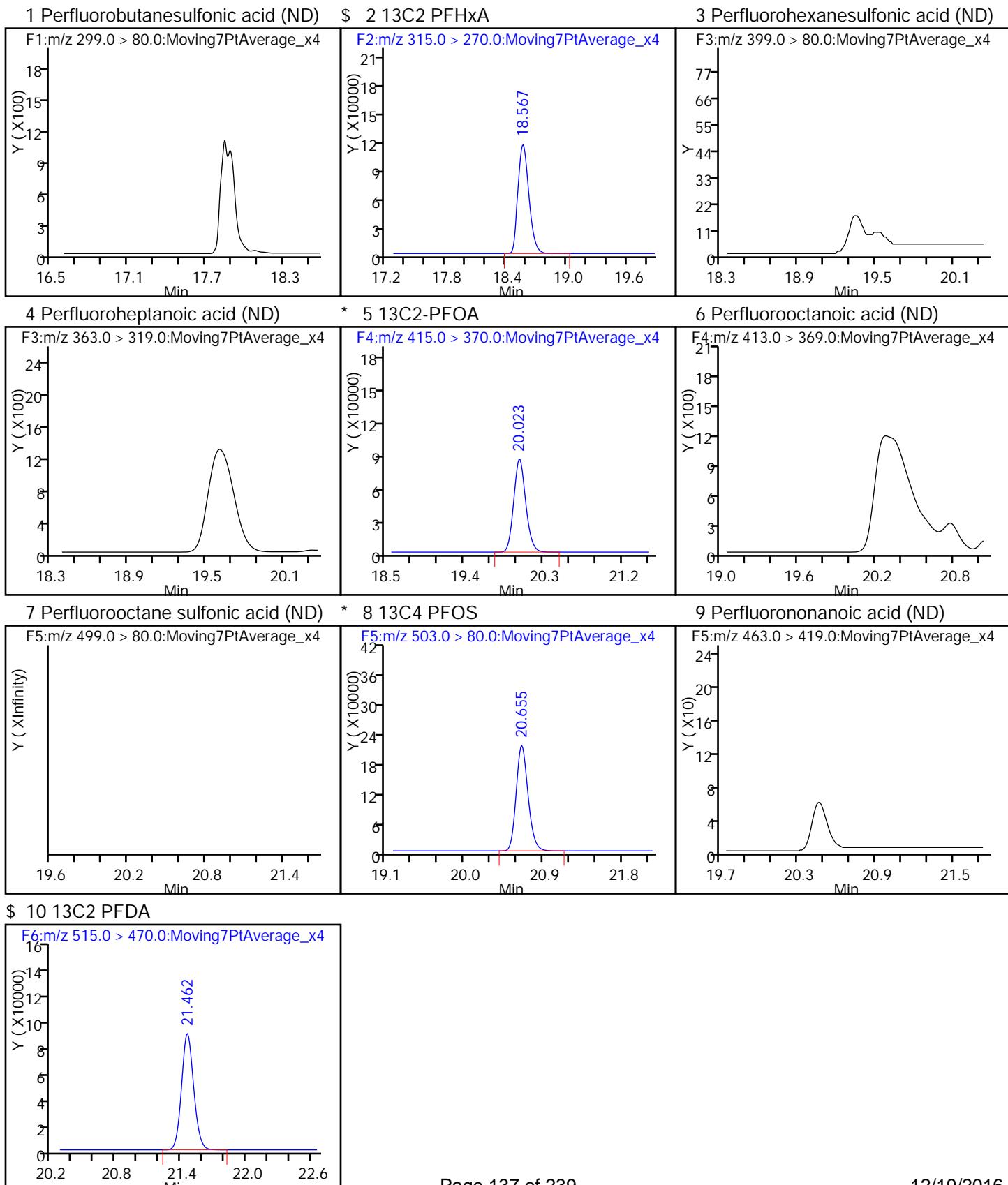
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_021.d
 Lims ID: 320-24178-A-11-A
 Client ID: WI-CV-1FB27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:53:03 ALS Bottle#: 15 Worklist Smp#: 21
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-11-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.576 -0.009 1.000 882921 9.60 28783
 * 5 13C2-PFOA
 415.0 > 370.0 20.023 20.035 -0.012 788429 10.0 20476
 * 8 13C4 PFOS
 503.0 > 80.0 20.655 20.667 -0.012 2023279 28.7 35423
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.462 21.471 -0.009 1.000 689149 9.97 21958

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_021.d
 Injection Date: 15-Dec-2016 17:53:03 Instrument ID: A6
 Lims ID: 320-24178-A-11-A Lab Sample ID: 320-24178-11
 Client ID: WI-CV-1FB27-1216
 Operator ID: CBW ALS Bottle#: 15 Worklist Smp#: 21
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_021.d
 Lims ID: 320-24178-A-11-A
 Client ID: WI-CV-1FB27-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 17:53:03 ALS Bottle#: 15 Worklist Smp#: 21
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-11-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:36

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.60	96.00
\$ 10 13C2 PFDA	10.0	9.97	99.75

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1RW28-1216 Lab Sample ID: 320-24178-12
 Matrix: Water Lab File ID: 15DEC2016A6A_022.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:08
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 275.4 (mL) Date Analyzed: 12/15/2016 18:22
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.054	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	87		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

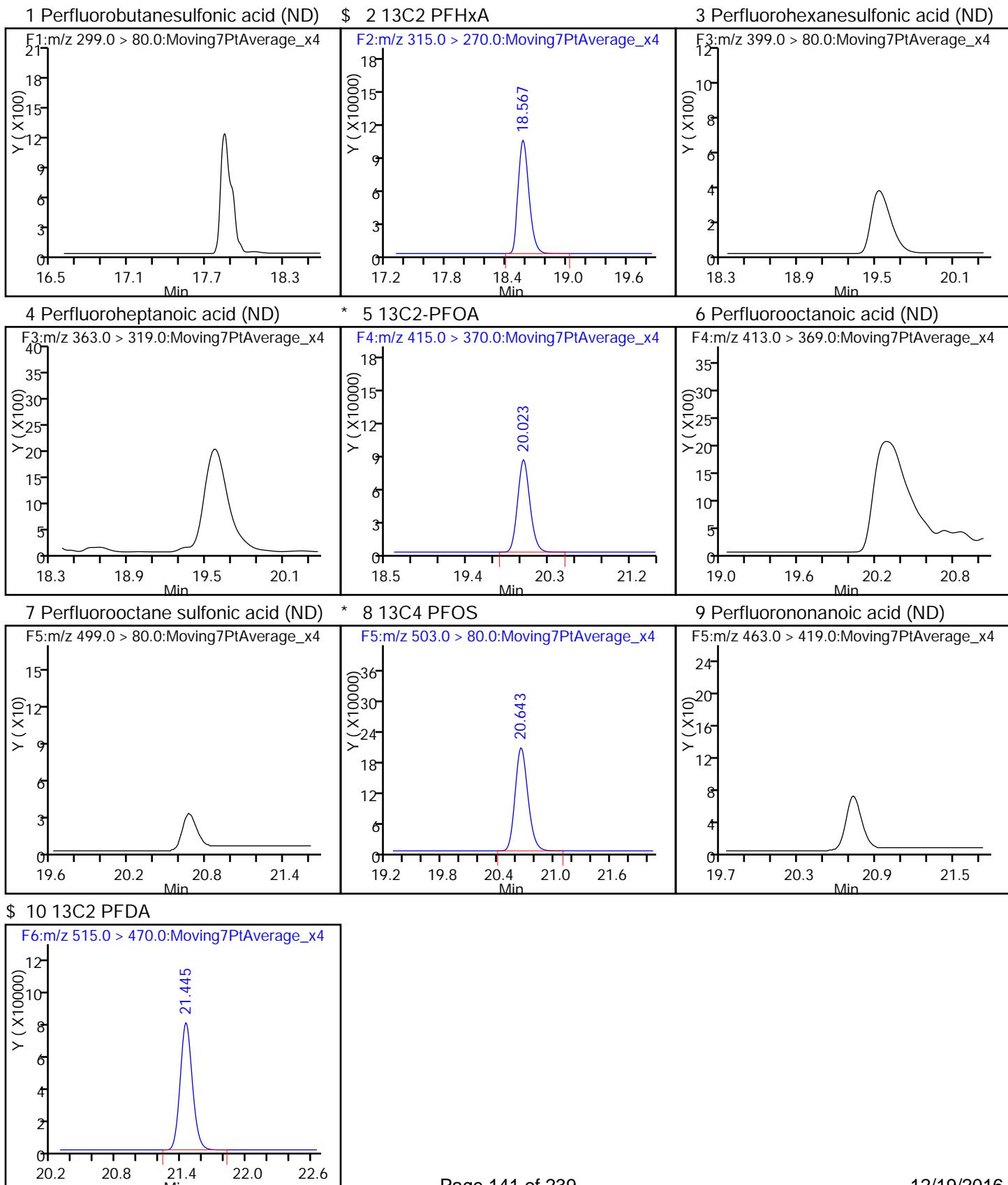
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_022.d
 Lims ID: 320-24178-A-12-A
 Client ID: WI-CV-1RW28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:22:40 ALS Bottle#: 16 Worklist Smp#: 22
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-12-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.576 -0.009 1.000 777337 8.61 25620
 * 5 13C2-PFOA
 415.0 > 370.0 20.023 20.035 -0.012 773727 10.0 20233
 * 8 13C4 PFOS
 503.0 > 80.0 20.643 20.667 -0.024 1952960 28.7 15615
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.445 21.471 -0.026 1.000 588998 8.69 18689

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_022.d
 Injection Date: 15-Dec-2016 18:22:40 Instrument ID: A6
 Lims ID: 320-24178-A-12-A Lab Sample ID: 320-24178-12
 Client ID: WI-CV-1RW28-1216
 Operator ID: CBW ALS Bottle#: 16 Worklist Smp#: 22
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_022.d
 Lims ID: 320-24178-A-12-A
 Client ID: WI-CV-1RW28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:22:40 ALS Bottle#: 16 Worklist Smp#: 22
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-12-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:39:51

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.61	86.12
\$ 10 13C2 PFDA	10.0	8.69	86.87

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: WI-CV-1FB28-1216 Lab Sample ID: 320-24178-13
 Matrix: Water Lab File ID: 15DEC2016A6A_023.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:05
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.8 (mL) Date Analyzed: 12/15/2016 18:52
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	100		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

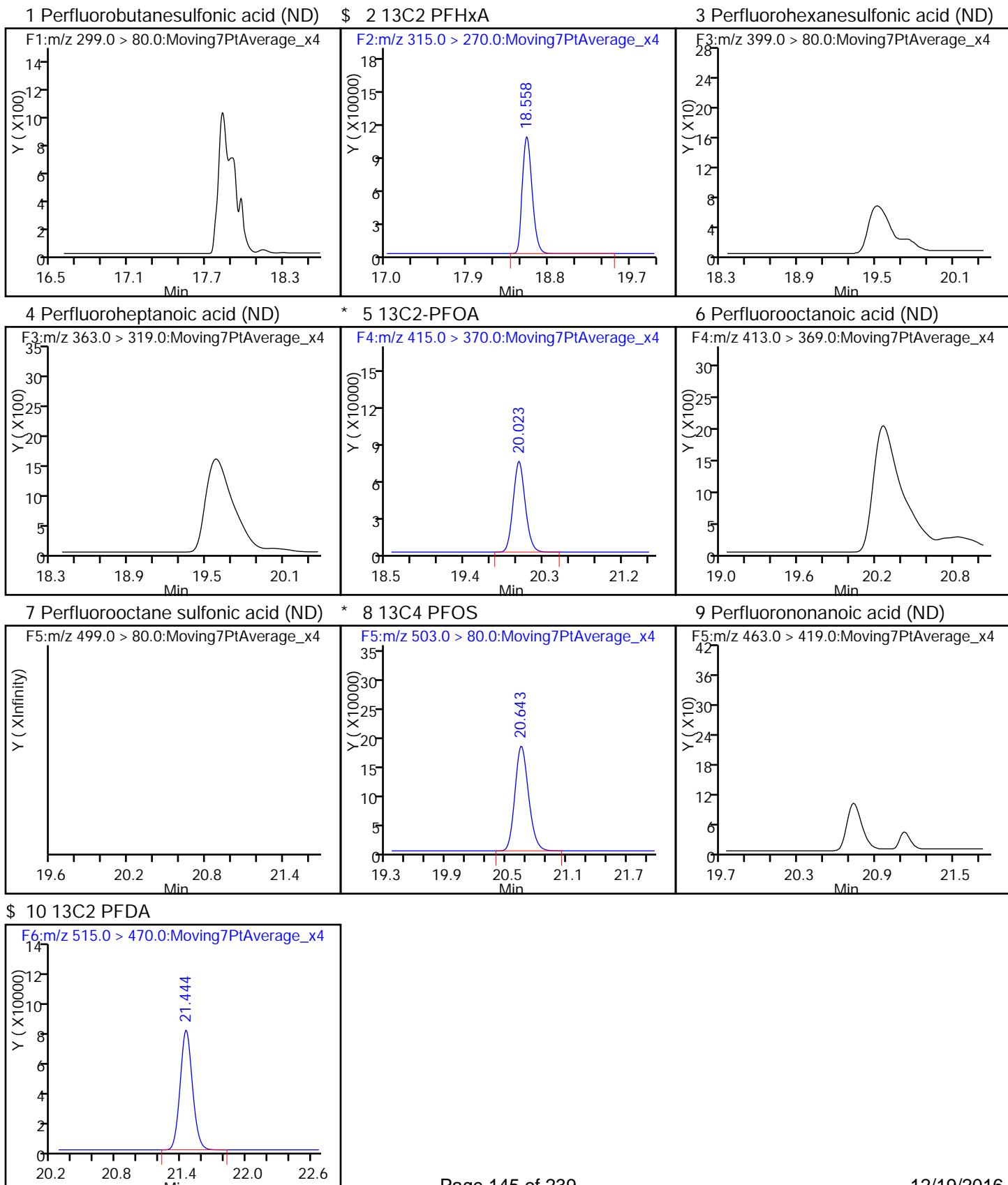
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_023.d
 Lims ID: 320-24178-A-13-A
 Client ID: WI-CV-1FB28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:52:17 ALS Bottle#: 17 Worklist Smp#: 23
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-13-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:40:02

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

\$ 2 13C2 PFHxA								
315.0 > 270.0	18.558	18.576	-0.018	1.000	796058	9.78	26101	
* 5 13C2-PFOA								
415.0 > 370.0	20.023	20.035	-0.012		697853	10.0	18018	
* 8 13C4 PFOS								
503.0 > 80.0	20.643	20.667	-0.024		1703380	28.7	25495	
\$ 10 13C2 PFDA								
515.0 > 470.0	21.444	21.471	-0.027	1.000	612635	10.0	19219	

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_023.d
 Injection Date: 15-Dec-2016 18:52:17 Instrument ID: A6
 Lims ID: 320-24178-A-13-A Lab Sample ID: 320-24178-13
 Client ID: WI-CV-1FB28-1216
 Operator ID: CBW ALS Bottle#: 17 Worklist Smp#: 23
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_023.d
 Lims ID: 320-24178-A-13-A
 Client ID: WI-CV-1FB28-1216
 Sample Type: Client
 Inject. Date: 15-Dec-2016 18:52:17 ALS Bottle#: 17 Worklist Smp#: 23
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24178-A-13-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:02 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:40:02

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.78	97.79
\$ 10 13C2 PFDA	10.0	10.0	100.18

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

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

Analy Batch No.: 140688

SDG No.: _____

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

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

Calibration Files:

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

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid (PFBS)	0.7247 0.6563	0.6525	0.7178	0.7256	0.7321	Ave		0.7015				5.2	30.0				
Perfluorohexanesulfonic acid	0.8344 0.8930	0.7757	0.9290	0.9478	1.0082	Ave		0.8980				9.3	30.0				
Perfluoroheptanoic acid	1.4137 1.1078	1.1891	1.2161	1.1975	1.1665	Ave		1.2151				8.6	30.0				
Perfluorooctanoic acid (PFOA)	0.9720 1.0610	0.9049	1.0674	1.1235	1.1136	Ave		1.0404				8.2	30.0				
Perfluorooctanesulfonic acid (PFOS)	0.8855 1.0951	0.9020	1.0711	1.0966	1.2136	Ave		1.0440				12.1	30.0				
Perfluorononanoic acid	0.9735 1.1655	0.9961	1.1929	1.2321	1.2453	Ave		1.1342				10.5	30.0				
13C2 PFHxA	1.0366 1.2091	1.0515	1.1929	1.2298	1.2791	Ave		1.1665				8.5	30.0				
13C2 PFDA	0.8084 0.9456	0.7439	0.8674	0.9054	0.9868	Ave		0.8763				10.2	30.0				

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

Analy Batch No.: 140688

SDG No.: _____

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

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

Calibration Files:

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

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

Curve Type Legend:

Ave = Average ISTD

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

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1 Analy Batch No.: 140688

SDG No.: _____

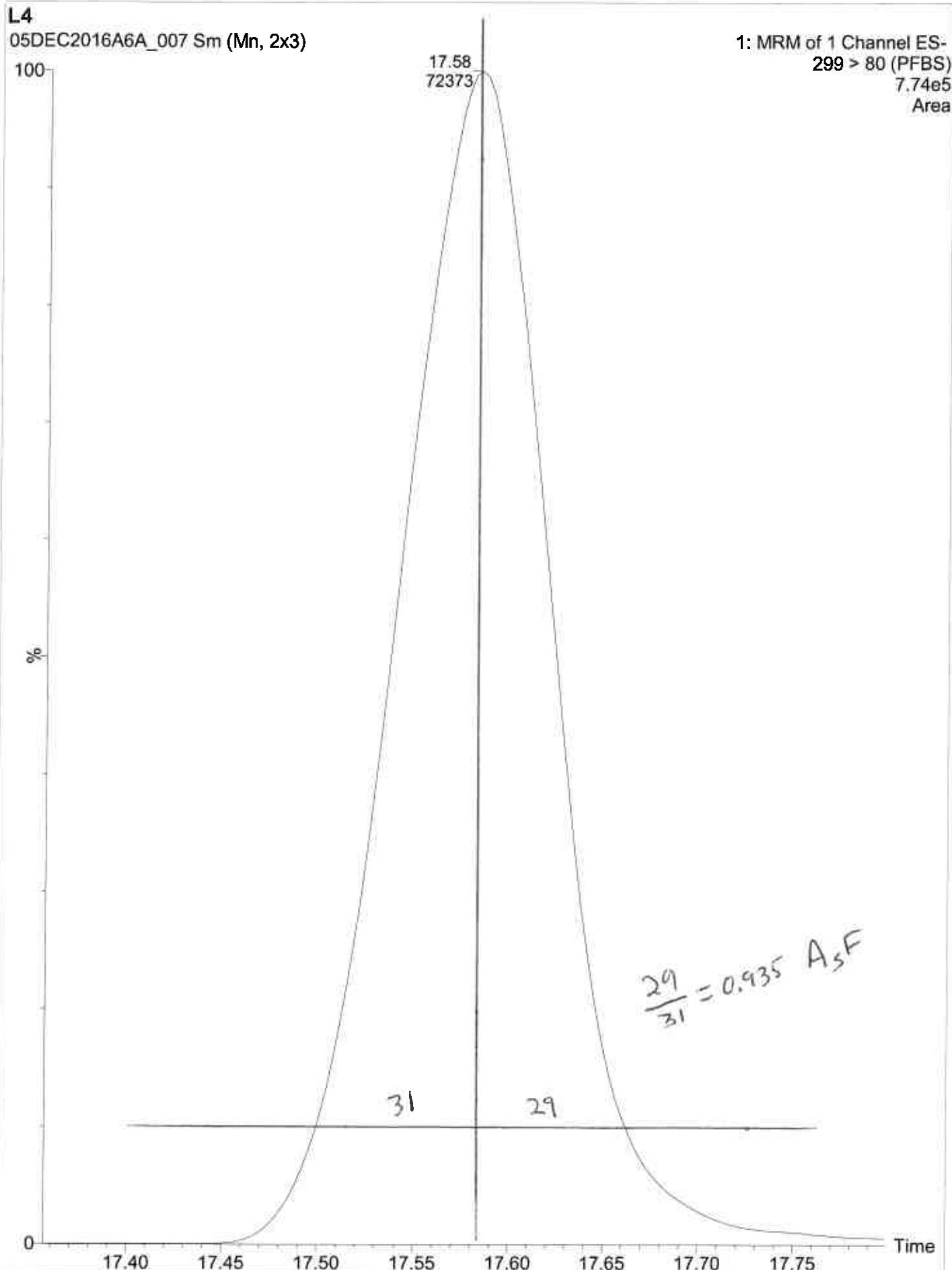
Instrument ID: A6 GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) N

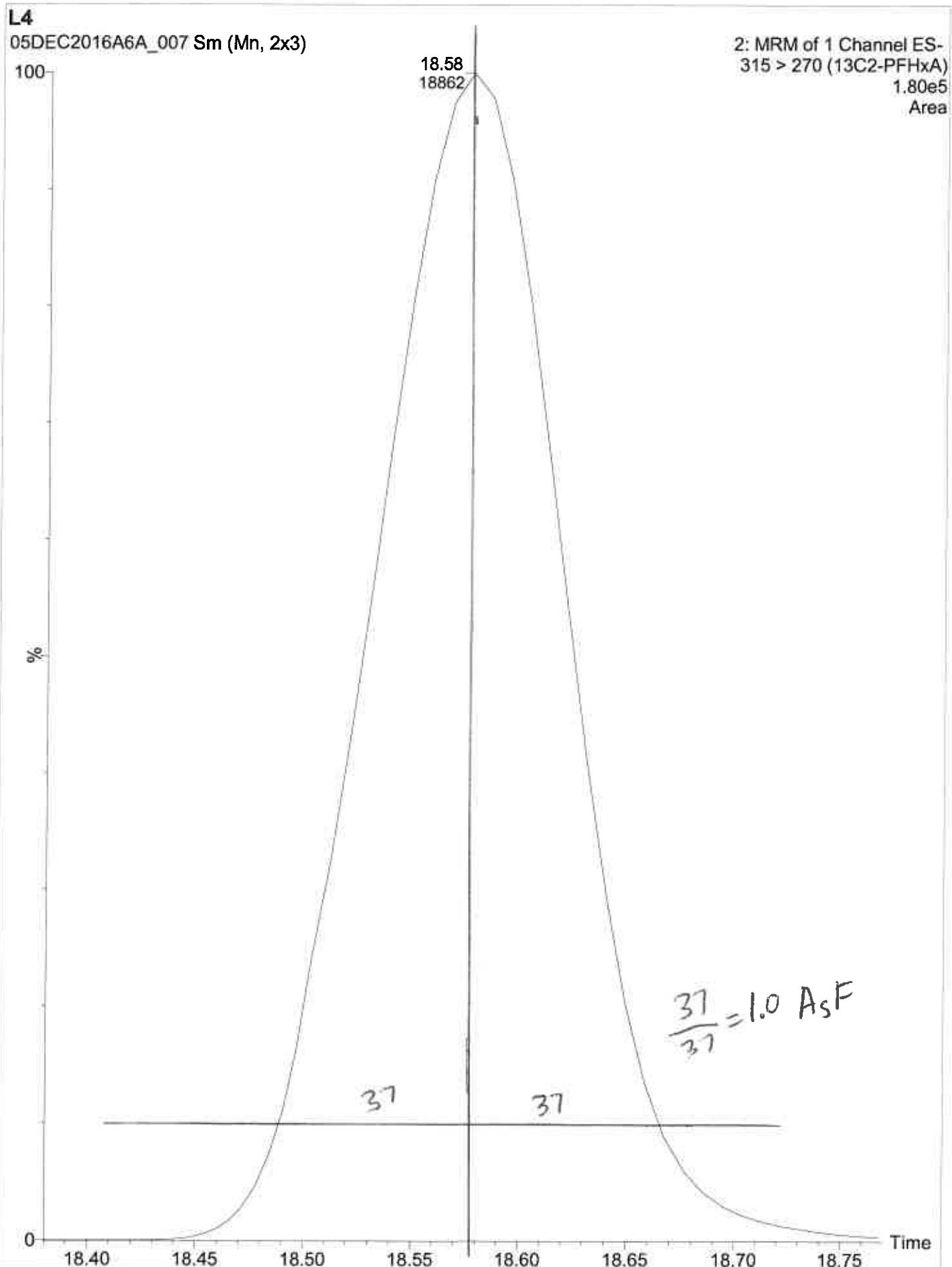
Calibration Start Date: 12/05/2016 17:26 Calibration End Date: 12/05/2016 19:54 Calibration ID: 26888

