



**Off-Base Drinking Water Sample Results,  
Combined Level 2 and Level 4 Laboratory Report,  
Electronic Data Deliverable, Data Validation Report,  
and the Sample Location Figure, SDG 320-29346-1**

*Naval Air Station Willow Grove  
Willow Grove, Pennsylvania*

August 2019

N00158\_000723  
WILLOW\_GROVE\_NAS  
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-29346-1, NAWC WARMINSTER NAS  
WILLOW GROVE PA**

07/18/2017  
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

## ANALYTICAL REPORT

Job Number: 320-29346-1

Job Description: Warminster: PFAS, NAS JRB Willow Grove

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



Approved for release.  
David R Alltucker  
Project Manager I  
7/18/2017 12:57 PM

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07/18/2017

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# Definitions/Glossary

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

TestAmerica Job ID: 320-29346-1

## Qualifiers

### LCMS

| Qualifier | Qualifier Description                                                               |
|-----------|-------------------------------------------------------------------------------------|
| U         | Undetected at the Limit of Detection.                                               |
| J         | Estimated: The analyte was positively identified; the quantitation is an estimation |
| M         | Manual integrated compound.                                                         |
| E         | Result exceeded calibration range.                                                  |

## Glossary

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

**Job Narrative**  
**320-29346-1**

**Receipt**

The samples were received on 6/22/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0° C.

**LCMS**

Method(s) 537: The laboratory control sample (LCS) has E flags because it is spiked at the upper level of the calibration curve as specified in the method. (LCS 320-172426/2-A)

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

Method(s) 537: The following samples appear to have been switched WGNA-062117-RW-0569 (320-29346-3) and WGNA-062117-FRB-0569 (320-29346-4). Sample 320-29346-4 was labeled FRB and had detections, while 320-29346-3 as labeled RW was Non-Detect. The samples were re-extracted and the results confirmed and the first extraction was reported. The laboratory confirmed the field sample labels on the sample bottles matched the laboratory labels the analysis sequences were verified. Samples may have been switched in the field. WGNA-062117-RW-0569 (320-29346-3) and WGNA-062117-FRB-0569 (320-29346-4)

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

**Organic Prep**

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-172426.

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-173623.

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

# Detection Summary

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

TestAmerica Job ID: 320-29346-1

## Client Sample ID: WGNA-062117-RW-3148

## Lab Sample ID: 320-29346-1

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS)  | 22     | J         | 39  | 6.6 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)        | 27     | M         | 19  | 2.7 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorohexanesulfonic acid (PFHxS) | 11     | J         | 29  | 5.4 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)      | 7.8    | J         | 9.7 | 1.8 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-FRB-3148

## Lab Sample ID: 320-29346-2

No Detections.

## Client Sample ID: WGNA-062117-RW-0569

## Lab Sample ID: 320-29346-3

No Detections.

## Client Sample ID: WGNA-062117-FRB-0569

## Lab Sample ID: 320-29346-4

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS)  | 22     | J         | 40  | 6.7 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)        | 28     | M         | 20  | 2.8 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorohexanesulfonic acid (PFHxS) | 6.3    | J         | 30  | 5.5 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)      | 8.2    | J         | 9.9 | 1.9 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-RW-3097

## Lab Sample ID: 320-29346-5

| Analyte                             | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 16     | J         | 37  | 6.3 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)       | 19     | M         | 19  | 2.6 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)     | 5.1    | J         | 9.3 | 1.8 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-FRB-3097

## Lab Sample ID: 320-29346-6

No Detections.

## Client Sample ID: WGNA-062117-RW-0461

## Lab Sample ID: 320-29346-7

No Detections.

## Client Sample ID: WGNA-062117-FRB-0461

## Lab Sample ID: 320-29346-8

No Detections.

## Client Sample ID: WGNA-062117-DUP02

## Lab Sample ID: 320-29346-9

| Analyte                             | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 17     | J         | 38  | 6.4 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)       | 14     | J M       | 19  | 2.6 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)     | 14     |           | 9.5 | 1.8 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-RW-0500

## Lab Sample ID: 320-29346-10

| Analyte                             | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 23     | J         | 39  | 6.6 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)       | 27     | M         | 19  | 2.7 | ng/L | 1       |   | 537    | Total/NA  |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento



# Detection Summary

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

TestAmerica Job ID: 320-29346-1

## Client Sample ID: WGNA-062117-RW-0500 (Continued)

Lab Sample ID: 320-29346-10

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorohexanesulfonic acid (PFHxS) | 8.1    | J         | 29  | 5.3 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)      | 7.3    | J         | 9.7 | 1.8 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-FRB-0500

Lab Sample ID: 320-29346-11

No Detections.

## Client Sample ID: WGNA-062117-RW-3933

Lab Sample ID: 320-29346-12

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS)  | 17     | J         | 39  | 6.7 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)        | 18     | J M       | 20  | 2.8 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorohexanesulfonic acid (PFHxS) | 11     | J         | 30  | 5.4 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)      | 6.6    | J         | 9.9 | 1.9 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-FRB-3933

Lab Sample ID: 320-29346-13

No Detections.