Calibration Files:

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

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





TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_004.d
 Lims ID: STD L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 05-Dec-2016 17:26:03 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: STD L1 L1
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:34 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

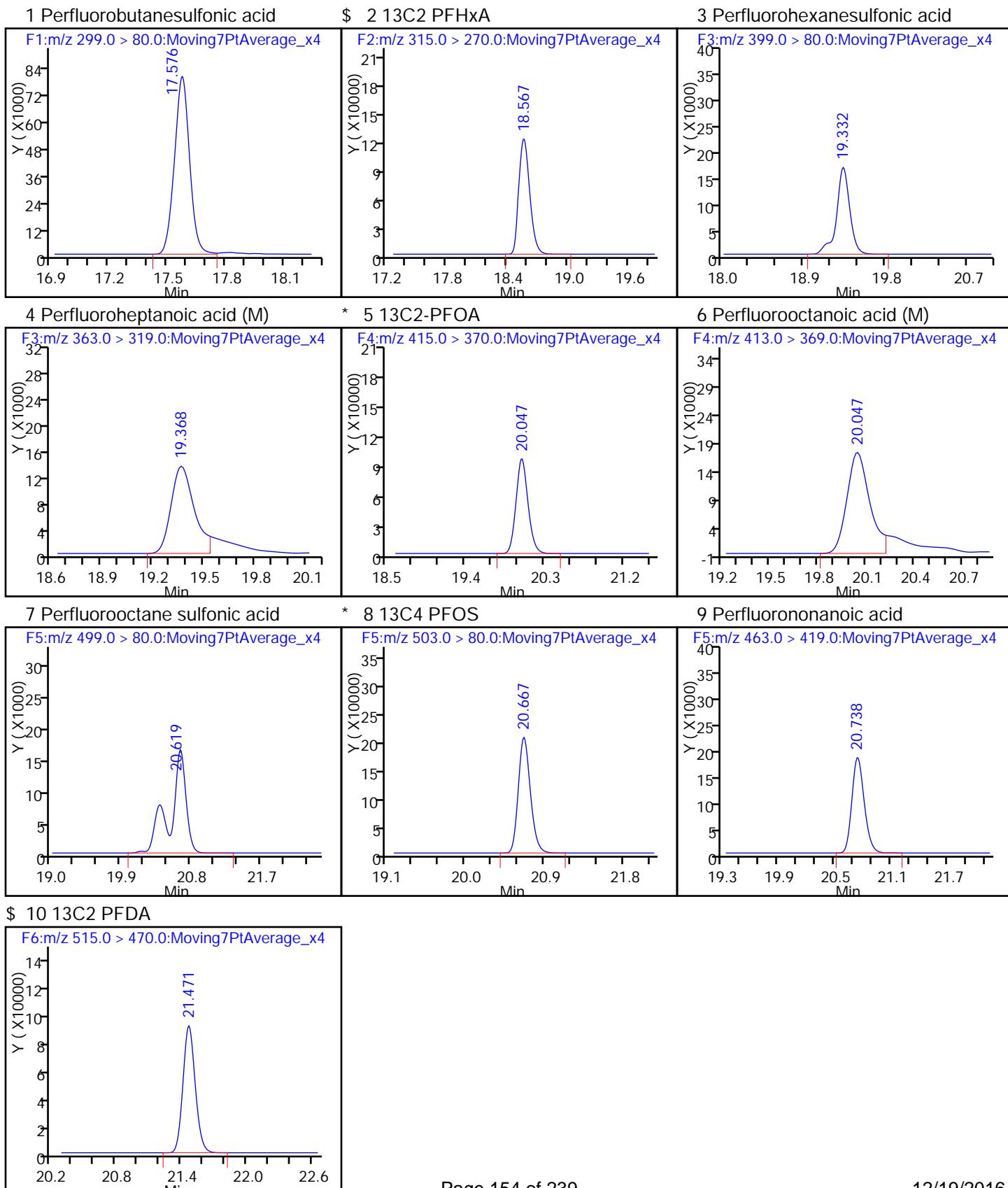
Reagents:

LC537-L1_00015

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_004.d
 Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6
 Lims ID: STD L1
 Client ID:
 Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento

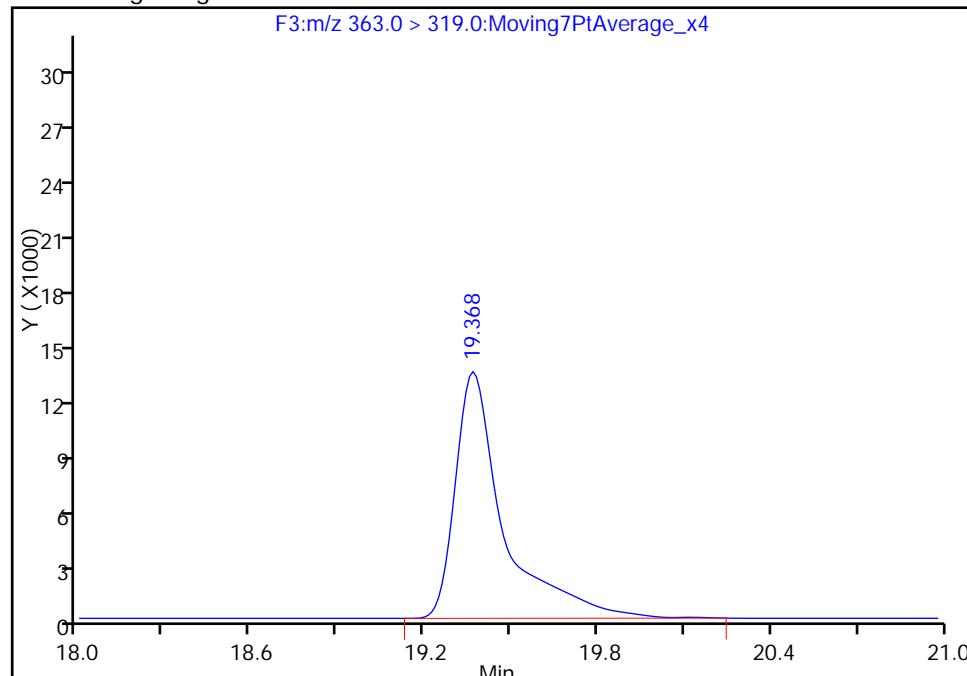
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 Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6
 Lims ID: STD L1
 Client ID:
 Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector: F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

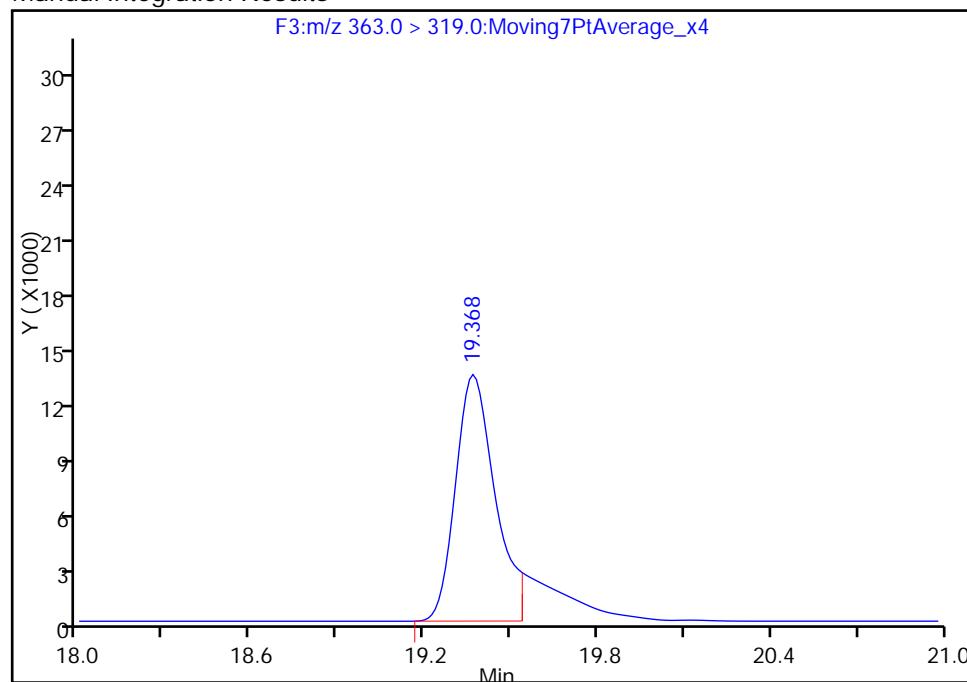
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 06-Dec-2016 10:00:02

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

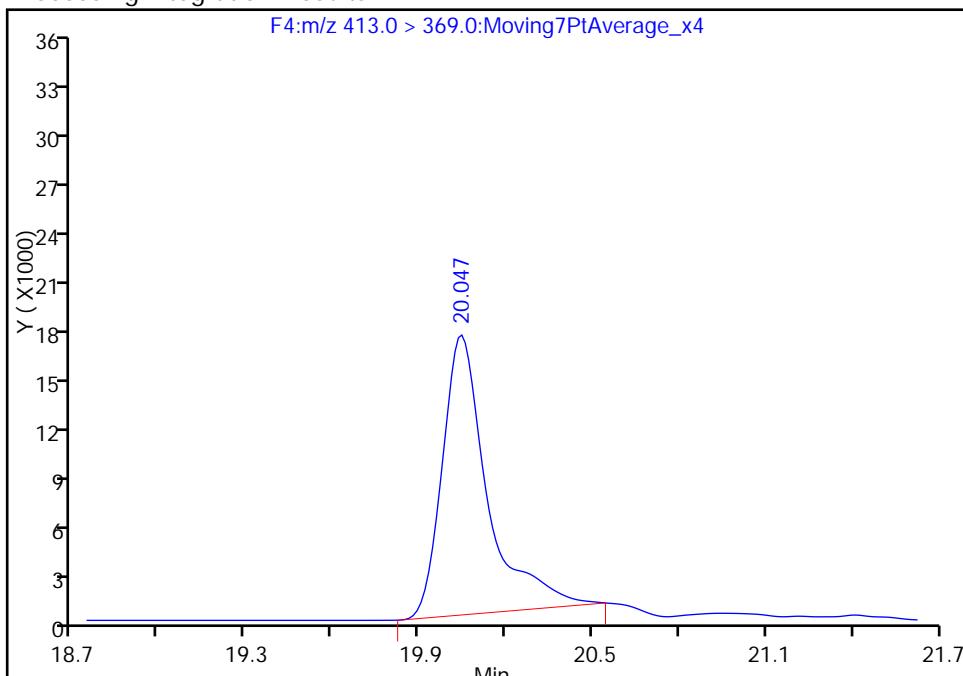
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_004.d
 Injection Date: 05-Dec-2016 17:26:03 Instrument ID: A6
 Lims ID: STD L1
 Client ID:
 Operator ID: CBW ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector: F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

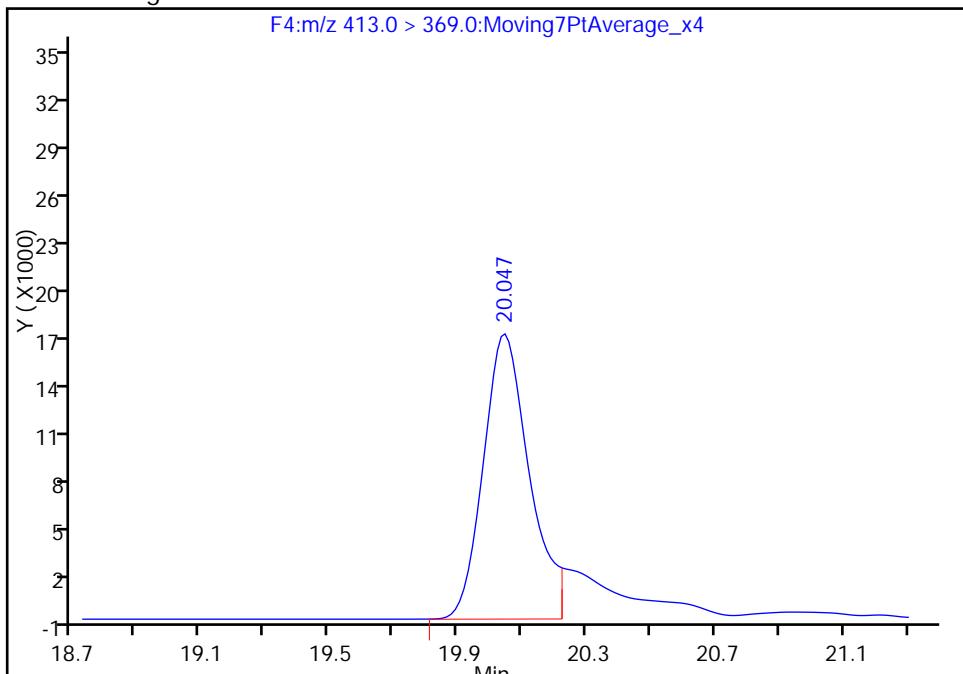
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 06-Dec-2016 10:00:02

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_005.d
 Lims ID: STD L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 05-Dec-2016 17:55:38 ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: STD L2 L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:35 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

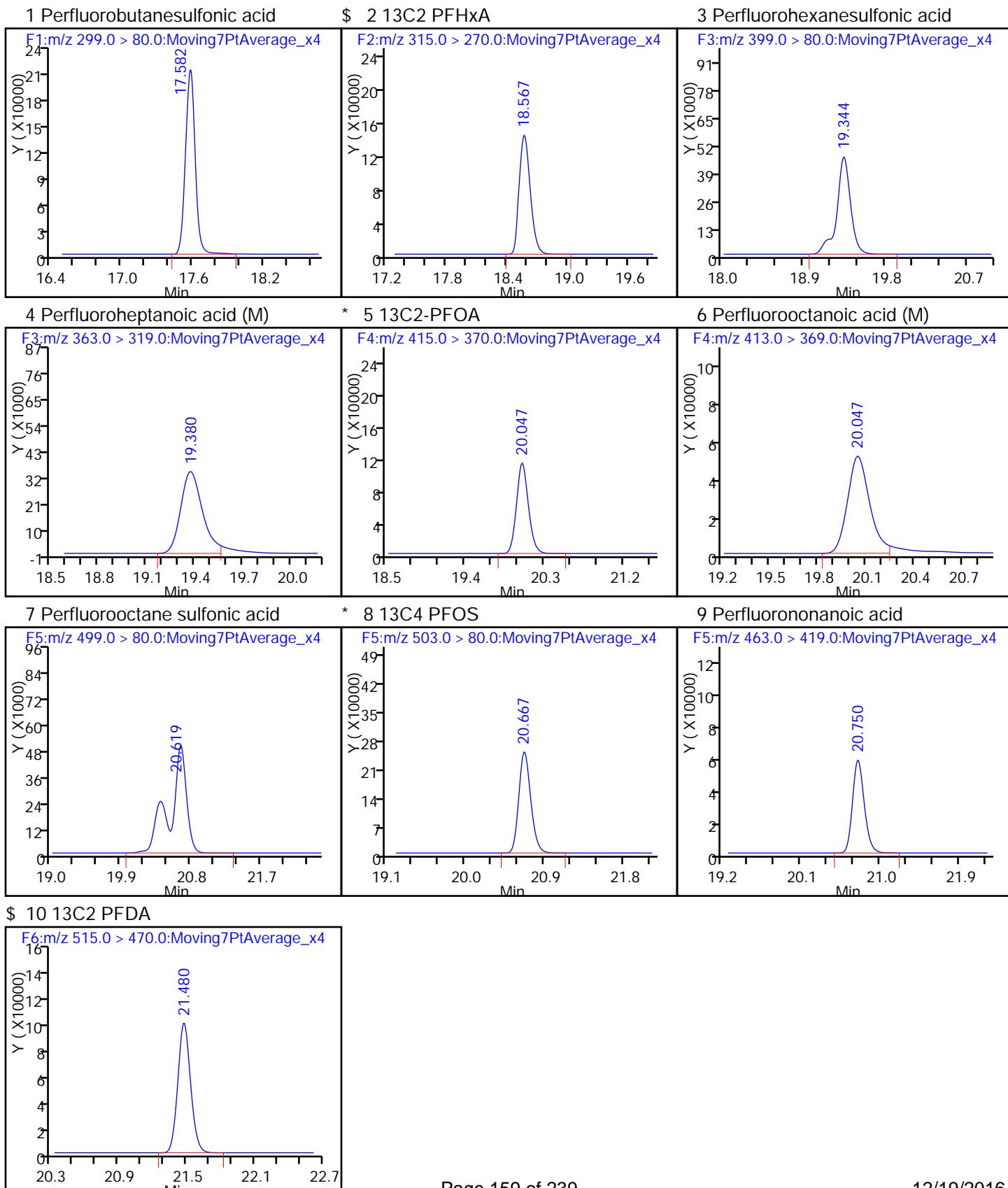
Reagents:

LC537-L2_00014

Amount Added: 1.00

Units: mL

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_005.d
 Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6
 Lims ID: STD L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento

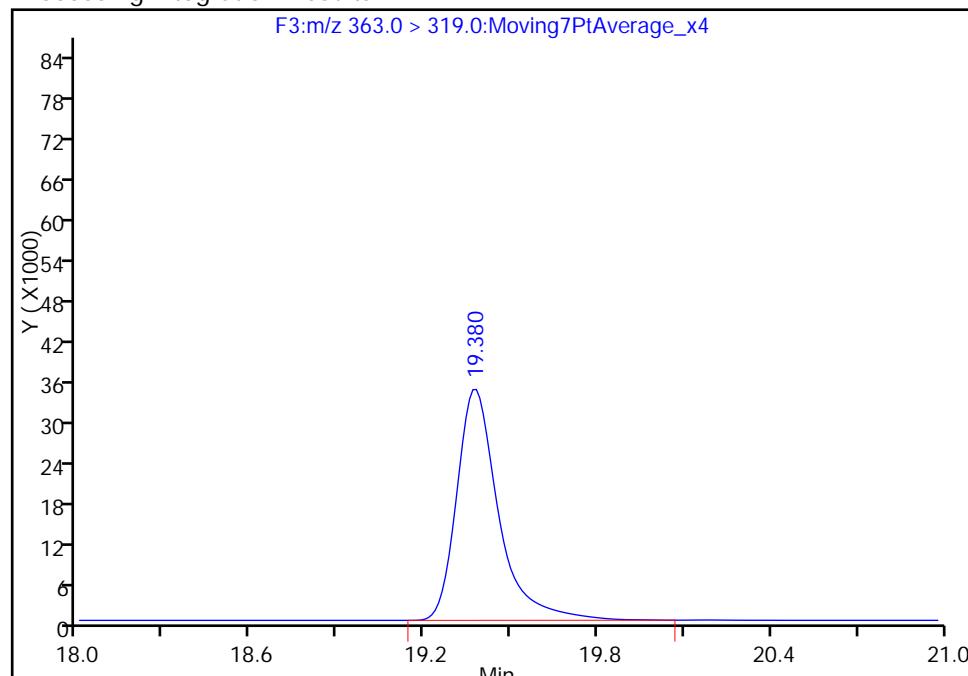
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 Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6
 Lims ID: STD L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector: F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

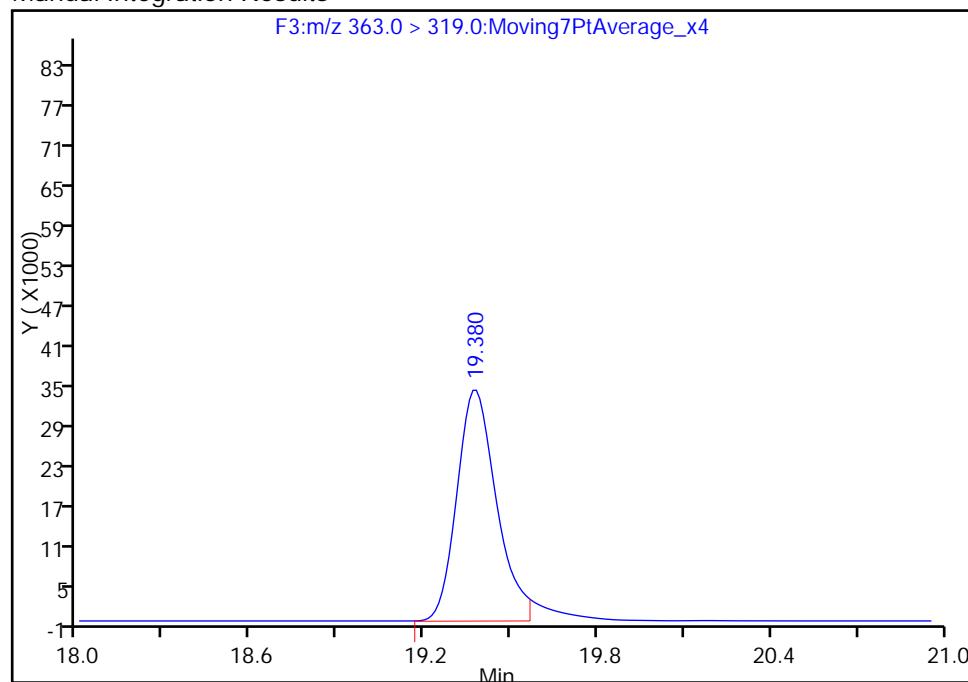
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 06-Dec-2016 10:03:30

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

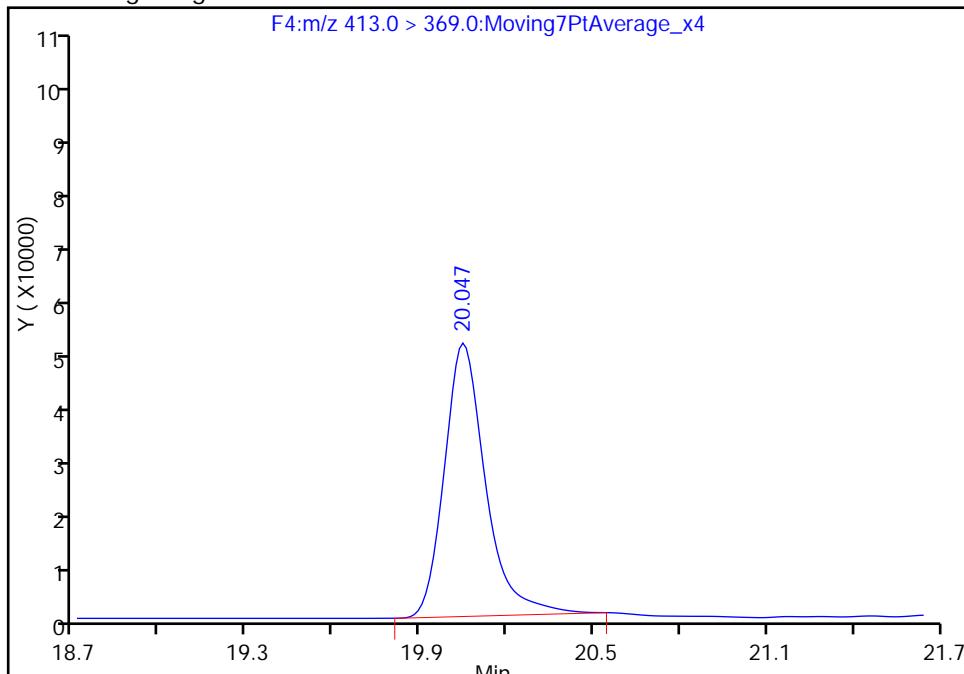
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_005.d
 Injection Date: 05-Dec-2016 17:55:38 Instrument ID: A6
 Lims ID: STD L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

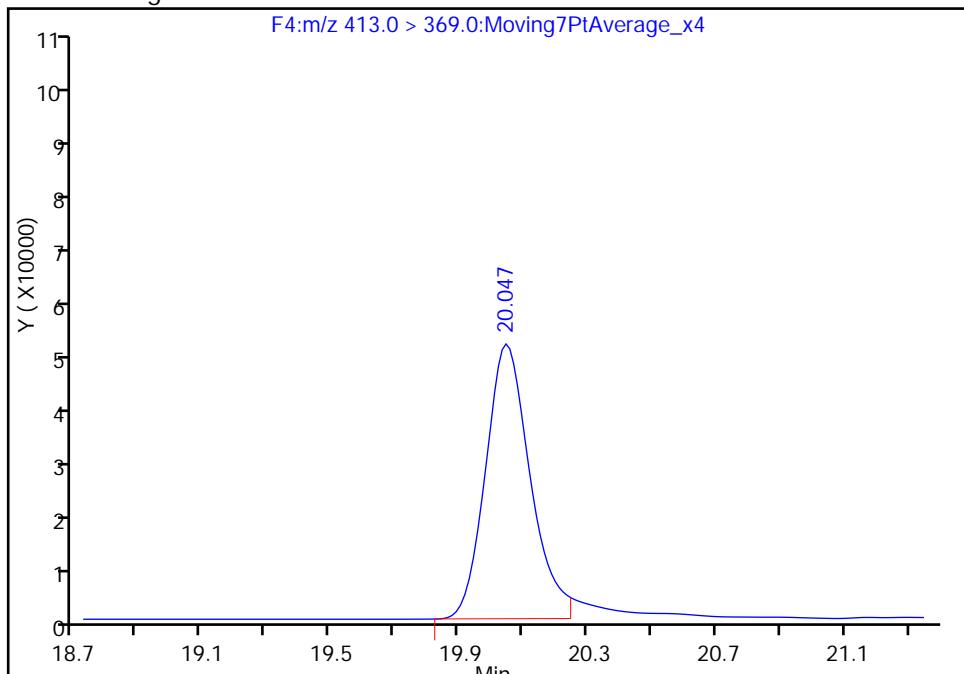
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 06-Dec-2016 10:03:30

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_006.d
 Lims ID: STD L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 05-Dec-2016 18:25:13 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: STD L3 L3
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:36 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

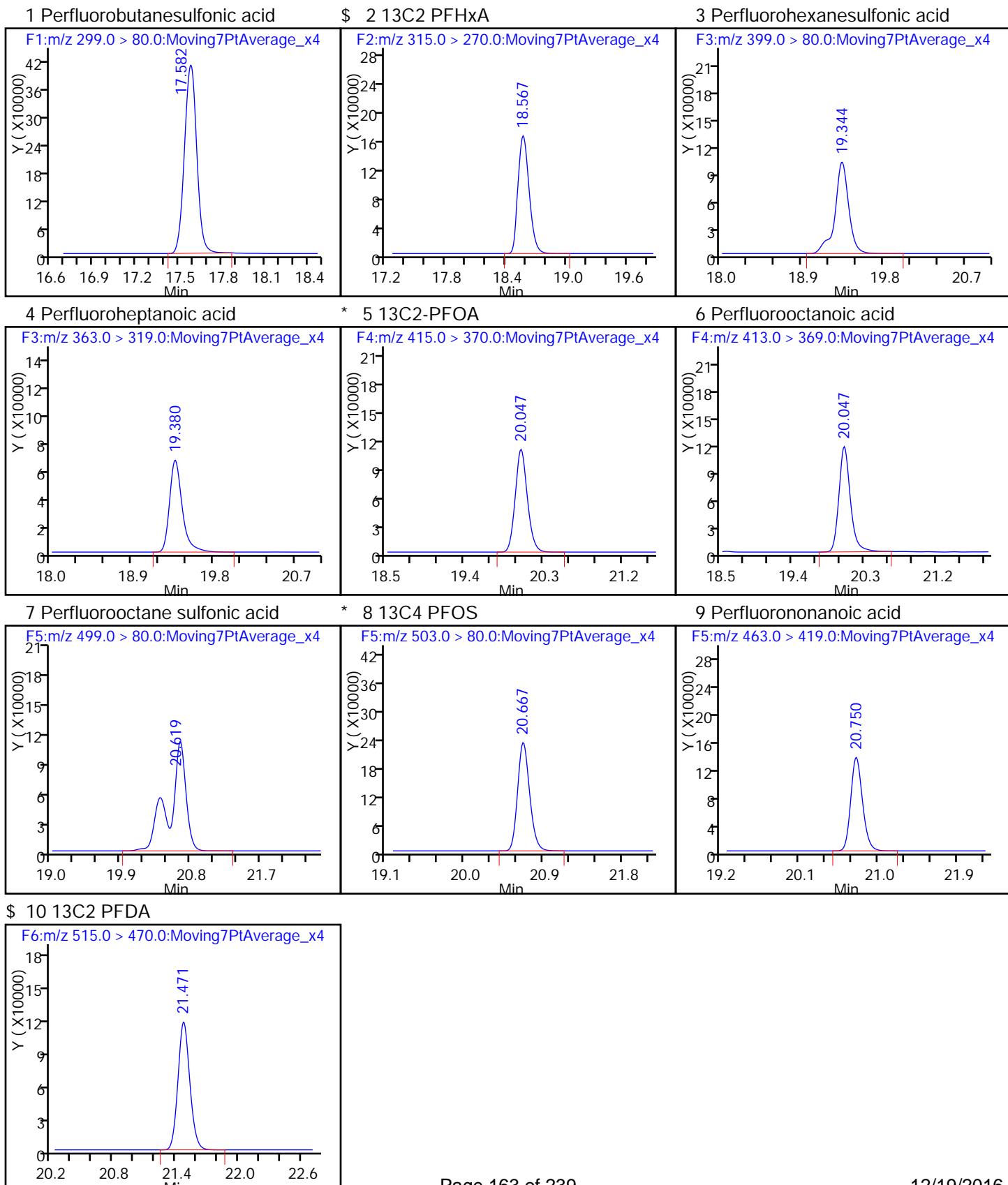
First Level Reviewer: barnettj Date: 06-Dec-2016 09:58:05

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

Reagents:

LC537-L3_00016 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_006.d
 Injection Date: 05-Dec-2016 18:25:13 Instrument ID: A6
 Lims ID: STD L3
 Client ID:
 Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_007.d
 Lims ID: STD L4
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 05-Dec-2016 18:54:48 ALS Bottle#: 4 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: STD L4 L4
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:37 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

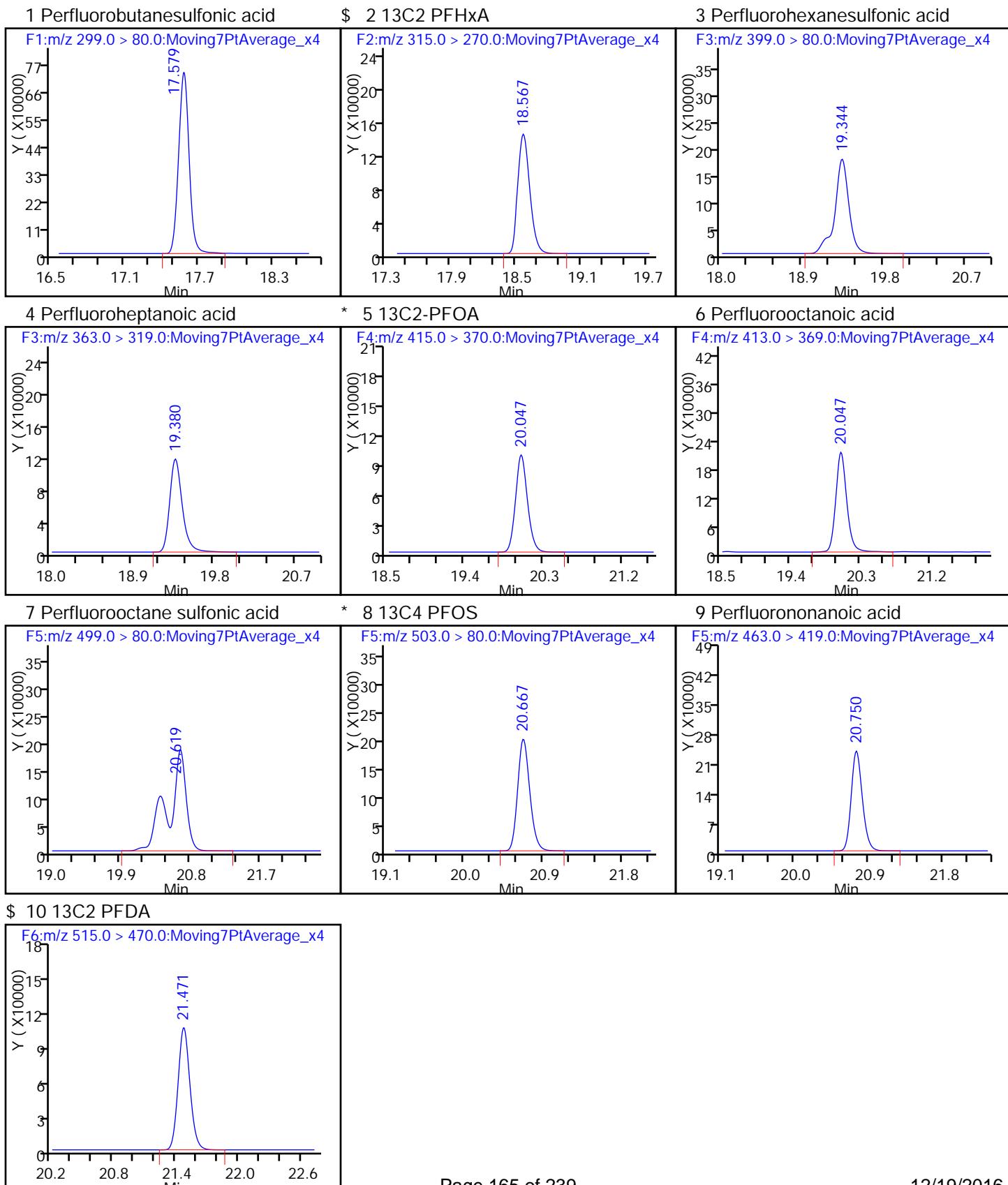
First Level Reviewer: barnettj Date: 06-Dec-2016 13:43:03

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

Reagents:

LC537-L4_00015 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_007.d
 Injection Date: 05-Dec-2016 18:54:48 Instrument ID: A6
 Lims ID: STD L4
 Client ID:
 Operator ID: CBW ALS Bottle#: 4 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_008.d
 Lims ID: STD L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 05-Dec-2016 19:24:23 ALS Bottle#: 5 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: STD L5 L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:38 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

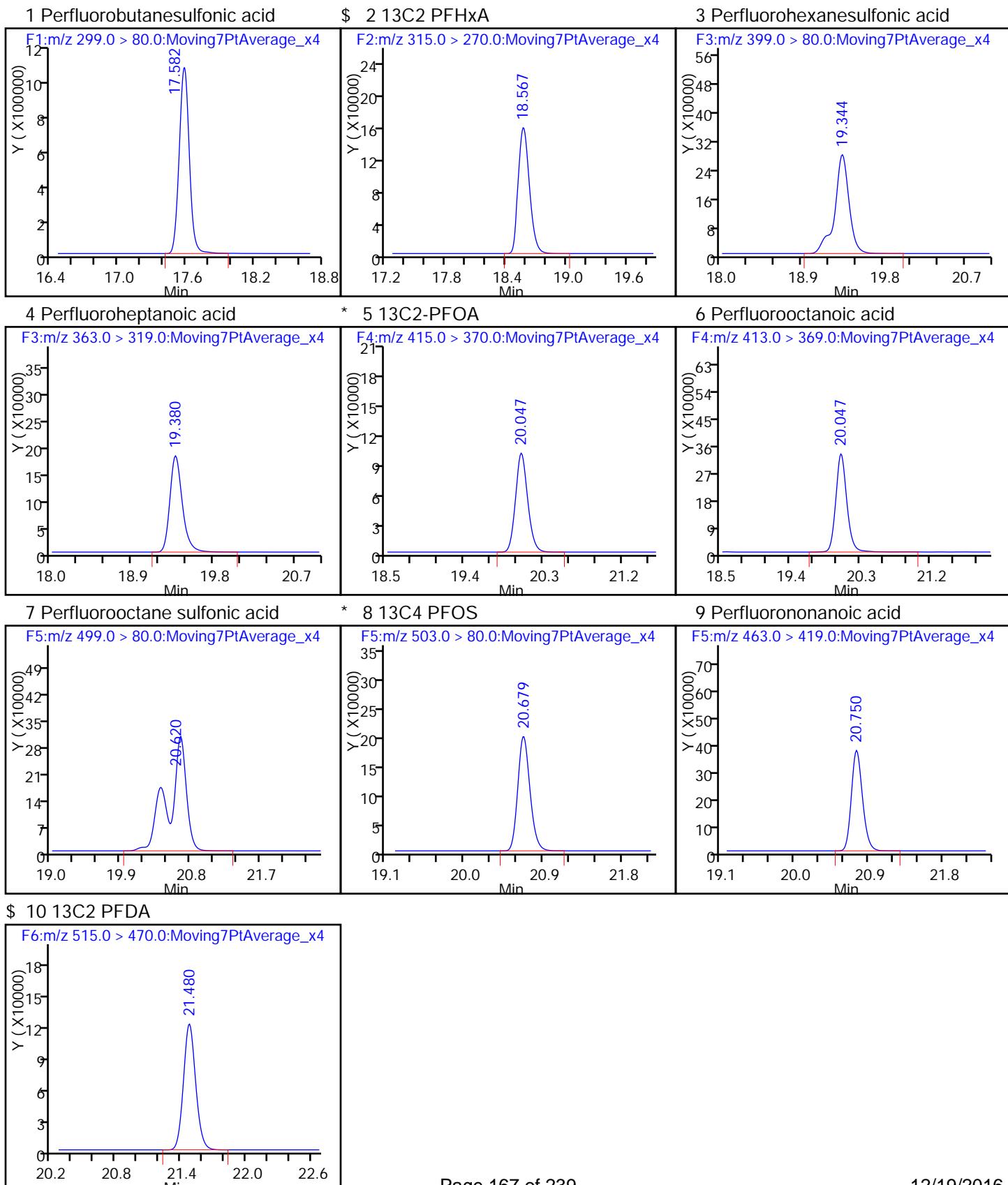
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid
 299.0 > 80.0 17.582 17.581 0.001 1.000 6630132 140.5 3208
 \$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.567 0.0 1.000 1240474 11.0 39454
 3 Perfluorohexanesulfonic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

Reagents:

LC537-L5_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_008.d
 Injection Date: 05-Dec-2016 19:24:23 Instrument ID: A6
 Lims ID: STD L5
 Client ID:
 Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Lims ID: STD L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 05-Dec-2016 19:54:00 ALS Bottle#: 6 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: STD L6 L6
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:39 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

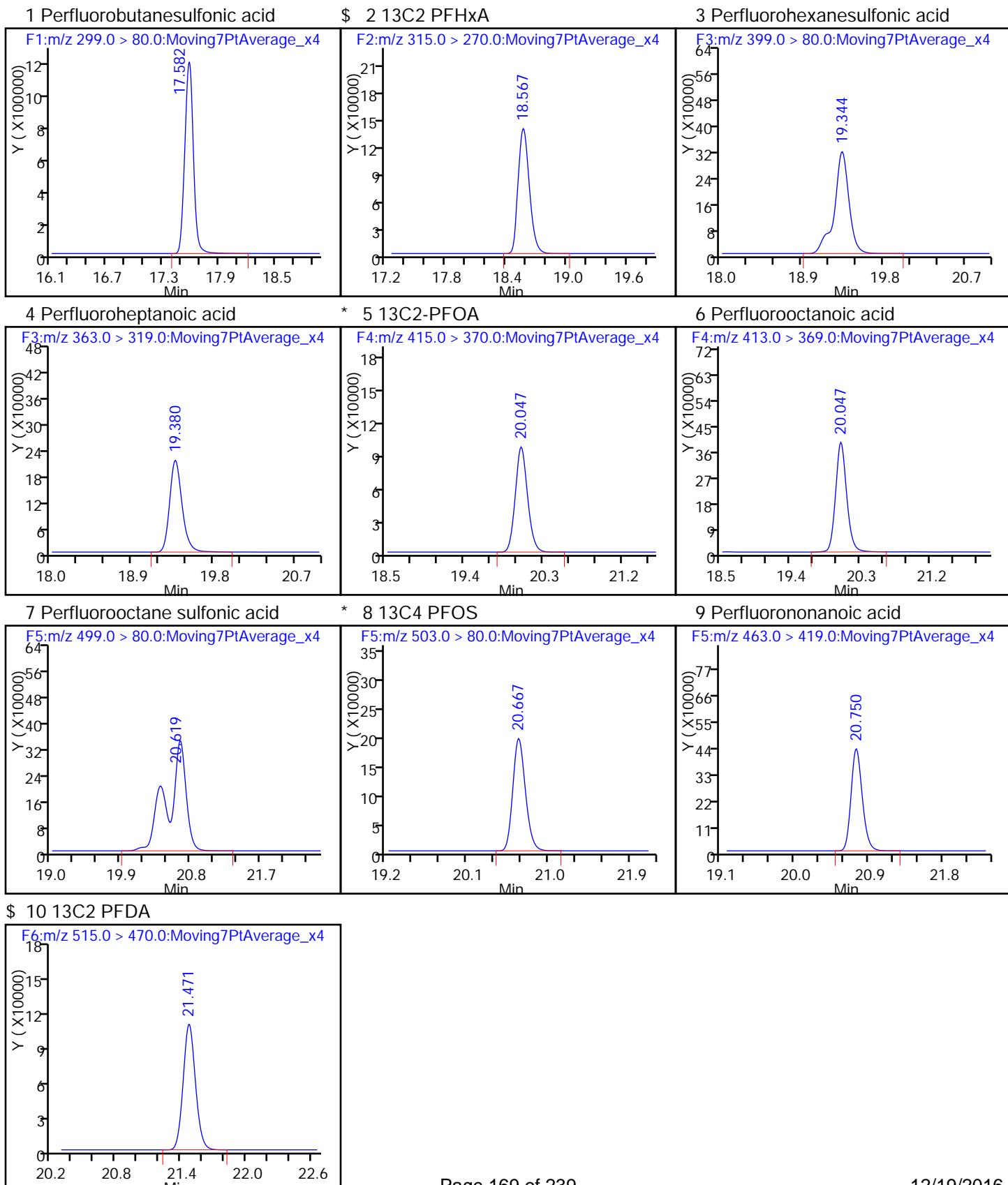
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid
 299.0 > 80.0 17.582 17.581 0.001 1.000 7753569 166.9 8570
 \$ 2 13C2 PFHxA
 315.0 > 270.0 18.567 18.567 0.0 1.000 1095977 10.4 34796
 3 Perfluorohexanesulfonic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

Reagents:

LC537-L6_00014 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Injection Date: 05-Dec-2016 19:54:00 Instrument ID: A6
 Lims ID: STD L6
 Client ID:
 Operator ID: CBW ALS Bottle#: 6 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: CCV 320-140688/9 Calibration Date: 12/05/2016 20:53
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 05DEC2016A6A_011.d Conc. Units: ng/mL

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_011.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 05-Dec-2016 20:53:12 ALS Bottle#: 2 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2 CCV L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:35:40 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

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

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

QC Flag Legend

Review Flags

M - Manually Integrated

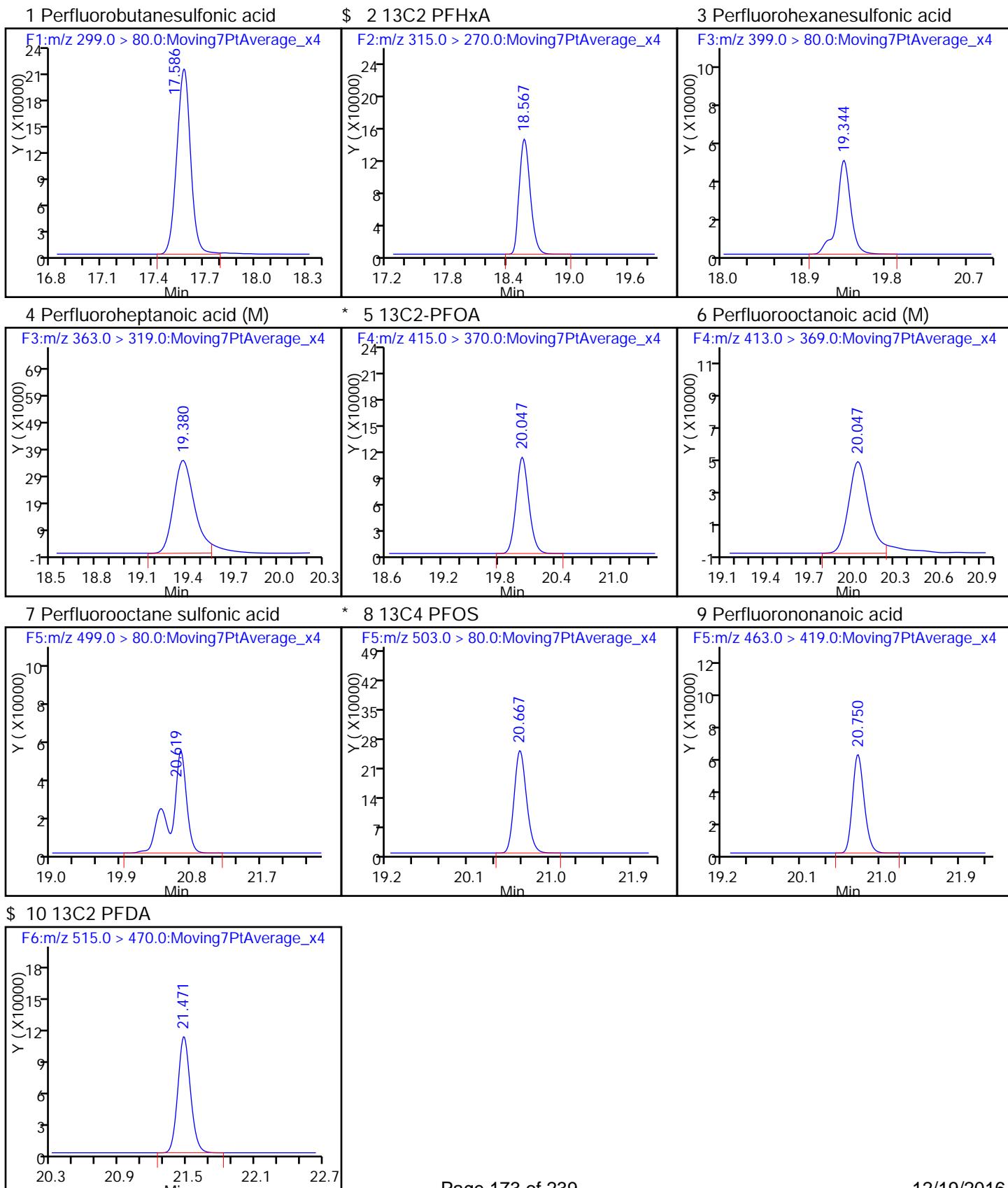
Reagents:

LC537-L2_00014

Amount Added: 1.00

Units: mL

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_011.d
 Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6
 Lims ID: CCV L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento

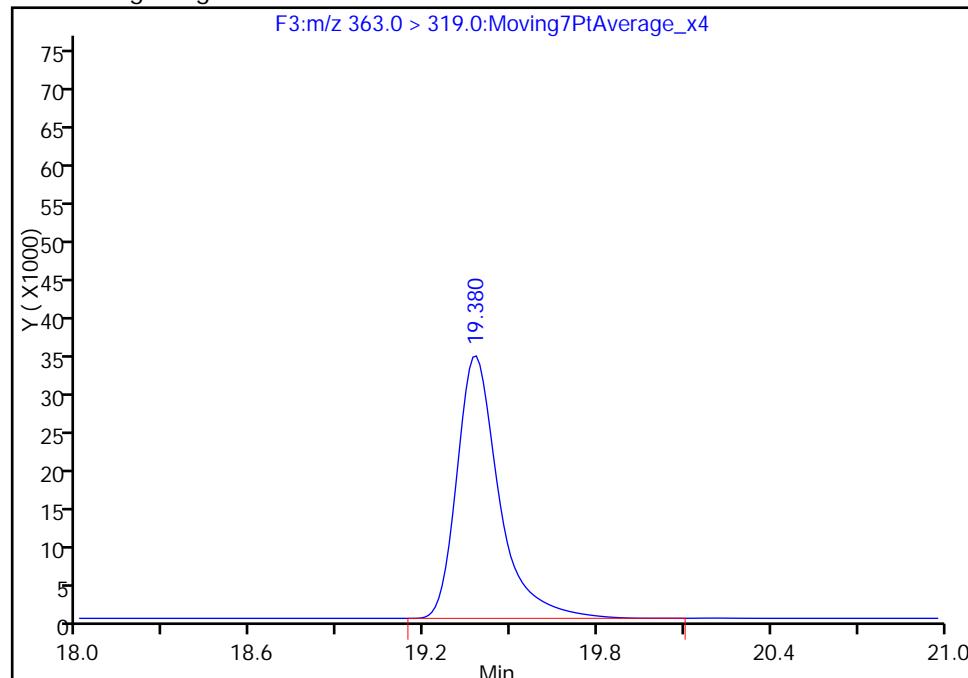
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_011.d
 Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6
 Lims ID: CCV L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector: F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

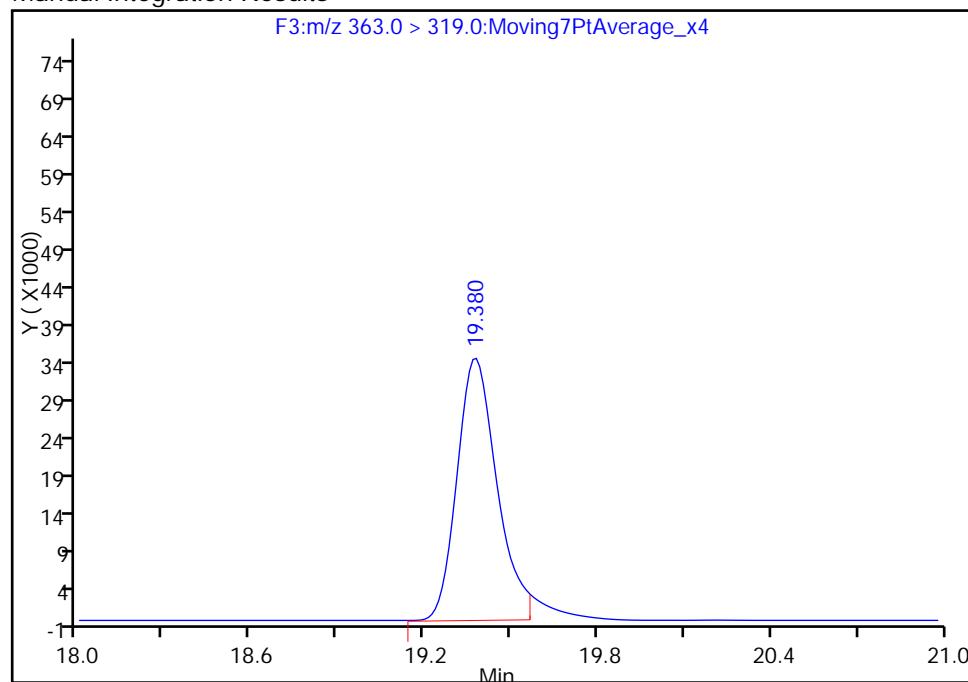
Processing Integration Results

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



Manual Integration Results

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



Reviewer: barnettj, 06-Dec-2016 10:08:33

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

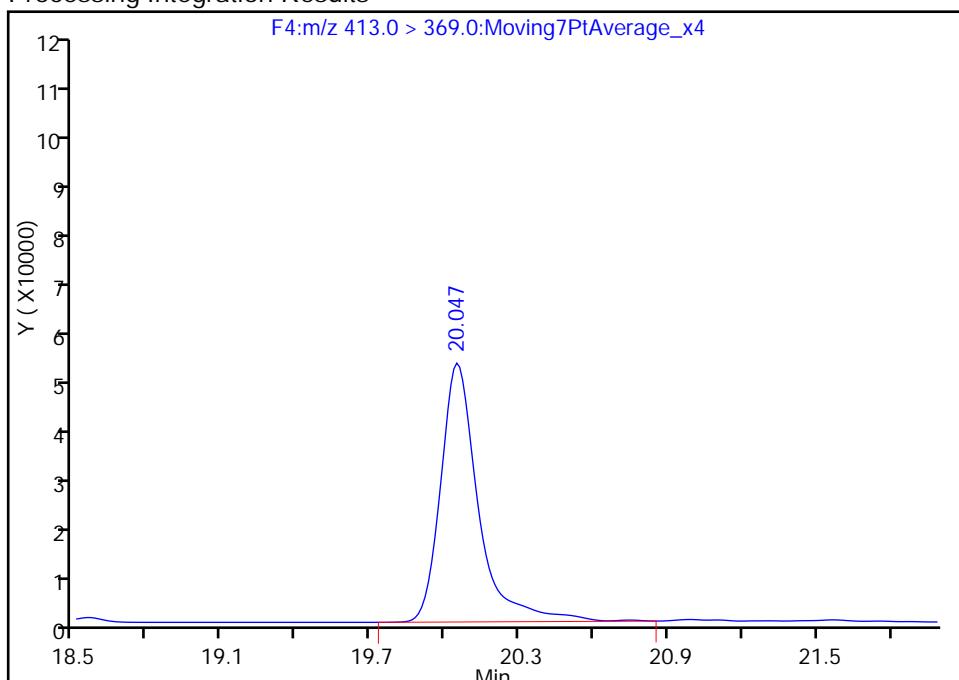
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_011.d
 Injection Date: 05-Dec-2016 20:53:12 Instrument ID: A6
 Lims ID: CCV L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 9
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector: F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

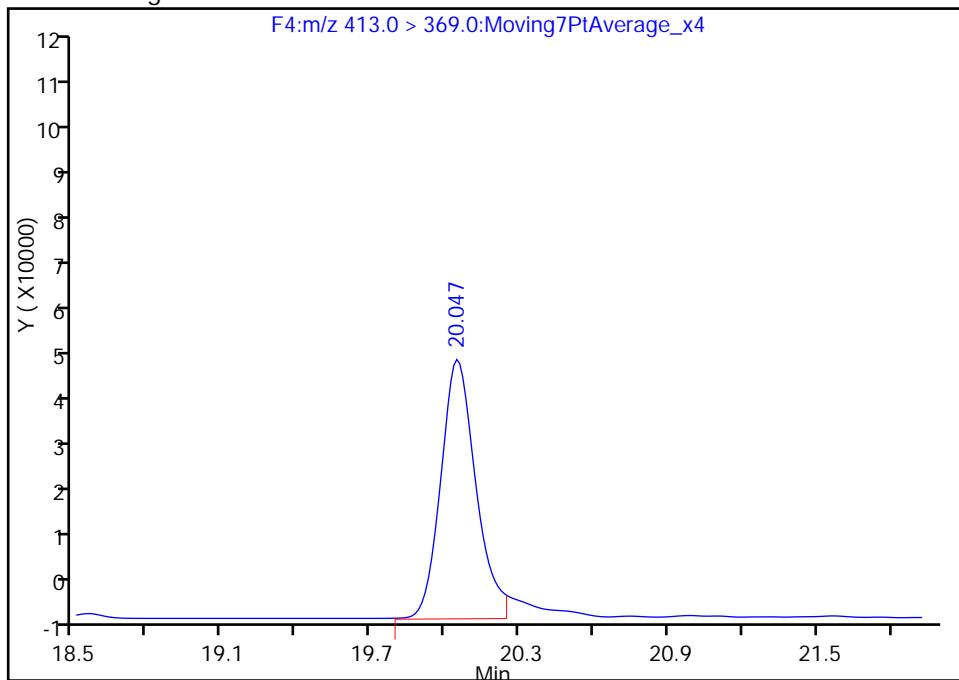
RT: 20.05
 Area: 520603
 Amount: 4.880820
 Amount Units: ng/ml

Processing Integration Results



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

Manual Integration Results



Reviewer: barnettj, 06-Dec-2016 10:08:33

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: ICV 320-140688/11 Calibration Date: 12/05/2016 21:52
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 05DEC2016A6A_013.d Conc. Units: ng/mL

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

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_013.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 05-Dec-2016 21:52:24 ALS Bottle#: 7 Worklist Smp#: 11
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: ICV ICV
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist:
 Method: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 06-Dec-2016 16:53:23 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK024

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

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

Reagents:

LC537-ICV_00017 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_013.d

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

Instrument ID: A6

Lims ID: ICV

Client ID:

Operator ID: CBW

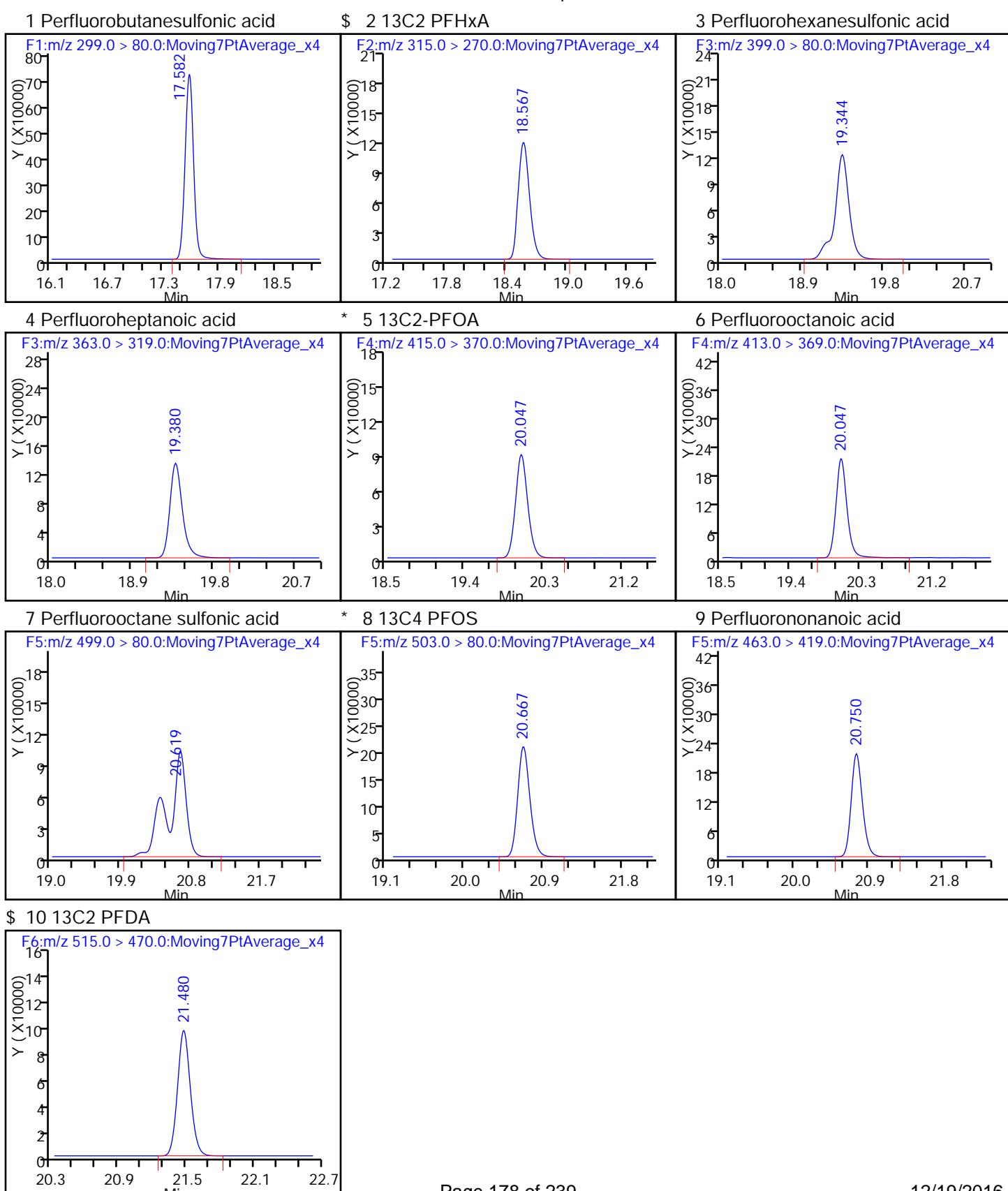
ALS Bottle#: 7 Worklist Smp#: 11

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

Method: 537_A6

Limit Group: LC 537 ICAL



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: CCV 320-142223/2 Calibration Date: 12/15/2016 08:03
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 15DEC2016A6A_002.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.6594		21.5	22.9	-6.0	50.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.7732		6.64	7.72	-13.9	50.0
Perfluoroheptanoic acid	Ave	1.215	1.277		2.73	2.60	5.1	50.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	0.9458		4.70	5.17	-9.1	50.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	0.8565		8.38	10.2	-18.0	50.0
Perfluorononanoic acid	Ave	1.134	1.091		4.82	5.01	-3.8	50.0
13C2 PFHxA	Ave	1.167	1.058		9.07	10.0	-9.3	30.0
13C2 PFDA	Ave	0.8763	0.8545		9.75	10.0	-2.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_002.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 15-Dec-2016 08:03:38 ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2 CCV L2
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:12 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:05:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0 17.599 17.599 0.0	1.000	845450	21.5	510				
\$ 2 13C2 PFHxA								
315.0 > 270.0 18.585 18.585 0.0	1.000	651205	9.07	21190				
3 Perfluorohexanesulfonic acid								
399.0 > 80.0 19.344 19.344 0.0	1.000	334175	6.64	7885				
4 Perfluoroheptanoic acid							M	
363.0 > 319.0 19.380 19.380 0.0	1.000	204042	2.73	115	M			
* 5 13C2-PFOA								
415.0 > 370.0 20.035 20.035 0.0		615516	10.0	64218				
6 Perfluorooctanoic acid							M	
413.0 > 369.0 20.047 20.047 0.0	1.000	301061	4.70	99.5	M			
7 Perfluorooctane sulfonic acid								
499.0 > 80.0 20.619 20.619 0.0	1.000	490144	8.38	6418				
* 8 13C4 PFOS								
503.0 > 80.0 20.667 20.667 0.0		1606471	28.7	33387				
9 Perfluorononanoic acid								
463.0 > 419.0 20.738 20.738 0.0	1.000	336444	4.82	9088				
\$ 10 13C2 PFDA								
515.0 > 470.0 21.471 21.471 0.0	1.000	525960	9.75	16666				

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LC537-L2_00014

Amount Added: 1.00

Units: mL

Report Date: 15-Dec-2016 15:21:12

Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_002.d

Injection Date: 15-Dec-2016 08:03:38

Instrument ID: A6

Lims ID: CCV L2

Client ID:

Operator ID: CBW

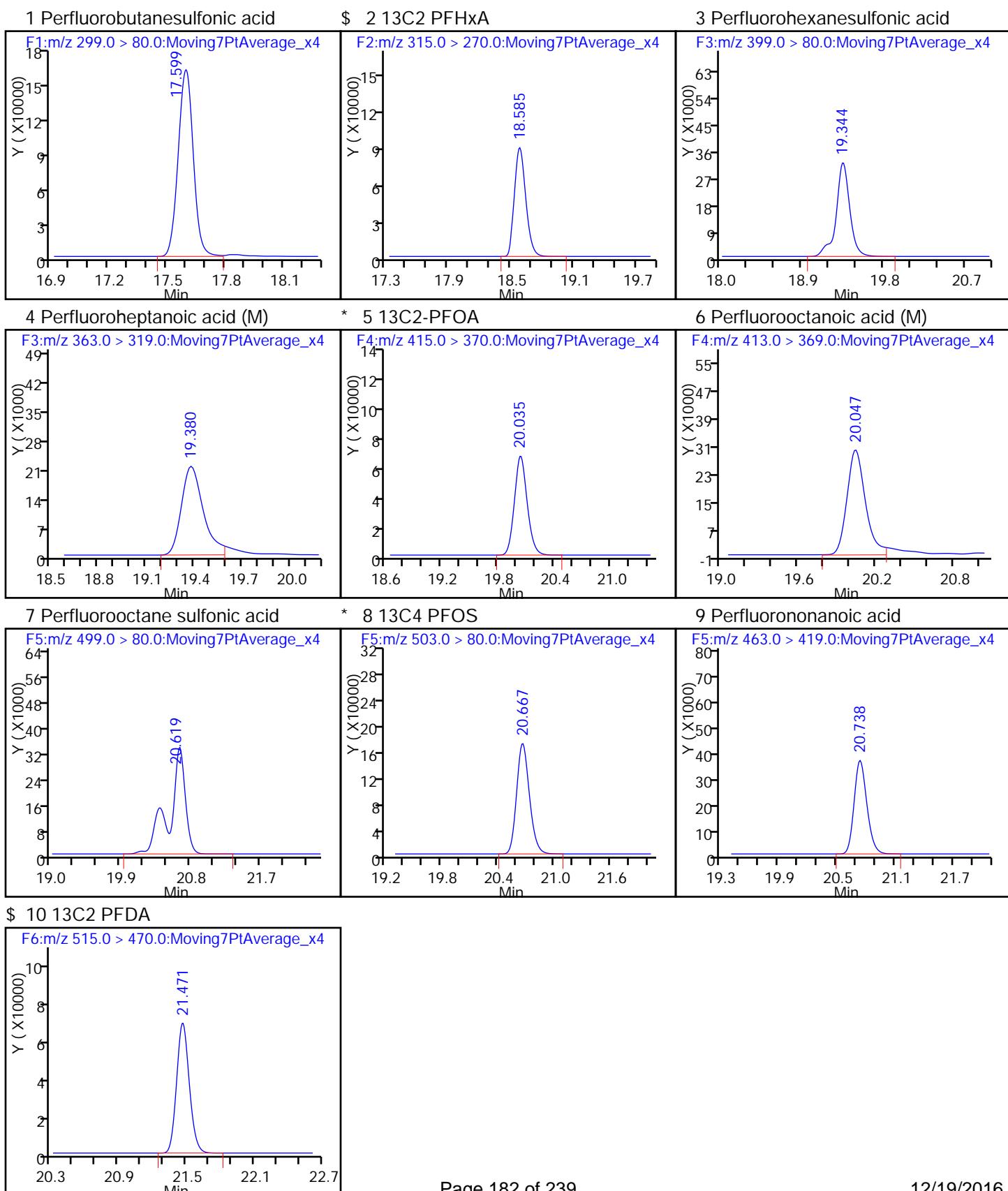
ALS Bottle#: 2 Worklist Smp#: 2

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

Method: 537_A6

Limit Group: LC 537 ICAL



TestAmerica Sacramento

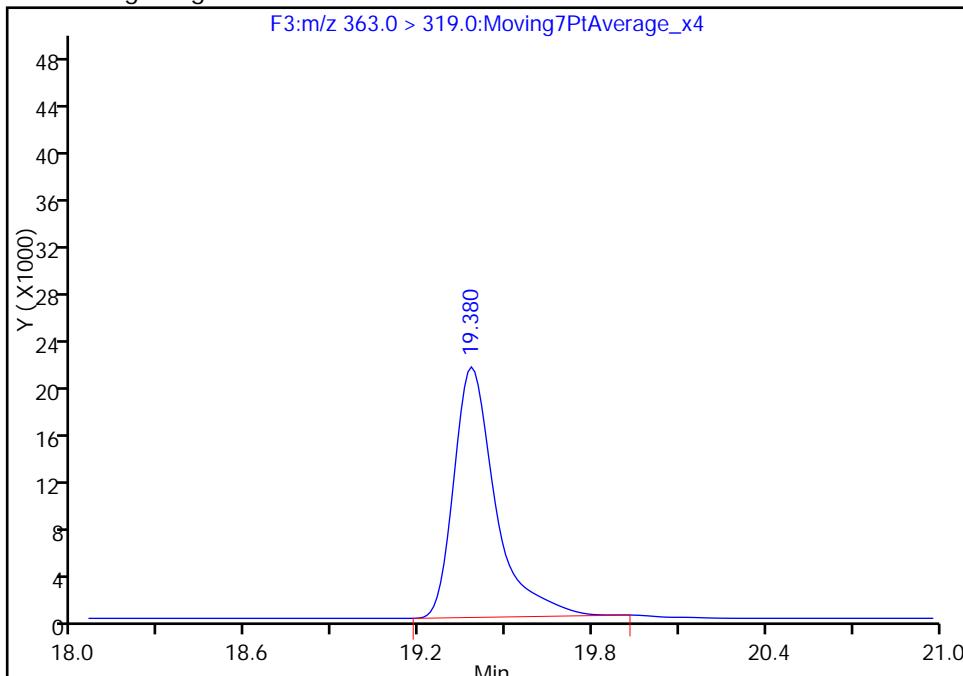
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_002.d
 Injection Date: 15-Dec-2016 08:03:38 Instrument ID: A6
 Lims ID: CCV L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F3:MRM

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

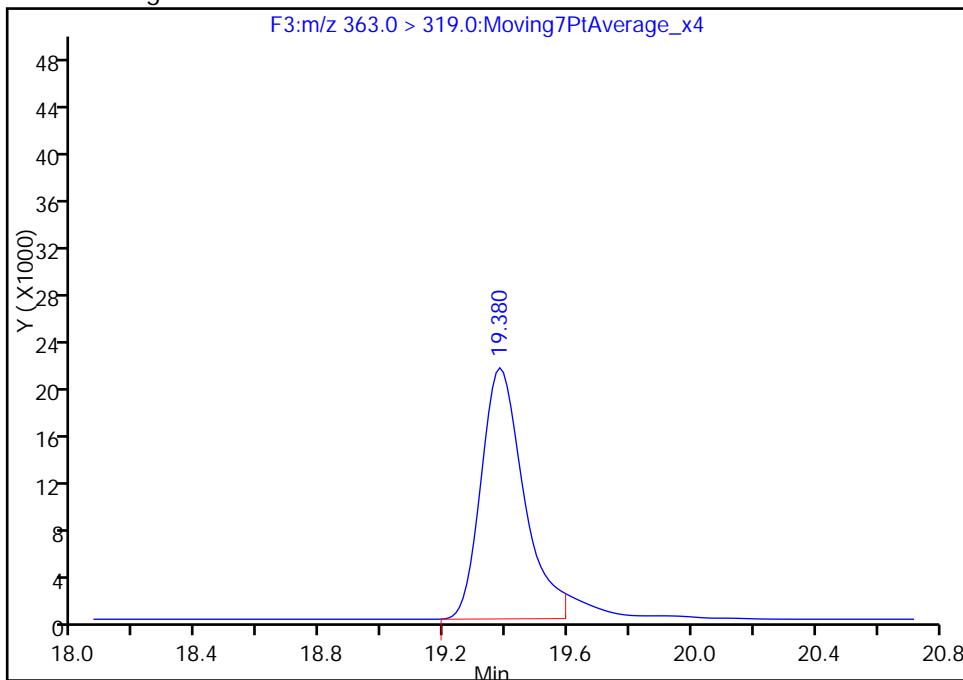
Processing Integration Results

RT: 19.38
 Area: 213658
 Amount: 2.856649
 Amount Units: ng/ml



Manual Integration Results

RT: 19.38
 Area: 204042
 Amount: 2.728081
 Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:05:28

Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

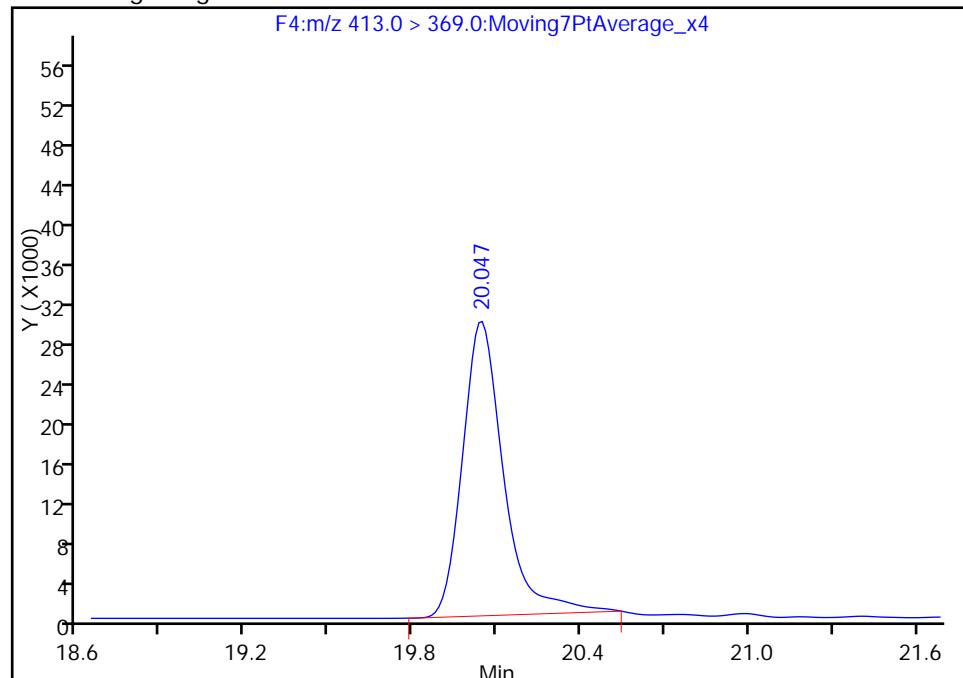
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_002.d
 Injection Date: 15-Dec-2016 08:03:38 Instrument ID: A6
 Lims ID: CCV L2
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

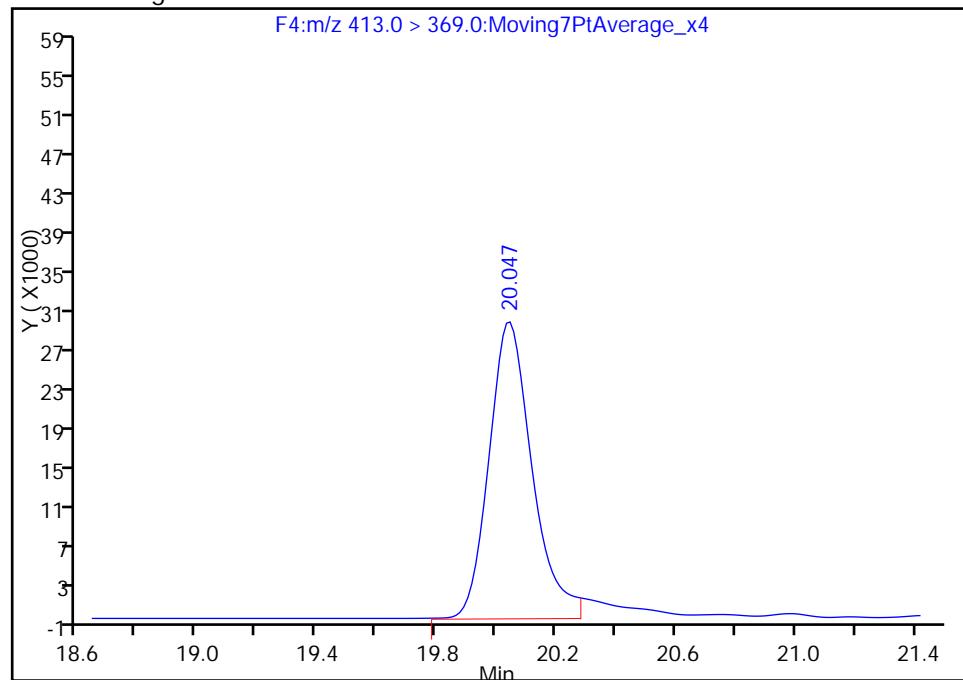
Processing Integration Results

RT: 20.05
 Area: 303357
 Amount: 4.737006
 Amount Units: ng/ml



Manual Integration Results

RT: 20.05
 Area: 301061
 Amount: 4.701153
 Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:05:28

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: CCV 320-142223/3 Calibration Date: 12/15/2016 08:33
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 15DEC2016A6A_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7551		48.6	45.1	7.6	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.9703		16.4	15.2	8.0	30.0
Perfluoroheptanoic acid	Ave	1.215	1.259		5.30	5.12	3.6	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.059		10.4	10.2	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.060		20.4	20.1	1.5	30.0
Perfluorononanoic acid	Ave	1.134	1.188		10.3	9.87	4.7	30.0
13C2 PFHxA	Ave	1.167	1.154		9.89	10.0	-1.1	30.0
13C2 PFDA	Ave	0.8763	0.9259		10.6	10.0	5.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_003.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 08:33:13 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3 CCV L3
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:12:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0 17.599 17.599 0.0	1.000	2014487	48.6	770				
\$ 2 13C2 PFHxA								
315.0 > 270.0 18.585 18.585 0.0	1.000	886493	9.89	28462				
3 Perfluorohexanesulfonic acid								
399.0 > 80.0 19.356 19.356 0.0	1.000	872550	16.4	20461				
4 Perfluoroheptanoic acid								
363.0 > 319.0 19.380 19.380 0.0	1.000	494692	5.30	5574				
* 5 13C2-PFOA								
415.0 > 370.0 20.047 20.047 0.0		768124	10.0	19781				
6 Perfluorooctanoic acid								
413.0 > 369.0 20.047 20.047 0.0	1.000	828809	10.4	337				
7 Perfluorooctane sulfonic acid								
499.0 > 80.0 20.620 20.620 0.0	1.000	1262214	20.4	10046				
* 8 13C4 PFOS								
503.0 > 80.0 20.667 20.667 0.0		1696317	28.7	43758				
9 Perfluorononanoic acid								
463.0 > 419.0 20.738 20.738 0.0	1.000	900814	10.3	23776				
\$ 10 13C2 PFDA								
515.0 > 470.0 21.471 21.471 0.0	1.000	711180	10.6	22182				

Reagents:

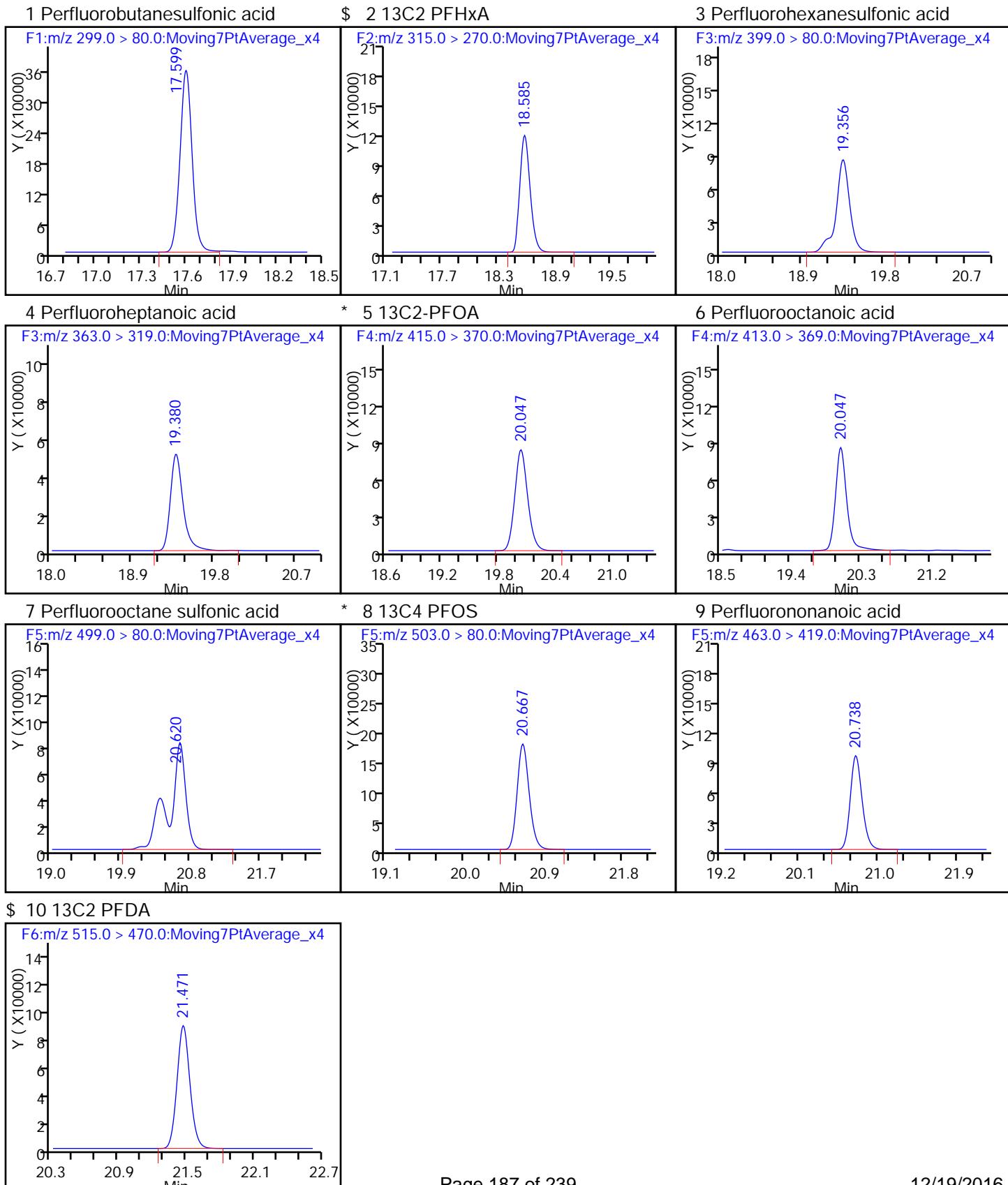
LC537-L3_00016 Amount Added: 1.00 Units: mL

Report Date: 15-Dec-2016 15:21:13

Chrom Revision: 2.2 05-Dec-2016 12:37:22

TestAmerica Sacramento

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_003.d
 Injection Date: 15-Dec-2016 08:33:13 Instrument ID: A6
 Lims ID: CCV L3
 Client ID:
 Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: CCV 320-142223/15 Calibration Date: 12/15/2016 14:55
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 15DEC2016A6A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7398		142	135	5.5	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	1.022		51.6	45.4	13.8	30.0
Perfluoroheptanoic acid	Ave	1.215	1.220		15.3	15.3	0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.121		32.8	30.4	7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.242		71.5	60.1	19.0	30.0
Perfluorononanoic acid	Ave	1.134	1.227		31.9	29.5	8.2	30.0
13C2 PFHxA	Ave	1.167	1.290		11.1	10.0	10.6	30.0
13C2 PFDA	Ave	0.8763	1.020		11.6	10.0	16.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: CCV 320-142412/15 Calibration Date: 12/15/2016 14:55
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 15DEC2016A6A_015.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid (PFBS)	Ave	0.7015	0.7398		142	135	5.5	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	1.022		51.6	45.4	13.8	30.0
Perfluoroheptanoic acid	Ave	1.215	1.220		15.3	15.3	0.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.121		32.8	30.4	7.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.242		71.5	60.1	19.0	30.0
Perfluorononanoic acid	Ave	1.134	1.227		31.9	29.5	8.2	30.0
13C2 PFHxA	Ave	1.167	1.290		11.1	10.0	10.6	30.0
13C2 PFDA	Ave	0.8763	1.020		11.6	10.0	16.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_015.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 14:55:15 ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5 CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:25:16 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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1 Perfluorobutanesulfonic acid
 299.0 > 80.0 17.595 17.595 0.0 1.000 6118449 142.0 5318
 \$ 2 13C2 PFHxA
 315.0 > 270.0 18.576 18.576 0.0 1.000 1099847 11.1 23812
 3 Perfluorohexanesulfonic acid
 399.0 > 80.0 19.344 19.344 0.0 1.000 2848894 51.6 64414
 4 Perfluoroheptanoic acid
 363.0 > 319.0 19.380 19.380 0.0 1.000 1587667 15.3 20627
 * 5 13C2-PFOA
 415.0 > 370.0 20.035 20.035 0.0 1.000 852323 10.0 22004
 6 Perfluorooctanoic acid
 413.0 > 369.0 20.035 20.035 0.0 1.000 2905704 32.8 1201
 7 Perfluorooctane sulfonic acid
 499.0 > 80.0 20.619 20.619 0.0 1.000 4586555 71.5 31656
 * 8 13C4 PFOS
 503.0 > 80.0 20.667 20.667 0.0 1.000 1761780 28.7 44925
 9 Perfluorononanoic acid
 463.0 > 419.0 20.738 20.738 0.0 1.000 3082852 31.9 36149
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.471 21.471 0.0 1.000 869586 11.6 27354

Reagents:

LC537-L5_00017 Amount Added: 1.00 Units: mL

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_015.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 14:55:15 ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5 CCV L5
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:25:16 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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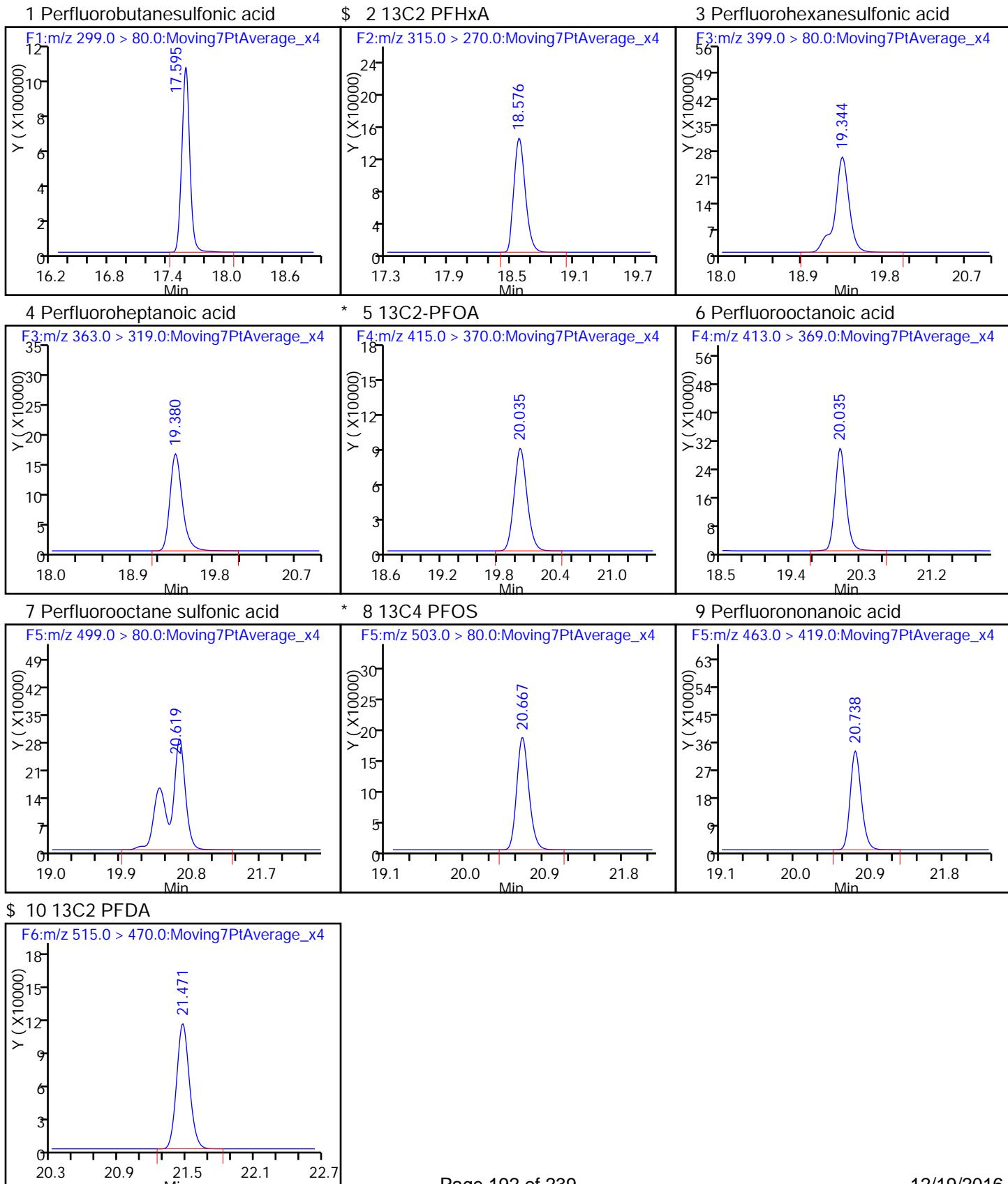
1 Perfluorobutanesulfonic acid
 299.0 > 80.0 17.595 17.595 0.0 1.000 6118449 142.0 5318
 \$ 2 13C2 PFHxA
 315.0 > 270.0 18.576 18.576 0.0 1.000 1099847 11.1 23812
 3 Perfluorohexanesulfonic acid
 399.0 > 80.0 19.344 19.344 0.0 1.000 2848894 51.6 64414
 4 Perfluoroheptanoic acid
 363.0 > 319.0 19.380 19.380 0.0 1.000 1587667 15.3 20627
 * 5 13C2-PFOA
 415.0 > 370.0 20.035 20.035 0.0 1.000 852323 10.0 22004
 6 Perfluorooctanoic acid
 413.0 > 369.0 20.035 20.035 0.0 1.000 2905704 32.8 1201
 7 Perfluorooctane sulfonic acid
 499.0 > 80.0 20.619 20.619 0.0 1.000 4586555 71.5 31656
 * 8 13C4 PFOS
 503.0 > 80.0 20.667 20.667 0.0 1.000 1761780 28.7 44925
 9 Perfluorononanoic acid
 463.0 > 419.0 20.738 20.738 0.0 1.000 3082852 31.9 36149
 \$ 10 13C2 PFDA
 515.0 > 470.0 21.471 21.471 0.0 1.000 869586 11.6 27354

Reagents:

LC537-L5_00017 Amount Added: 1.00 Units: mL

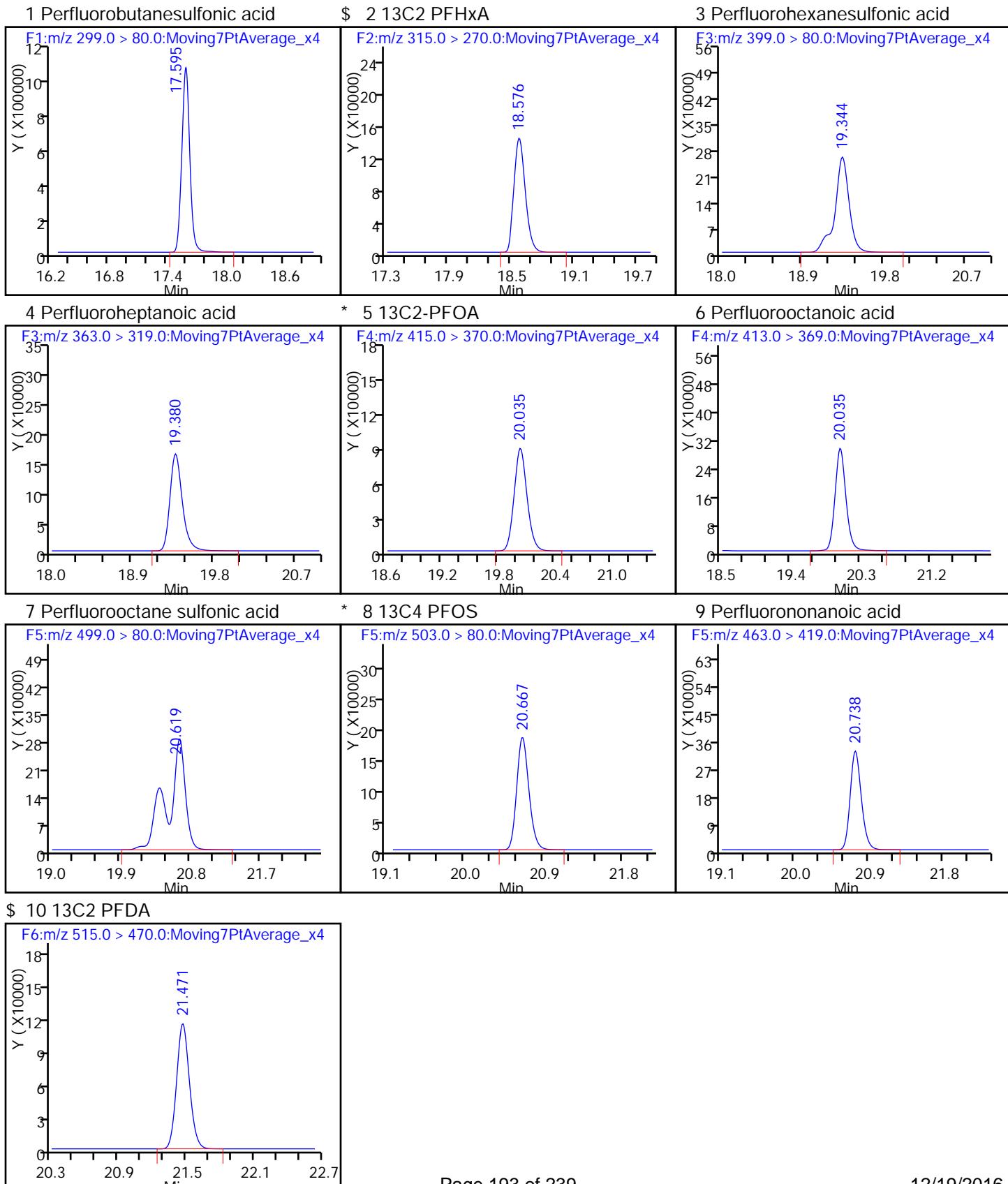
TestAmerica Sacramento

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_015.d
 Injection Date: 15-Dec-2016 14:55:15 Instrument ID: A6
 Lims ID: CCV L5
 Client ID:
 Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_015.d
 Injection Date: 15-Dec-2016 14:55:15 Instrument ID: A6
 Lims ID: CCV L5
 Client ID:
 Operator ID: CBW ALS Bottle#: 5 Worklist Smp#: 15
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.: _____
Lab Sample ID: CCV 320-142412/24 Calibration Date: 12/15/2016 19:21
Instrument ID: A6 Calib Start Date: 12/05/2016 17:26
GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/05/2016 19:54
Lab File ID: 15DEC2016A6A_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	0.7015	0.7248		46.6	45.1	3.3	30.0
Perfluorohexanesulfonic acid	Ave	0.8980	0.9510		16.1	15.2	5.9	30.0
Perfluoroheptanoic acid	Ave	1.215	1.318		5.55	5.12	8.4	30.0
Perfluorooctanoic acid (PFOA)	Ave	1.040	1.012		9.91	10.2	-2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Ave	1.044	1.057		20.4	20.1	1.2	30.0
Perfluorononanoic acid	Ave	1.134	1.199		10.4	9.87	5.7	30.0
13C2 PFHxA	Ave	1.167	1.158		9.93	10.0	-0.7	30.0
13C2 PFDA	Ave	0.8763	0.9323		10.6	10.0	6.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_024.d
 Lims ID: CCV L3
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 15-Dec-2016 19:21:55 ALS Bottle#: 3 Worklist Smp#: 24
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L3 CCV L3
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Sublist: chrom-537__A6*sub3
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 16-Dec-2016 10:53:25 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 16-Dec-2016 10:40:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.576	17.576	0.0	1.000	1873215	46.6	713	
\$ 2 13C2 PFHxA								
315.0 > 270.0	18.558	18.558	0.0	1.000	888613	9.93	28888	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.320	19.320	0.0	1.000	828466	16.1	19374	
4 Perfluoroheptanoic acid								
363.0 > 319.0	19.356	19.356	0.0	1.000	517197	5.55	8731	
* 5 13C2-PFOA								
415.0 > 370.0	20.023	20.023	0.0		767144	10.0	19688	
6 Perfluorooctanoic acid								
413.0 > 369.0	20.023	20.023	0.0	1.000	791115	9.91	626	
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.619	20.619	0.0	1.000	1219270	20.4	16950	
* 8 13C4 PFOS								
503.0 > 80.0	20.655	20.655	0.0		1643264	28.7	42650	
9 Perfluorononanoic acid								
463.0 > 419.0	20.726	20.726	0.0	1.000	908163	10.4	48020	
\$ 10 13C2 PFDA								
515.0 > 470.0	21.453	21.453	0.0	1.000	715234	10.6	22574	

Reagents:

LC537-L3_00016 Amount Added: 1.00 Units: mL

Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_024.d

Injection Date: 15-Dec-2016 19:21:55

Instrument ID: A6

Lims ID: CCV L3

Client ID:

Operator ID: CBW

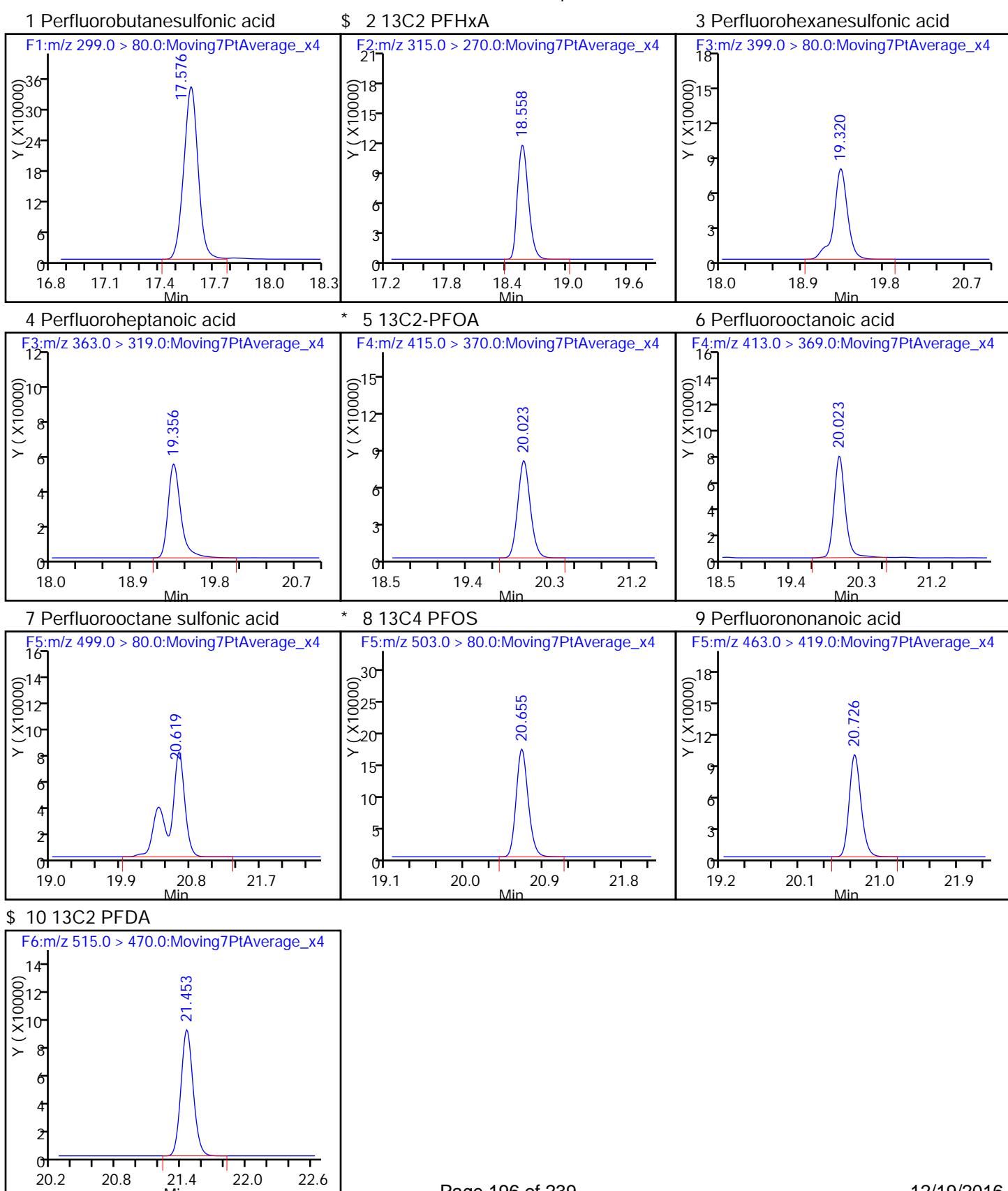
ALS Bottle#: 3 Worklist Smp#: 24

Injection Vol: 10.0 ul

Dil. Factor: 1.0000

Method: 537_A6

Limit Group: LC 537 ICAL



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-141540/1-A
 Matrix: Water Lab File ID: 15DEC2016A6A_005.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/15/2016 09:32
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

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

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

TestAmerica Sacramento
Target Compound Quantitation Report

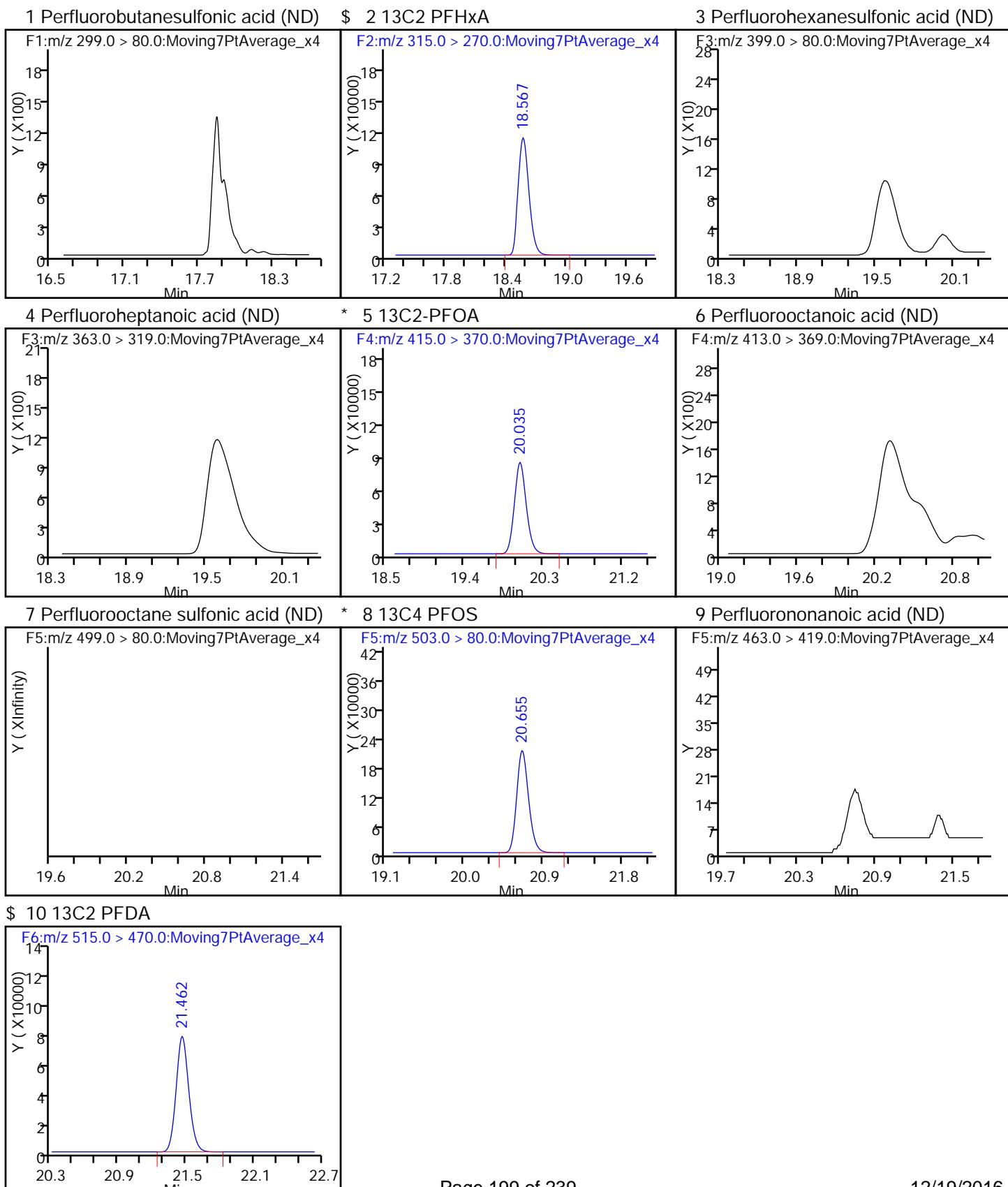
Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_005.d
 Lims ID: MB 320-141540/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 15-Dec-2016 09:32:25 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-141540/1-A BOX 22
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:13:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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\$ 2 13C2 PFHxA								
315.0 > 270.0	18.567	18.585	-0.018	1.000	828566	8.98	27322	
* 5 13C2-PFOA								
415.0 > 370.0	20.035	20.047	-0.012		791353	10.0	20703	
* 8 13C4 PFOS								
503.0 > 80.0	20.655	20.667	-0.012		2025210	28.7	30303	
\$ 10 13C2 PFDA								
515.0 > 470.0	21.462	21.471	-0.009	1.000	607099	8.75	19276	

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_005.d
 Injection Date: 15-Dec-2016 09:32:25 Instrument ID: A6
 Lims ID: MB 320-141540/1-A
 Client ID:
 Operator ID: CBW ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_005.d
 Lims ID: MB 320-141540/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 15-Dec-2016 09:32:25 ALS Bottle#: 2 Worklist Smp#: 5
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: MB 320-141540/1-A BOX 22
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:13:52

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	8.98	89.76
\$ 10 13C2 PFDA	10.0	8.75	87.55

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 320-141540/2-A
 Matrix: Water Lab File ID: 15DEC2016A6A_006.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/15/2016 10:02
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0277	J	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0144	J M	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0705	J	0.14	0.11	0.048

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\\A6\\20161214-37858.b\\15DEC2016A6A_006.d
 Lims ID: LLCS 320-141540/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 15-Dec-2016 10:02:01 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCS 320-141540/2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161205-37524.b\\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:14:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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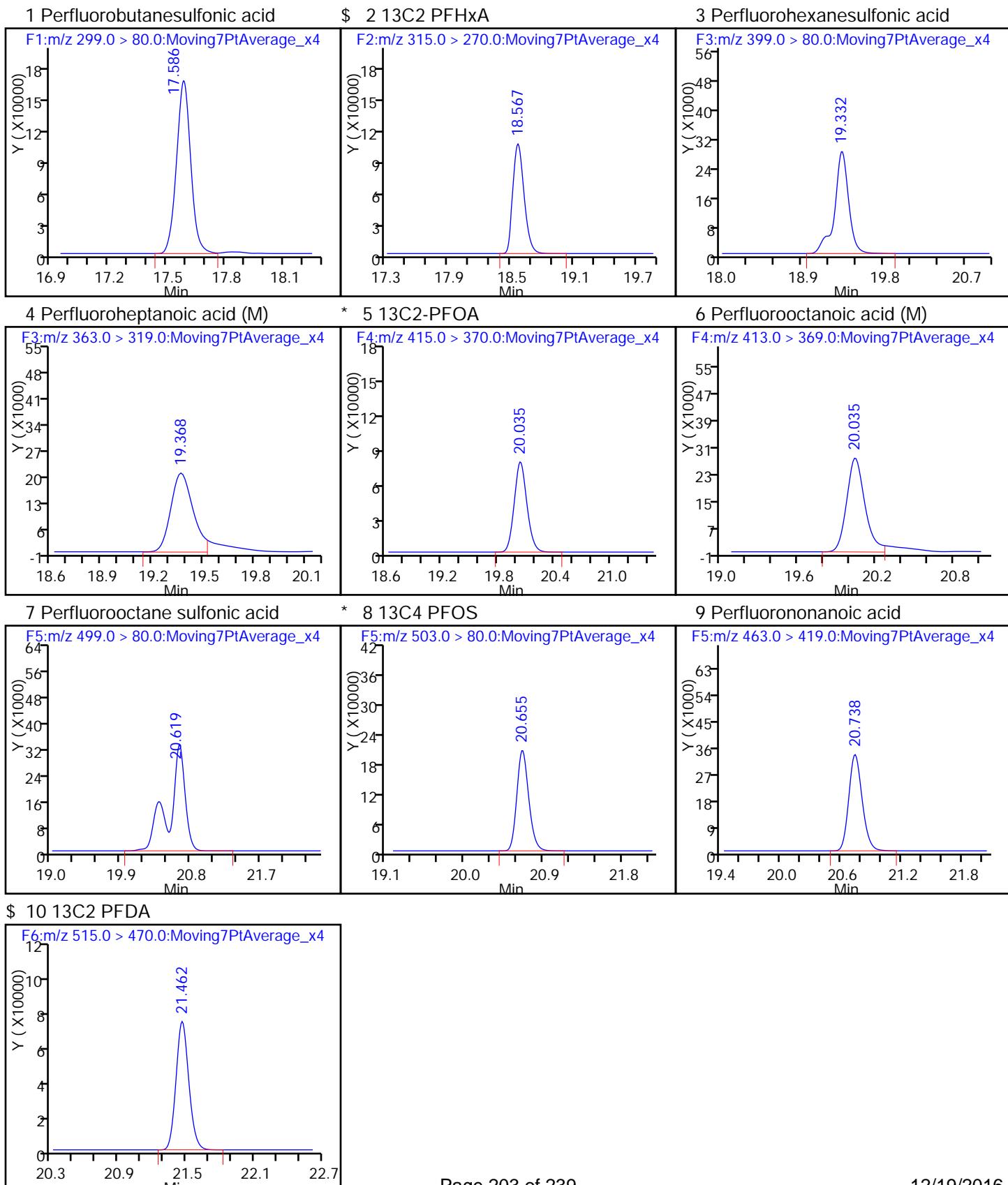
1 Perfluorobutanesulfonic acid	299.0 > 80.0	17.586	17.599	-0.013	1.000	831635	17.6	537
\$ 2 13C2 PFHxA	315.0 > 270.0	18.567	18.585	-0.018	1.000	801911	9.35	26353
3 Perfluorohexanesulfonic acid	399.0 > 80.0	19.332	19.356	-0.024	1.000	304182	5.04	6948
4 Perfluoroheptanoic acid	363.0 > 319.0	19.368	19.380	-0.012	1.000	192850	2.16	77.9 M
* 5 13C2-PFOA	415.0 > 370.0	20.035	20.047	-0.012		735245	10.0	19320
6 Perfluoroctanoic acid	413.0 > 369.0	20.035	20.047	-0.012	1.000	275244	3.60	117 M
7 Perfluoroctane sulfonic acid	499.0 > 80.0	20.619	20.620	-0.001	1.000	485923	6.92	6498
* 8 13C4 PFOS	503.0 > 80.0	20.655	20.667	-0.012		1927844	28.7	50357
9 Perfluorononanoic acid	463.0 > 419.0	20.738	20.738	0.0	1.000	309393	3.71	8279
\$ 10 13C2 PFDA	515.0 > 470.0	21.462	21.471	-0.009	1.000	580204	9.01	18240

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_006.d
 Injection Date: 15-Dec-2016 10:02:01 Instrument ID: A6
 Lims ID: LLCS 320-141540/2-A
 Client ID:
 Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_006.d
 Lims ID: LLCS 320-141540/2-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 15-Dec-2016 10:02:01 ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCS 320-141540/2-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:14:43

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	9.35	93.50
\$ 10 13C2 PFDA	10.0	9.01	90.05

TestAmerica Sacramento

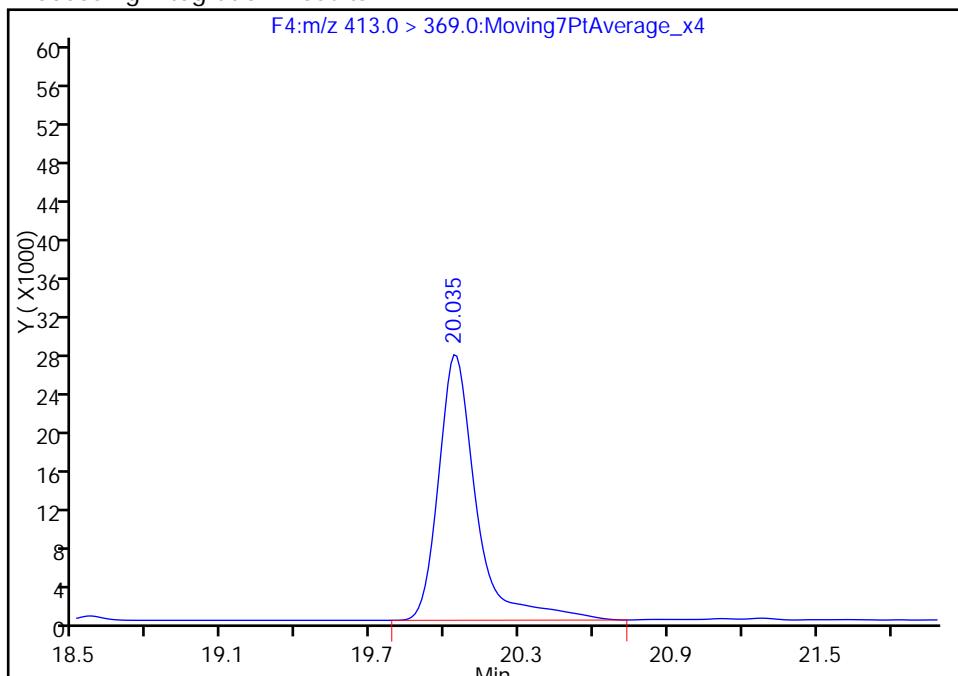
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_006.d
 Injection Date: 15-Dec-2016 10:02:01 Instrument ID: A6
 Lims ID: LLCS 320-141540/2-A
 Client ID:
 Operator ID: CBW ALS Bottle#: 3 Worklist Smp#: 6
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

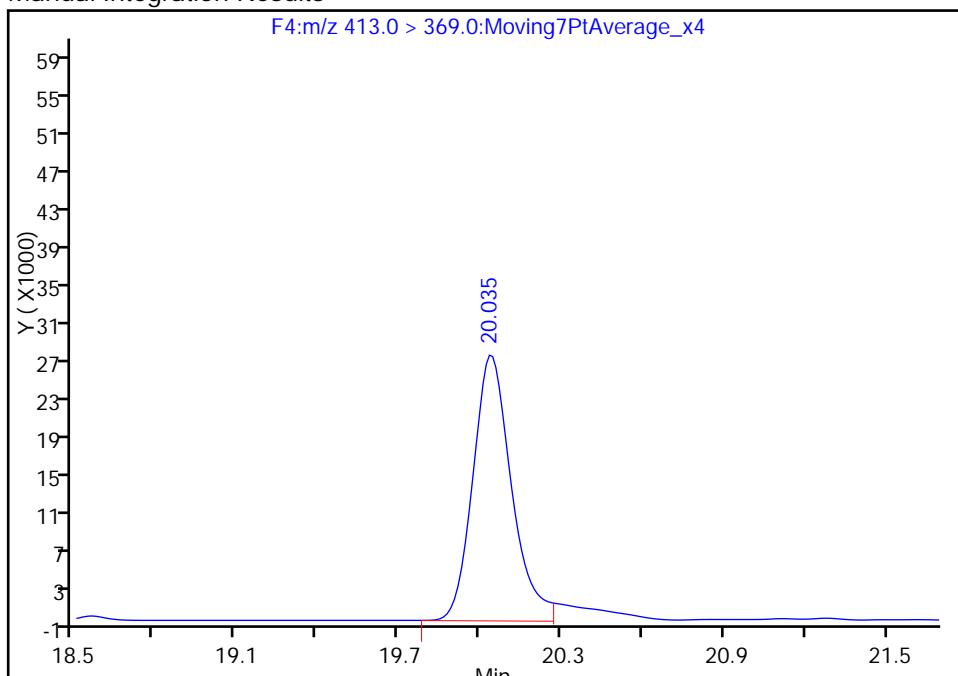
Processing Integration Results

RT: 20.03
 Area: 295378
 Amount: 3.861316
 Amount Units: ng/ml



Manual Integration Results

RT: 20.03
 Area: 275244
 Amount: 3.598115
 Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:14:43

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCSD 320-141540/3-A
 Matrix: Water Lab File ID: 15DEC2016A6A_007.d
 Analysis Method: 537 Date Collected: _____
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 250.00 (mL) Date Analyzed: 12/15/2016 10:31
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0278	J	0.060	0.048	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.0150	J M	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0694	J	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	94		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_007.d
 Lims ID: LLCSD 320-141540/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 15-Dec-2016 10:31:37 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCSD 320-141540/3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:15:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	S/N	Flags
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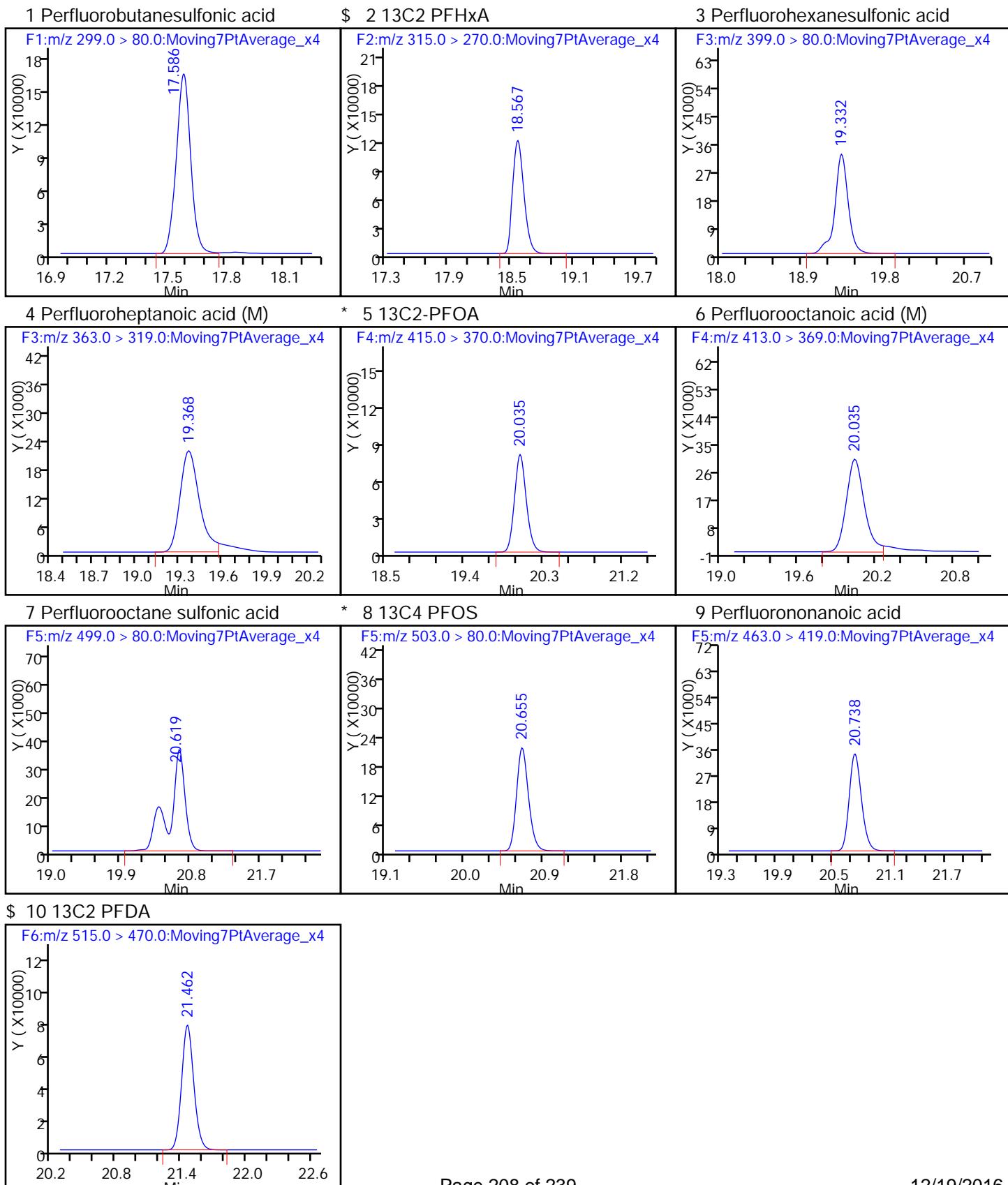
1 Perfluorobutanesulfonic acid								
299.0 > 80.0	17.586	17.599	-0.013	1.000	863125	17.4	676	
\$ 2 13C2 PFHxA								
315.0 > 270.0	18.567	18.585	-0.018	1.000	890825	10.1	29204	
3 Perfluorohexanesulfonic acid								
399.0 > 80.0	19.332	19.356	-0.024	1.000	333361	5.24	8026	
4 Perfluoroheptanoic acid								M
363.0 > 319.0	19.368	19.380	-0.012	1.000	201237	2.20	125	M
* 5 13C2-PFOA								
415.0 > 370.0	20.035	20.047	-0.012		753724	10.0	19901	
6 Perfluorooctanoic acid								M
413.0 > 369.0	20.035	20.047	-0.012	1.000	294784	3.76	140	M
7 Perfluorooctane sulfonic acid								
499.0 > 80.0	20.619	20.620	-0.001	1.000	514997	6.96	7123	
* 8 13C4 PFOS								
503.0 > 80.0	20.655	20.667	-0.012		2032622	28.7	53199	
9 Perfluorononanoic acid								
463.0 > 419.0	20.738	20.738	0.0	1.000	309898	3.63	8427	
\$ 10 13C2 PFDA								
515.0 > 470.0	21.462	21.471	-0.009	1.000	620081	9.39	19677	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento
 Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_007.d
 Injection Date: 15-Dec-2016 10:31:37 Instrument ID: A6
 Lims ID: LLCSD 320-141540/3-A
 Client ID:
 Operator ID: CBW ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL



TestAmerica Sacramento
Recovery Report

Data File: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\15DEC2016A6A_007.d
 Lims ID: LLCSD 320-141540/3-A
 Client ID:
 Sample Type: LLCSD
 Inject. Date: 15-Dec-2016 10:31:37 ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Sample Info: LLCSD 320-141540/3-A
 Misc. Info.: Acquity BEH 1.7um, 3X150mm T=35*C
 Operator ID: CBW Instrument ID: A6
 Method: \\ChromNA\Sacramento\ChromData\A6\20161214-37858.b\537__A6.m
 Limit Group: LC 537 ICAL
 Last Update: 15-Dec-2016 15:21:13 Calib Date: 05-Dec-2016 19:54:00
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A6\20161205-37524.b\05DEC2016A6A_009.d
 Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
 Process Host: XAWRK005

First Level Reviewer: barnettj Date: 15-Dec-2016 15:15:34

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 13C2 PFHxA	10.0	10.1	101.32
\$ 10 13C2 PFDA	10.0	9.39	93.88

TestAmerica Sacramento

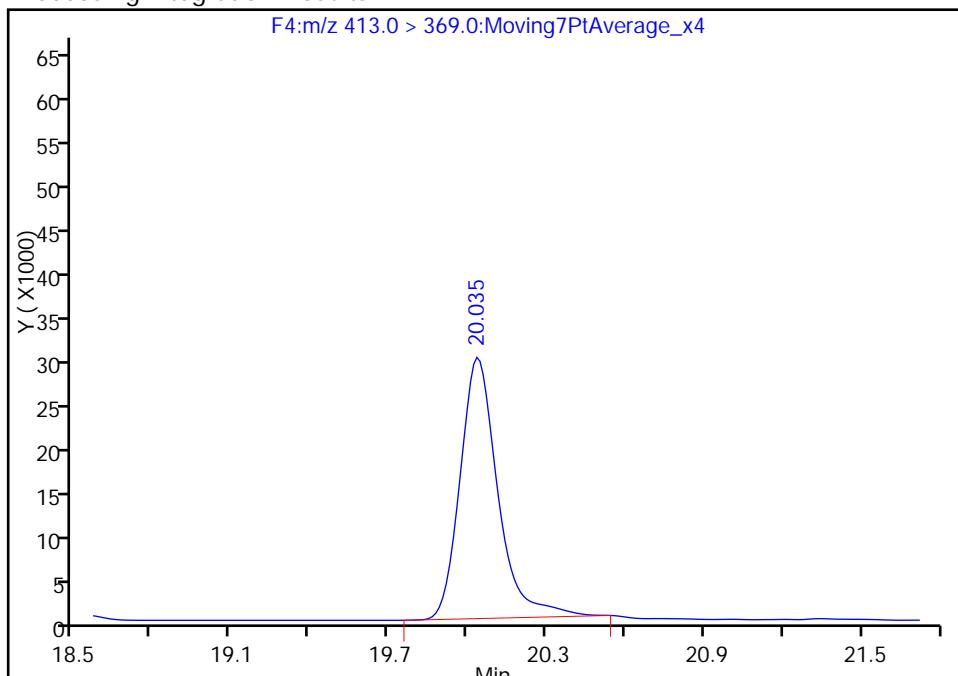
Data File: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b\\15DEC2016A6A_007.d
 Injection Date: 15-Dec-2016 10:31:37 Instrument ID: A6
 Lims ID: LLCSD 320-141540/3-A
 Client ID:
 Operator ID: CBW ALS Bottle#: 4 Worklist Smp#: 7
 Injection Vol: 10.0 ul Dil. Factor: 1.0000
 Method: 537_A6 Limit Group: LC 537 ICAL
 Column: Acquity BEH C18 (2.10 mm) Detector F4:MRM

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

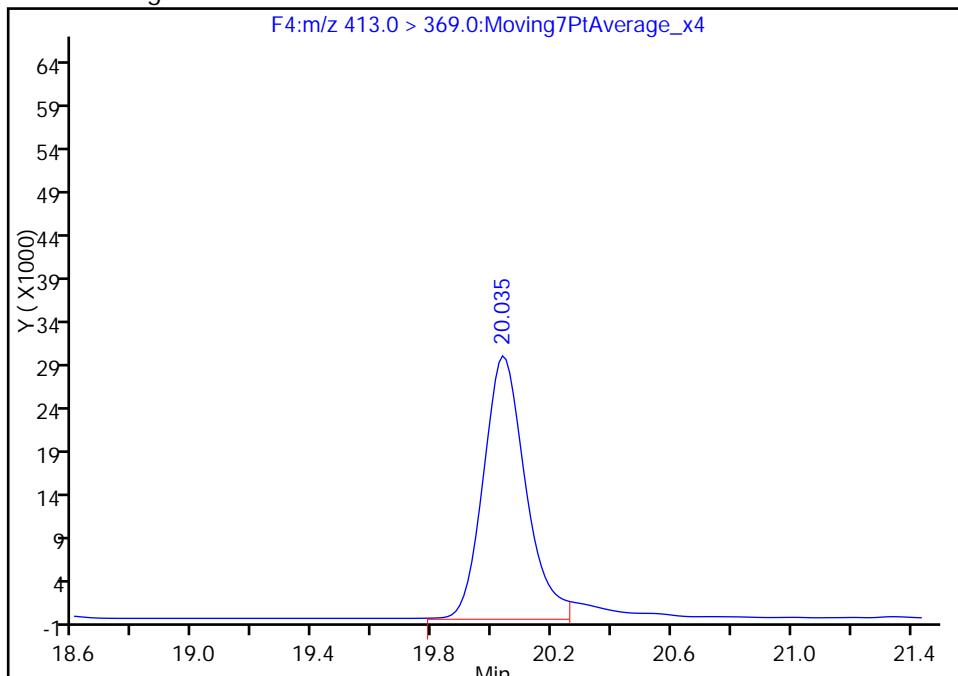
Processing Integration Results

RT: 20.03
 Area: 296592
 Amount: 3.782129
 Amount Units: ng/ml



Manual Integration Results

RT: 20.03
 Area: 294784
 Amount: 3.759073
 Amount Units: ng/ml



Reviewer: barnettj, 15-Dec-2016 15:15:34

Audit Action: Manually Integrated

Audit Reason: Split Peak

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Instrument ID: A6

Start Date: 12/05/2016 17:26

Analysis Batch Number: 140688

End Date: 12/06/2016 02:48

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

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Instrument ID: A6

Start Date: 12/15/2016 08:03

Analysis Batch Number: 142223

End Date: 12/15/2016 14:55

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-142223/2 CCVL		12/15/2016 08:03	1	15DEC2016A6A_00 2.d	Acquity 2.1 (mm)
CCV 320-142223/3 CCVIS		12/15/2016 08:33	1	15DEC2016A6A_00 3.d	Acquity 2.1 (mm)
ZZZZZ		12/15/2016 09:02	1		Acquity 2.1 (mm)
MB 320-141540/1-A		12/15/2016 09:32	1	15DEC2016A6A_00 5.d	Acquity 2.1 (mm)
LLCS 320-141540/2-A		12/15/2016 10:02	1	15DEC2016A6A_00 6.d	Acquity 2.1 (mm)
LLCSD 320-141540/3-A		12/15/2016 10:31	1	15DEC2016A6A_00 7.d	Acquity 2.1 (mm)
ZZZZZ		12/15/2016 10:57	1		Acquity 2.1 (mm)
320-24178-1		12/15/2016 11:30	1	15DEC2016A6A_00 9.d	Acquity 2.1 (mm)
320-24178-2		12/15/2016 12:00	1	15DEC2016A6A_01 0.d	Acquity 2.1 (mm)
320-24178-3		12/15/2016 12:29	1	15DEC2016A6A_01 1.d	Acquity 2.1 (mm)
320-24178-4		12/15/2016 12:59	1	15DEC2016A6A_01 2.d	Acquity 2.1 (mm)
320-24178-5		12/15/2016 13:29	1	15DEC2016A6A_01 3.d	Acquity 2.1 (mm)
320-24178-6		12/15/2016 14:25	1	15DEC2016A6A_01 4.d	Acquity 2.1 (mm)
CCV 320-142223/15 CCVIS		12/15/2016 14:55	1	15DEC2016A6A_01 5.d	Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1

SDG No.: _____

Instrument ID: A6 Start Date: 12/15/2016 14:55Analysis Batch Number: 142412 End Date: 12/15/2016 19:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-142412/15 CCVIS		12/15/2016 14:55	1	15DEC2016A6A_01 5.d	Acquity 2.1 (mm)
ZZZZZ		12/15/2016 15:24	1		Acquity 2.1 (mm)
320-24178-7		12/15/2016 15:54	1	15DEC2016A6A_01 7.d	Acquity 2.1 (mm)
320-24178-8		12/15/2016 16:24	1	15DEC2016A6A_01 8.d	Acquity 2.1 (mm)
320-24178-9		12/15/2016 16:53	1	15DEC2016A6A_01 9.d	Acquity 2.1 (mm)
320-24178-10		12/15/2016 17:23	1	15DEC2016A6A_02 0.d	Acquity 2.1 (mm)
320-24178-11		12/15/2016 17:53	1	15DEC2016A6A_02 1.d	Acquity 2.1 (mm)
320-24178-12		12/15/2016 18:22	1	15DEC2016A6A_02 2.d	Acquity 2.1 (mm)
320-24178-13		12/15/2016 18:52	1	15DEC2016A6A_02 3.d	Acquity 2.1 (mm)
CCV 320-142412/24 CCVIS		12/15/2016 19:21	1	15DEC2016A6A_02 4.d	Acquity 2.1 (mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Batch Number: 141540

Batch Start Date: 12/09/16 18:59

Batch Analyst: Reed, Jonathan E

Batch Method: 537

Batch End Date: 12/10/16 17:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00026
MB 320-141540/1		537, 537				250.00 mL	1.00 mL	7 SU	20 uL
LLCS 320-141540/2		537, 537				250.00 mL	1.00 mL	7 SU	20 uL
LLCSD 320-141540/3		537, 537				250.00 mL	1.00 mL	7 SU	20 uL
320-24178-A-1	WI-CV-1RW23-1216	537, 537	T	300.19 g	26.81 g	273.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-2	WI-CV-1RW23P-1216 6	537, 537	T	304.31 g	26.81 g	277.5 mL	1.00 mL	7 SU	20 uL
320-24178-A-3	WI-CV-1FB23-1216	537, 537	T	277.99 g	26.37 g	251.6 mL	1.00 mL	7 SU	20 uL
320-24178-A-4	WI-CV-1RW24-1216	537, 537	T	295.05 g	27.65 g	267.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-5	WI-CV-1FB24-1216	537, 537	T	278.47 g	26.28 g	252.2 mL	1.00 mL	7 SU	20 uL
320-24178-A-6	WI-CV-1RW25-1216	537, 537	T	298.76 g	27.10 g	271.7 mL	1.00 mL	7 SU	20 uL
320-24178-A-7	WI-CV-1FB25-1216	537, 537	T	273.55 g	26.27 g	247.3 mL	1.00 mL	7 SU	20 uL
320-24178-A-8	WI-CV-1RW26-1216	537, 537	T	298.22 g	27.95 g	270.3 mL	1.00 mL	7 SU	20 uL
320-24178-A-9	WI-CV-1FB26-1216	537, 537	T	279.99 g	26.48 g	253.5 mL	1.00 mL	7 SU	20 uL
320-24178-A-10	WI-CV-1RW27-1216	537, 537	T	282.11 g	27.76 g	254.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-11	WI-CV-1FB27-1216	537, 537	T	285.96 g	26.80 g	259.2 mL	1.00 mL	7 SU	20 uL
320-24178-A-12	WI-CV-1RW28-1216	537, 537	T	304.15 g	28.72 g	275.4 mL	1.00 mL	7 SU	20 uL
320-24178-A-13	WI-CV-1FB28-1216	537, 537	T	280.71 g	26.95 g	253.8 mL	1.00 mL	7 SU	20 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00016	LC537-SU 00024	AnalysisComment			
MB 320-141540/1		537, 537		50 uL	Free Chlorine: ND				
LLCS 320-141540/2		537, 537		50 uL	Free Chlorine: ND				
LLCSD 320-141540/3		537, 537		50 uL	Free Chlorine: ND				
320-24178-A-1	WI-CV-1RW23-1216	537, 537	T	50 uL	Free Chlorine: ND				
320-24178-A-2	WI-CV-1RW23P-1216 6	537, 537	T	50 uL	Free Chlorine: ND				
320-24178-A-3	WI-CV-1FB23-1216	537, 537	T	50 uL	Free Chlorine: ND				
320-24178-A-4	WI-CV-1RW24-1216	537, 537	T	50 uL	Free Chlorine: ND				

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

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento

Job No.: 320-24178-1

SDG No.:

Batch Number: 141540

Batch Start Date: 12/09/16 18:59

Batch Analyst: Reed, Jonathan E

Batch Method: 537

Batch End Date: 12/10/16 17:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-LSP 00016	LC537-SU 00024	AnalysisComment			
320-24178-A-5	WI-CV-1FB24-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-6	WI-CV-1RW25-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-7	WI-CV-1FB25-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-8	WI-CV-1RW26-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-9	WI-CV-1FB26-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-10	WI-CV-1RW27-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-11	WI-CV-1FB27-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-12	WI-CV-1RW28-1216	537, 537	T		50 uL	Free Chlorine: ND			
320-24178-A-13	WI-CV-1FB28-1216	537, 537	T		50 uL	Free Chlorine: ND			

Batch Notes

Manifold ID	1, 3
Methanol ID	789820
Pipette ID	MD05306
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop Witness	VPM
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop Witness	VPM
SPE Cartridge ID	6332578-03
Trizma ID	SLBN2122V
Reagent Water ID	12/08/16

Basis	Basis Description
T	Total/NA

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

Method 537 CCV/Data Review Checklist

Job No: 24178, 24179 Instrument ID & Date: A6 12/15/16 ICAL Batch: 140688
 Extraction Batch: 141540, 141539 Worklist #: 37858 TALS Batch: 142223, 142412, 142414,
142415, 142438

Review Items	— Level 1 —			Level 2 <u>142438</u>
	Yes	No	N/A	
Initial Calibration				
1. Is ICAL verified and locked in Chrom & TALS?	✓			✓
2. Is ICV properly linked in TALS?	✓			✓
Continuing Calibration				
1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range?	✓			✓
2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?	✓			✓
3. Native compounds and surrogates in control? Low-range within ±50% of true value Mid and High-range within ±30% of true value	✓			✓
4. Internal Standard areas in control? Areas ≥ 50% of average area of the ICal and 70-140% of the most recent CCV.	✓			✓
Client Samples & QC Sample Results				
1. Were preparation and analysis done within holding times?	✓			✓
2. Are Chromatograms reviewed and spectra verified?	✓			✓
3. Are positive results within calibration range?	✓			✓
4. Dilutions due to target cpds? <input checked="" type="checkbox"/> Dilutions due to non-targets? <input checked="" type="checkbox"/>	✓			✓
5. All target compounds in MB < 1/3 RL ? (Requires NCM if "no.")	✓			✓
6. Are target constituents in LCS/LCSD within method control limits?	✓			✓
7. Internal Standard areas in control for all samples and QC reported? ±50% from the average area of the ICAL and 70-140% of the most recent CCV	✓			✓
8. Do results (e.g., dilutions/trip blanks) make sense?	✓			✓
9. Are MS/MSD recoveries and RPDs within method control limits?	✓			✓
10. Are all QC samples properly linked in TALS?	✓			✓
11. All manual integrations appropriate and completely documented?	✓			✓
12. Are nonconformances documented as NCMs?	✓			✓
13. Are all Chrom graphics uploaded?	✓			✓

 1st Level Reviewer / Date: CBW 12/16/16

 2nd Level Reviewer / Date: mwayf 12/19/2016

 NCM # and Comments: 73183 12/17/16

A6
Instrument ID & Date: 12-5-16 Worklist#: 37524

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

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

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

2nd Level Reviewer / Date: RHK, 2/7/16

NCM # and Comments: _____

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15DEC2016A_A6 537
 Instrument Name: A6
 Data Directory: \\ChromNA\\Sacramento\\ChromData\\A6\\20161214-37858.b
 QC Batching: Enabled

Worklist Number: 37858
 Chrom Method: 537_A6
 Limit Group Batching: Enabled

QC Batch: 1	LC 537 ICAL Raw Batch: 142223	LC 537 CS ICAL Raw Batch: 142224
# 1 RB	# 1 RB	
# 2 CCV L2	# 2 CCV L2	# 2 CCV L2
# 3 CCV L3	# 3 CCV L3	
# 4 RB	# 4 RB	
# 5 MB 320-141540/1-A	# 5 MB 320-141540/1-A	
# 6 LLCS 320-141540/2-A	# 6 LLCS 320-141540/2-A	
# 7 LLCSD 320-141540/3-A	# 7 LLCSD 320-141540/3-A	
# 8 320-24085-A-12-A	# 8 320-24085-A-12-A	
# 9 320-24178-A-1-A	# 9 320-24178-A-1-A	
#10 320-24178-A-2-A	#10 320-24178-A-2-A	
#11 320-24178-A-3-A	#11 320-24178-A-3-A	
#12 320-24178-A-4-A	#12 320-24178-A-4-A	
#13 320-24178-A-5-A	#13 320-24178-A-5-A	
#14 320-24178-A-6-A	#14 320-24178-A-6-A	
#15 CCV L5	#15 CCV L5	

QC Batch: 2	LC 537 ICAL Raw Batch: 142412
#15 CCV L5	#15 CCV L5
#16 RB	#16 RB
#17 320-24178-A-7-A	#17 320-24178-A-7-A
#18 320-24178-A-8-A	#18 320-24178-A-8-A
#19 320-24178-A-9-A	#19 320-24178-A-9-A
#20 320-24178-A-10-A	#20 320-24178-A-10-A
#21 320-24178-A-11-A	#21 320-24178-A-11-A
#22 320-24178-A-12-A	#22 320-24178-A-12-A
#23 320-24178-A-13-A	#23 320-24178-A-13-A
#24 CCV L3	#24 CCV L3

QC Batch: 3	LC 537 ICAL Raw Batch: 142413
#24 CCV L3	#24 CCV L3
#25 RB	#25 RB
#26 MB 320-136929/1-A	#26 MB 320-136929/1-A
#27 320-20510-A-1-B	#27 320-20510-A-1-B
#28 320-20510-A-2-B	#28 320-20510-A-2-B
#29 320-20510-A-3-B	#29 320-20510-A-3-B
#30 537 SPIKE QC	#30 537 SPIKE QC
#31 CCV L3	#31 CCV L3

QC Batch: 4	LC 537 ICAL Raw Batch: 142414
#31 CCV L3	#31 CCV L3
#32 RB	#32 RB
#33 MB 320-141539/1-A	#33 MB 320-141539/1-A
#34 LCS 320-141539/2-A	#34 LCS 320-141539/2-A
#35 320-24179-A-1-A	#35 320-24179-A-1-A
#36 320-24179-A-1-B MS	#36 320-24179-A-1-B MS
#37 320-24179-A-1-C MSD	#37 320-24179-A-1-C MSD
#38 320-24179-A-2-A	#38 320-24179-A-2-A

QC Batch: 4	LC 537 ICAL Raw Batch: 142414
#39 320-24179-A-3-A	#39 320-24179-A-3-A
#40 320-24179-A-4-A	#40 320-24179-A-4-A
#41 320-24179-A-5-A	#41 320-24179-A-5-A
#42 CCV L5	#42 CCV L5

QC Batch: 5	LC 537 ICAL Raw Batch: 142415	LC 537 CS ICAL Raw Batch: 142416
#42 CCV L5	#42 CCV L5	
#43 RB	#43 RB	
#44 320-24179-A-6-A	#44 320-24179-A-6-A	
#45 320-24179-A-7-A	#45 320-24179-A-7-A	
#46 320-24179-A-8-A	#46 320-24179-A-8-A	
#47 320-24179-A-9-A	#47 320-24179-A-9-A	
#48 320-24179-A-10-A	#48 320-24179-A-10-A	
#49 320-24179-A-11-A	#49 320-24179-A-11-A	
#50 320-24179-A-12-A	#50 320-24179-A-12-A	
#51 320-24179-A-13-A	#51 320-24179-A-13-A	
#52 320-24179-A-14-A	#52 320-24179-A-14-A	
#53 320-24179-A-15-A	#53 320-24179-A-15-A	
#54 CCV L3	#54 CCV L3	#54 CCV L3

QC Batch: 6	LC 537 ICAL Raw Batch: 142417	LC 537 CS ICAL Raw Batch: 142418
#54 CCV L3	#54 CCV L3	#54 CCV L3
#55 RB		#55 RB
#56 MB 320-141980/1-A		#56 MB 320-141980/1-A
#57 LCS 320-141980/2-A		#57 LCS 320-141980/2-A
#58 320-24284-A-1-A		#58 320-24284-A-1-A
#59 320-24284-A-2-A		#59 320-24284-A-2-A
#60 320-24284-A-3-A		#60 320-24284-A-3-A
#61 320-24284-A-3-B DU		#61 320-24284-A-3-B DU
#62 320-24284-A-3-C MS		#62 320-24284-A-3-C MS
#63 320-24284-A-4-A		#63 320-24284-A-4-A
#64 320-24284-A-5-A		#64 320-24284-A-5-A
#65 320-24284-A-6-A		#65 320-24284-A-6-A
#66 CCV L5	#66 CCV L5	#66 CCV L5

QC Batch: 7	LC 537 CS ICAL Raw Batch: 142419	LC 537 ICAL Raw Batch: 142437
#66 CCV L5	#66 CCV L5	#66 CCV L5
#67 RB		#67 RB
#68 MB 320-140189/1-A		#68 MB 320-140189/1-A
#69 LCS 320-140189/2-A		#69 LCS 320-140189/2-A
#70 LCSD 320-140189/3-A		#70 LCSD 320-140189/3-A
#71 320-23895-A-1-A		#71 320-23895-A-1-A
#72 320-23895-A-2-A		#72 320-23895-A-2-A
#73 320-23895-B-3-A		#73 320-23895-B-3-A
#74 320-23895-A-4-A		#74 320-23895-A-4-A
#75 320-23895-B-5-A		#75 320-23895-B-5-A
#76 320-23895-A-6-A		#76 320-23895-A-6-A
#77 320-23895-A-7-A		#77 320-23895-A-7-A
#78 CCV L3		#78 CCV L3

QC Batch: 8	LC 537 ICAL Raw Batch: 142438
#78 CCV L3	#78 CCV L3
#79 RB	#79 RB

QC Batch: 8	LC 537 ICAL Raw Batch: 142438
#80 320-23895-A-8-A	#80 320-23895-A-8-A
#81 320-23895-A-9-A	#81 320-23895-A-9-A
#82 320-23895-A-10-A	#82 320-23895-A-10-A
#106 320-24179-A-1-B MS	#106 320-24179-A-1-B MS
#85 MB 320-141959/1-A	#85 MB 320-141959/1-A
#86 LLCS 320-141959/2-A	#86 LLCS 320-141959/2-A
#87 LLCSD 320-141959/3-A	#87 LLCSD 320-141959/3-A
#88 320-24036-A-1-A	#88 320-24036-A-1-A
#89 320-24036-A-2-A	#89 320-24036-A-2-A
#90 320-24036-A-3-A	#90 320-24036-A-3-A
#83 CCV L5	#83 CCV L5

QC Batch: 9	LC 537 ICAL Raw Batch: 142651
#83 CCV L5	#83 CCV L5
#108 RB	#108 RB
#91 320-24036-A-4-A	#91 320-24036-A-4-A
#92 320-24036-A-5-A	#92 320-24036-A-5-A
#93 320-24036-A-6-A	#93 320-24036-A-6-A
#94 320-24036-A-7-A	#94 320-24036-A-7-A
#95 320-24036-A-8-A	#95 320-24036-A-8-A
#96 320-24036-A-9-A	#96 320-24036-A-9-A
#97 MB 320-142443/1-A	#97 MB 320-142443/1-A
#98 LCS 320-142443/2-A	#98 LCS 320-142443/2-A
#99 LCSD 320-142443/3-A	#99 LCSD 320-142443/3-A
#100 320-24190-B-2-A	#100 320-24190-B-2-A
#109 CCV L3	#109 CCV L3

QC Batch: 10	LC 537 ICAL Raw Batch: 142652
#109 CCV L3	#109 CCV L3
#110 RB	#110 RB
#101 320-24190-B-3-A	#101 320-24190-B-3-A
#102 320-24190-B-4-A	#102 320-24190-B-4-A
#103 320-24190-B-5-A	#103 320-24190-B-5-A
#104 320-24190-B-6-A	#104 320-24190-B-6-A
#105 320-24190-B-7-A	#105 320-24190-B-7-A
#112 CCV L5	#112 CCV L5

Rush

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Number: 320-141540
Method Code: 320-537_Prep-320

Batch Open: 12/9/2016 6:59:00PM
Batch End: 12/10/2016 5:11:00PM
Screen A# 12/12/16 (NoS/L needed)

Extraction of Perfluorinated Alkyl Acids

		SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB-320-141540/1	N/A		250.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
2	LLCS-320-141540/2	N/A		1.00 mL				N/A	N/A	N/A	Free Chlorine: ND	
3	LLCSD~320-141540/3	N/A		250.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
4	320-24178-A-1 (537_DOD5)	N/A (320-24178-1)	300.19 g	273.4 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
5	320-24178-A-2 (537_DOD5)	N/A (320-24178-1)	26.81 g	1.00 mL				12/13/16	8_Day_Rush	4	Free Chlorine: ND	
6	320-24178-A-3 (537_DOD5)	N/A (320-24178-1)	304.31 g	277.5 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
7	320-24178-A-4 (537_DOD5)	N/A (320-24178-1)	26.81 g	1.00 mL				12/13/16	8_Day_Rush	4	Free Chlorine: ND	
8	320-24178-A-5 (537_DOD5)	N/A (320-24178-1)	277.99 g	251.6 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
9	320-24178-A-6 (537_DOD5)	N/A (320-24178-1)	295.05 g	267.4 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
10	320-24178-A-7 (537_DOD5)	N/A (320-24178-1)	278.47 g	252.2 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
			27.65 g	1.00 mL								
			26.37 g	1.00 mL								
			26.28 g	1.00 mL								
			298.76 g	271.7 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
			27.10 g	1.00 mL								
			273.55 g	247.3 mL	7			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
			26.27 g	1.00 mL								

Printed : 12/10/2016
12/19/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Method Code: 320-537_Prep-320

Batch Number: 320-141540

Sample ID	Sample Description	Prep ID	Prep Date	Volume	Conc	Conc Units	Test Date	Test Type	Result	Comments
11 (537_DOD5)	N/A (320-24178-1)	298.22 g 270.3 mL	7				12/13/16	8_Day_Rush	4	Free Chlorine: ND
12 (537_DOD5)	N/A (320-24178-1)	27.95 g 253.5 mL	7				12/13/16	8_Day_Rush	4	Free Chlorine: ND
13 (537_DOD5)	N/A (320-24178-1)	26.48 g 254.4 mL	7				12/13/16	8_Day_Rush	4	Free Chlorine: ND
14 (537_DOD5)	N/A (320-24178-1)	282.11 g 27.76 g	7	1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND
15 (537_DOD5)	N/A (320-24178-1)	285.96 g 26.80 g	7	259.2 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND
16 (537_DOD5)	N/A (320-24178-1)	304.15 g 28.72 g	7	275.4 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND
17 (537_DOD5)	N/A (320-24178-1)	280.71 g 26.95 g	7	253.8 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Batch Number: 320-141540

Batch End:

Method Code: 320-537_Prep-320

Batch Notes	
Manifold ID	1, 3
Trizma ID	SLBN2122V
SPE Cartridge ID	6332578-03
Methanol ID	789820
Reagent Water ID	12/08/16
Pipette ID	MD05306
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop	VPM
Analyst ID - SU Reagent Drop	Witness
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop	VPM
Analyst ID - IS Reagent Drop	JER
Analyst ID - IS Reagent Drop	VPM
Batch Comment	

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Batch End:

Method Code: 320-537_Prep-320

Batch Number: 320-141540

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-141540/1	LC537-SU_00024	50 uL	1.00 mL	<i>J. Reed</i>	VPM 12/09/16
LLCS 320-141540/2	LC537-LSP_00016	50 uL	1.00 mL		
LLCS 320-141540/2	LC537-SU_00024	50 uL	1.00 mL		
LLCSD 320-141540/3	LC537-LSP_00016	50 uL	1.00 mL		
LLCSD 320-141540/3	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-1	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-2	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-3	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-4	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-5	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-6	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-7	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-8	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-9	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-10	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-11	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-12	LC537-SU_00024	50 uL	1.00 mL		
320-24178-A-13	LC537-SU_00024	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:59:00PM

Batch End:

Method Code: 320-537 Prep-320

Other Reagents:		
Reagent	Amount/Units	Lot#:

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 141540

Test: 5320005 Rush

Earliest Holding Time: 12/2/16

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

1st Level Reviewer: _____

12/10/16
VPM
[Signature]

Date: _____

12/10/16

2nd Level Reviewer: _____

VPM

Date: _____

12/10/16

Comments: _____

23
Bush

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Method Code: 320-537_Prep-320

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM
Batch End: 12/10/16 (120 mL needed)
Screen A4 12/11/16 (No DL needed)

Extraction of Perfluorinated Alkyl Acids

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Gross Wt Tare Wt	Init Amnt Fin Amnt	Revd Adj1	Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-141539/1 N/A	N/A	250.00 mL 1.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
2	LCS-320-141539/2 N/A	N/A	250.00 mL 1.00 mL	7			N/A	N/A	N/A	Free Chlorine: ND	
3	320-24179-A-1 (537_DOD5)	N/A (320-24179-1)	304.48 g 27.52 g	277 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
4	320-24179-A-1~MS (537_DOD5)	N/A (320-24179-1)	293.61 g 26.52 g	267.1 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
5	320-24179-A-1-MSD (537_DOD5)	N/A (320-24179-1)	279.73 g 27.59 g	252.1 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
6	320-24179-A-2 (537_DOD5)	N/A (320-24179-1)	288.74 g 262.3 mL	262.3 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
7	320-24179-A-3 (537_DOD5)	N/A (320-24179-1)	308.26 g 26.86 g	281.4 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
8	320-24179-A-4 (537_DOD5)	N/A (320-24179-1)	313.82 g 26.96 g	286.9 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
9	320-24179-A-5 (537_DOD5)	N/A (320-24179-1)	299.20 g 26.71 g	272.5 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	
10	320-24179-A-6 (537_DOD5)	N/A (320-24179-1)	293.10 g 28.10 g	265 mL 1.00 mL			12/13/16	8_Day_Rush	4	Free Chlorine: ND	

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Printed : 12/9/2016

Page 1 of 5

TestAmerica Sacramento

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Number: 320-141539

Method Code: 320-537_Prep-320

Batch Open: 12/9/2016 6:50:00PM

Batch End:

11	320-24179-A-7 (537_DOD5)	N/A (320-24179-1)	308.57 g 25.95 g	282.6 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
12	320-24179-A-8 (537_DOD5)	N/A (320-24179-1)	293.56 g 29.01 g	264.6 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
13	320-24179-A-9 (537_DOD5)	N/A (320-24179-1)	314.55 g 26.36 g	288.2 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
14	320-24179-A-10 (537_DOD5)	N/A (320-24179-1)	287.94 g 28.82 g	259.1 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
15	320-24179-A-11 (537_DOD5)	N/A (320-24179-1)	291.80 g 27.02 g	264.8 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
16	320-24179-A-12 (537_DOD5)	N/A (320-24179-1)	296.03 g 27.08 g	269 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
17	320-24179-A-13 (537_DOD5)	N/A (320-24179-1)	307.48 g 26.05 g	281.4 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
18	320-24179-A-14 (537_DOD5)	N/A (320-24179-1)	285.78 g 27.40 g	258.4 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							
19	320-24179-A-15 (537_DOD5)	N/A (320-24179-1)	282.78 g 26.29 g	256.5 mL 1.00 mL	7					12/13/16	8_Day_Rush	4	Free Chlorine: ND							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Number: 320-141539
Method Code: 320-537_Prep-320

Batch Open: 12/9/2016 6:50:00PM
Batch End:

Batch Notes	
Manifold ID	5, 1
Trizma ID	SLBN2122V
SPE Cartridge ID	6332578-03
Methanol ID	789820
Reagent Water ID	12/08/16
Pipette ID	MD05306
Analyst ID - TA Reagent Drop	JER
Analyst ID - TA Reagent Drop	VPM
Witness	
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop	VPM
Witness	
Analyst ID - IS Reagent Drop	SPD
Analyst ID - IS Reagent Drop	VAM
Witness	
Batch Comment	

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Number: 320-141539
Method Code: 320-537_Prep-320

Batch Open: 12/9/2016 6:50:00PM
Batch End: 12/10/2016 5:11:00PM

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-141539/1	LC537-IS_00026	20 uL	1.00 mL		
MB 320-141539/1	LC537-SU_00024	50 uL	1.00 mL		
LCS 320-141539/2	LC537-HSP_00010	50 uL	1.00 mL		
LCS 320-141539/2	LC537-IS_00026	20 uL	1.00 mL		
LCS 320-141539/2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-1	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-1 MS	LC537-MSP_00014	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MSD	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-1 MSD	LC537-MSP_00014	50 uL	1.00 mL		
320-24179-A-1 MSD	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-2	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-3	LC537-IS_00026	20 uL	1.00 mL		
320-24179-A-3	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-4	LC537-IS_00026	20 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

Batch Number: 320-141539
Method Code: 320-537_Prep-320

(To Accompany Samples to Instruments)
Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM
Batch End: 12/10/2016 5:11:00PM

320-24179-A-4	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-5	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-5	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-6	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-6	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-7	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-7	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-8	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-8	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-9	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-9	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-10	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-10	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-11	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-11	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-12	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-12	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-13	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-13	LC537-SU_00024	50 μ L	1.00 mL
320-24179-A-14	LC537-IS_00026	20 μ L	1.00 mL
320-24179-A-14	LC537-SU_00024	50 μ L	1.00 mL

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Number: 320-141539

Method Code: 320-537_Prep-320

Batch Open: 12/9/2016 6:50:00PM
Batch End: 12/10/2016 5:11:00PM

320-24179-A-15	LC537-IS_00026	20 uL	1.00 mL
320-24179-A-15	LC537-SU_00024	50 uL	1.00 mL

Other Reagents:

Reagent	Amount/Units	Lot#:

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Reed, Jonathan E

Batch Open: 12/9/2016 6:50:00PM

Batch End:

Batch Number: 320-141539

Method Code: 320-537_Prep-320

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-141539/1	LC537-SU_00024	50 uL	1.00 mL	<i>JM</i>	✓PM 12/09/16
LCS 320-141539/2	LC537-HSP_00010	50 uL	1.00 mL		
LCS 320-141539/2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-MSP_00014	50 uL	1.00 mL		
320-24179-A-1 MS	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-1 MSD	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-2	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-3	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-4	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-5	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-6	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-7	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-8	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-9	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-10	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-11	LC537-SU_00024	50 uL	1.00 mL		
320-24179-A-12	LC537-SU_00024	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-141539

Method Code: 320-537_ Prep-320

Batch Open: 12/9/2016 6:50:00PM

Batch End:

320-24179-A-13	LC537-SU_00024	50 μ L	1.00 mL	<u>10000000/1e</u>	VPM 2/109/114
320-24179-A-14	LC537-SU_00024	50 μ L	1.00 mL		
320-24179-A-15	LC537-SU_00024	50 μ L	1.00 mL		

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 141577 Test: S37-0005 (Rush)
Earliest Holding Time: 12/19/16

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

1st Level Reviewer: JH

Date: 12/19/16

2nd Level Reviewer: VPM

Date: 12/10/16

Comments: _____

Shipping and Receiving Documents

Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc.

Job Number: 320-24178-1

Login Number: 24178

List Source: TestAmerica Sacramento

List Number: 1

Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Temperature was -0.2 degrees, but the samples were not frozen
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: 320-24178-1
Laboratory: Test America, Sacramento, California
Site: Whidbey Island, CTO-0008, Washington
Date: January 4, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WI-CV-1RW23-1216	320-24178-1	Water
2	WI-CV-1RW23P-1216	320-24178-2	Water
3	WI-CV-1FB23-1216	320-24178-3	Water
4	WI-CV-1RW24-1216	320-24178-4	Water
5	WI-CV-1FB24-1216	320-24178-5	Water
6	WI-CV-1RW25-1216	320-24178-6	Water
7	WI-CV-1FB25-1216	320-24178-7	Water
8	WI-CV-1RW26-1216	320-24178-8	Water
9	WI-CV-1FB26-1216	320-24178-9	Water
10	WI-CV-1RW27-1216	320-24178-10	Water
11	WI-CV-1FB27-1216	320-24178-11	Water
12	WI-CV-1RW28-1216	320-24178-12	Water
13	WI-CV-1FB28-1216	320-24178-13	Water

A full data validation was performed on the analytical data for seven water samples and six aqueous field blank samples collected on December 6, 2016 by CH2M HILL at the Whidbey Island site in Washington. The samples were analyzed under the EPA Method “Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)”.

Specific method references are as follows:

Analysis

PFCs

Method References

USEPA Method 537 Rev 1.1 Modified

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

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

The following data quality indicators were reviewed for this report:

Organics

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

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

Data Usability Assessment

There were no rejections of data.

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

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

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

Holding Times

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

GC/MS Tuning

- All criteria were met.

Initial Calibration

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

Continuing Calibration

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

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- The field blank samples were free of contamination.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

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

- A MS/MSD sample was not collected.

Laboratory Control Samples/Laboratory Control Sample Duplicates

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

Internal Standard (IS) Area Performance

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

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

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

Compound	WI-CV-1RW23-1216 ug/L	WI-CV-1RW23P-1216 ug/L	RPD	Qualifier
PFOA	0.055	0.061	10%	None

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

Signed:

Nancy Weaver

Dated: 1/6/17

Nancy Weaver
Senior Chemist

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

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1RW23-1216 Lab Sample ID: 320-24178-1
 Matrix: Water Lab File ID: 15DEC2016A6A_009.d
 Analysis Method: 537 Date Collected: 12/06/2016 09:21
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 273.4 (mL) Date Analyzed: 12/15/2016 11:30
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: GPC Cleanup: (Y/N) N
 Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U M	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.055		0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	95		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1RW23P-1216 Lab Sample ID: 320-24178-2
Matrix: Water Lab File ID: 15DEC2016A6A_010.d
Analysis Method: 537 Date Collected: 12/06/2016 09:26
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 277.5 (mL) Date Analyzed: 12/15/2016 12:00
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.043	U <u>M</u>	0.054	0.043	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.061		0.027	0.022	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.099	U	0.13	0.099	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	101		70-130
STL00996	13C2 PFDA	110		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1FB23-1216 Lab Sample ID: 320-24178-3
Matrix: Water Lab File ID: 15DEC2016A6A_011.d
Analysis Method: 537 Date Collected: 12/06/2016 09:22
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 251.6 (mL) Date Analyzed: 12/15/2016 12:29
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.060	0.048	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U <u>N</u>	0.030	0.024	0.0094
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	106		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1RW24-1216 Lab Sample ID: 320-24178-4
Matrix: Water Lab File ID: 15DEC2016A6A_012.d
Analysis Method: 537 Date Collected: 12/06/2016 09:45
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 267.4 (mL) Date Analyzed: 12/15/2016 12:59
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.045	U	0.056	0.045	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0088
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	91		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1FB24-1216 Lab Sample ID: 320-24178-5
Matrix: Water Lab File ID: 15DEC2016A6A_013.d
Analysis Method: 537 Date Collected: 12/06/2016 09:44
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 252.2 (mL) Date Analyzed: 12/15/2016 13:29
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.048	U	0.059	0.048	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

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

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1RW25-1216 Lab Sample ID: 320-24178-6
Matrix: Water Lab File ID: 15DEC2016A6A_014.d
Analysis Method: 537 Date Collected: 12/06/2016 10:00
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 271.7 (mL) Date Analyzed: 12/15/2016 14:25
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142223 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		70-130
STL00996	13C2 PFDA	92		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1FB25-1216 Lab Sample ID: 320-24178-7
Matrix: Water Lab File ID: 15DEC2016A6A_017.d
Analysis Method: 537 Date Collected: 12/06/2016 09:58
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 247.3 (mL) Date Analyzed: 12/15/2016 15:54
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluoroctanesulfonic acid (PFOS)	0.049	U	0.061	0.049	0.016
335-67-1	Perfluoroctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0095
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.048

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	93		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1RW26-1216 Lab Sample ID: 320-24178-8
Matrix: Water Lab File ID: 15DEC2016A6A_018.d
Analysis Method: 537 Date Collected: 12/06/2016 10:12
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 270.3 (mL) Date Analyzed: 12/15/2016 16:24
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture:
Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.055	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.028	0.022	0.0087
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.044

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	100		70-130
STL00996	13C2 PFDA	97		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1FB26-1216 Lab Sample ID: 320-24178-9
Matrix: Water Lab File ID: 15DEC2016A6A_019.d
Analysis Method: 537 Date Collected: 12/06/2016 10:09
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 253.5 (mL) Date Analyzed: 12/15/2016 16:53
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

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

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1RW27-1216 Lab Sample ID: 320-24178-10
Matrix: Water Lab File ID: 15DEC2016A6A_020.d
Analysis Method: 537 Date Collected: 12/06/2016 10:24
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 254.4 (mL) Date Analyzed: 12/15/2016 17:23
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture:
GPC Cleanup: (Y/N) N
Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.038		0.029	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	114		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

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Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1FB27-1216 Lab Sample ID: 320-24178-11
Matrix: Water Lab File ID: 15DEC2016A6A_021.d
Analysis Method: 537 Date Collected: 12/06/2016 10:22
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 259.2 (mL) Date Analyzed: 12/15/2016 17:53
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.046	U	0.058	0.046	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.023	U	0.029	0.023	0.0091
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.046

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	100		70-130

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
SDG No.:
Client Sample ID: WI-CV-1RW28-1216 Lab Sample ID: 320-24178-12
Matrix: Water Lab File ID: 15DEC2016A6A_022.d
Analysis Method: 537 Date Collected: 12/06/2016 14:08
Extraction Method: 537 Date Extracted: 12/09/2016 18:59
Sample wt/vol: 275.4 (mL) Date Analyzed: 12/15/2016 18:22
Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
% Moisture: GPC Cleanup: (Y/N) N
Analysis Batch No.: 142412 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.044	U	0.054	0.044	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.022	U	0.027	0.022	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.10	U	0.13	0.10	0.043

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	87		70-130

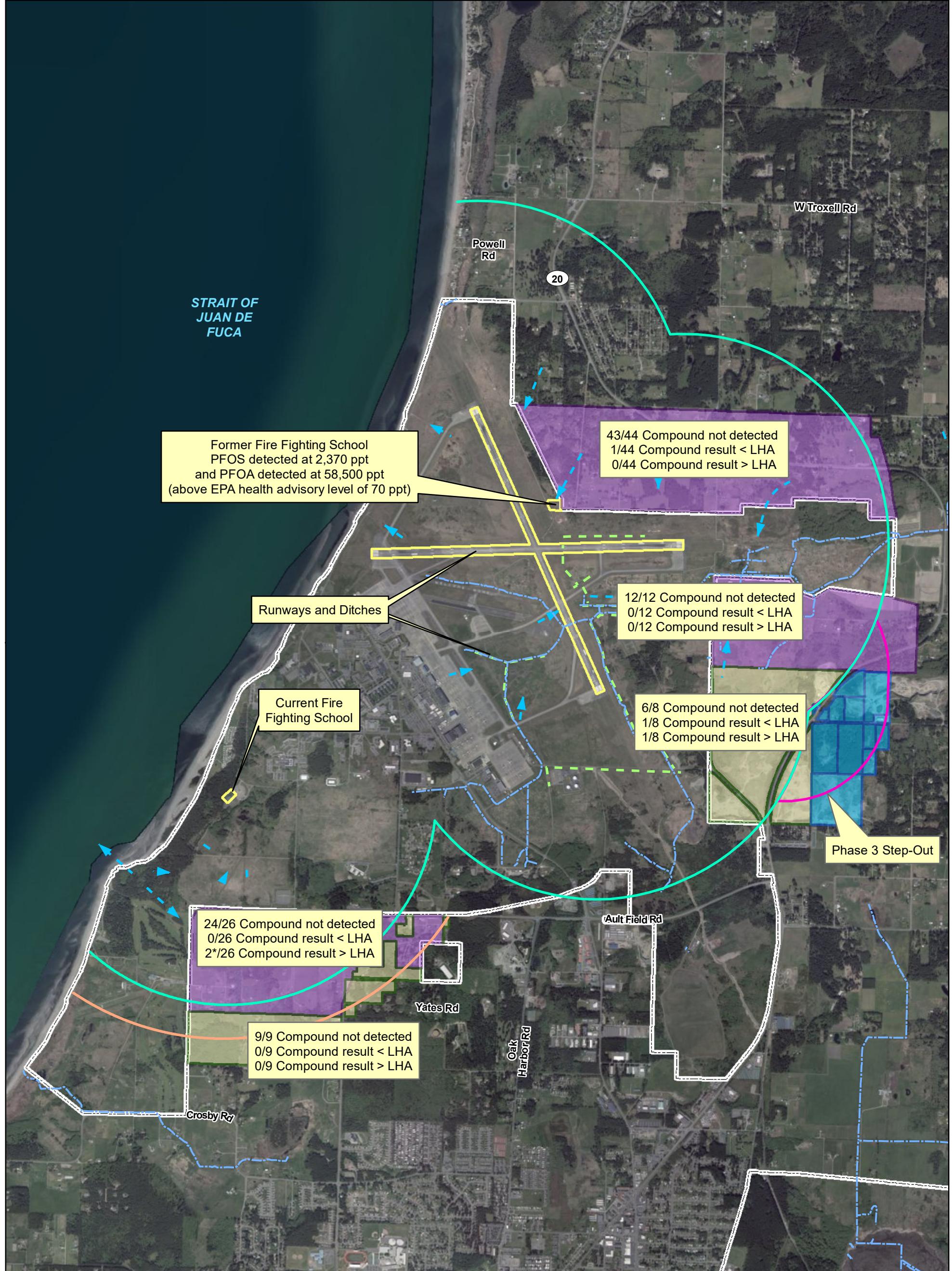
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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24178-1
 SDG No.:
 Client Sample ID: WI-CV-1FB28-1216 Lab Sample ID: 320-24178-13
 Matrix: Water Lab File ID: 15DEC2016A6A_023.d
 Analysis Method: 537 Date Collected: 12/06/2016 14:05
 Extraction Method: 537 Date Extracted: 12/09/2016 18:59
 Sample wt/vol: 253.8 (mL) Date Analyzed: 12/15/2016 18:52
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1
 Injection Volume: 10 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture:
 Analysis Batch No.: 142412 GPC Cleanup: (Y/N) N
 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.047	U	0.059	0.047	0.015
335-67-1	Perfluorooctanoic acid (PFOA)	0.024	U	0.030	0.024	0.0093
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.11	U	0.14	0.11	0.047

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	100		70-130



Legend

- 1 Mile Zone
- Half-mile Step-out Downgradient
- Surface Water
- Drainage Ditch
- Half-mile Step-out Downgradient
- Suspected Source Area
- Parcels in Phase 1 Sampling Area
- Parcels Identified in Phase 2 Sampling Area
- Parcels Identified in Phase 3 Sampling Area

□ Base Boundary
— Inferred Groundwater Flow Direction

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

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

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



1 inch = 0.45 mile
Imagery Source: Esri