## Client Sample ID: WGNA-062117-RW-0404

Lab Sample ID: 320-29346-14

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS)  | 21     | J         | 39  | 6.6 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)        | 23     | M         | 19  | 2.7 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorohexanesulfonic acid (PFHxS) | 7.4    | J         | 29  | 5.4 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)      | 6.3    | J         | 9.7 | 1.8 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-FRB-0404

Lab Sample ID: 320-29346-15

No Detections.

## Client Sample ID: WGNA-062117-RW-2426

Lab Sample ID: 320-29346-16

| Analyte                             | Result | Qualifier | LOQ | DL  | Unit | Dil Fac | D | Method | Prep Type |
|-------------------------------------|--------|-----------|-----|-----|------|---------|---|--------|-----------|
| Perfluorooctanesulfonic acid (PFOS) | 18     | J         | 39  | 6.7 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluorooctanoic acid (PFOA)       | 14     | J M       | 20  | 2.8 | ng/L | 1       |   | 537    | Total/NA  |
| Perfluoroheptanoic acid (PFHpA)     | 14     |           | 9.9 | 1.9 | ng/L | 1       |   | 537    | Total/NA  |

## Client Sample ID: WGNA-062117-FRB-2426

Lab Sample ID: 320-29346-17

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-RW-3148**

**Date Collected: 06/21/17 08:35**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-1**

**Matrix: Water**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 22        | J         | 39       | 6.6 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| Perfluorooctanoic acid (PFOA)        | 27        | M         | 19       | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| Perfluorononanoic acid (PFNA)        | 19        | U M       | 23       | 7.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11        | J         | 29       | 5.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 7.8       | J         | 9.7      | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35        | U         | 88       | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 94        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |
| 13C2 PFDA                            | 92        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:18 | 1       |

**Client Sample ID: WGNA-062117-FRB-3148**

**Date Collected: 06/21/17 08:30**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-2**

**Matrix: Water**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15        | U         | 39       | 6.6 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.7       | U         | 19       | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| Perfluorononanoic acid (PFNA)        | 19        | U         | 23       | 7.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 12        | U         | 29       | 5.3 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.9       | U         | 9.7      | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35        | U         | 87       | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 95        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |
| 13C2 PFDA                            | 95        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:23 | 1       |

**Client Sample ID: WGNA-062117-RW-0569**

**Date Collected: 06/21/17 13:20**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-3**

**Matrix: Water**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15        | U         | 38       | 6.4 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.5       | U         | 19       | 2.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| Perfluorononanoic acid (PFNA)        | 19        | U         | 23       | 7.5 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11        | U         | 28       | 5.2 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.8       | U         | 9.4      | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 34        | U         | 85       | 15  | ng/L |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 96        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |
| 13C2 PFDA                            | 91        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:27 | 1       |

# Client Sample Results

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-FRB-0569**

**Lab Sample ID: 320-29346-4**

**Date Collected: 06/21/17 15:15**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 22        | J         | 40       | 6.7 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| Perfluorooctanoic acid (PFOA)        | 28        | M         | 20       | 2.8 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| Perfluorononanoic acid (PFNA)        | 20        | U         | 24       | 7.9 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 6.3       | J         | 30       | 5.5 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 8.2       | J         | 9.9      | 1.9 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 36        | U         | 89       | 16  | ng/L | — | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 89        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:32 | 1       |
| 13C2 PFDA                            | 95        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:32 | 1       |

**Client Sample ID: WGNA-062117-RW-3097**

**Lab Sample ID: 320-29346-5**

**Date Collected: 06/21/17 11:40**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 16        | J         | 37       | 6.3 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| Perfluorooctanoic acid (PFOA)        | 19        | M         | 19       | 2.6 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| Perfluorononanoic acid (PFNA)        | 19        | U M       | 22       | 7.4 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11        | U         | 28       | 5.1 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 5.1       | J         | 9.3      | 1.8 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 33        | U         | 83       | 15  | ng/L | — | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 83        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:37 | 1       |
| 13C2 PFDA                            | 95        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:37 | 1       |

**Client Sample ID: WGNA-062117-FRB-3097**

**Lab Sample ID: 320-29346-6**

**Date Collected: 06/21/17 09:30**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 16        | U         | 39       | 6.7 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.9       | U         | 20       | 2.8 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| Perfluorononanoic acid (PFNA)        | 20        | U         | 24       | 7.9 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 12        | U         | 30       | 5.4 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.9       | U         | 9.8      | 1.9 | ng/L | — | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35        | U         | 89       | 16  | ng/L | — | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 96        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:51 | 1       |
| 13C2 PFDA                            | 90        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 12:51 | 1       |

# Client Sample Results

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-RW-0461**

**Lab Sample ID: 320-29346-7**

**Date Collected: 06/21/17 15:20**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 16     | U         | 39  | 6.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:56 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.8    | U         | 20  | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:56 | 1       |
| Perfluorononanoic acid (PFNA)        | 20     | U         | 23  | 7.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:56 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 12     | U         | 29  | 5.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:56 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.9    | U         | 9.8 | 1.9 | ng/L |   | 07/05/17 10:52 | 07/08/17 12:56 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35     | U         | 88  | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 12:56 | 1       |

| Surrogate  | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 96        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 12:56 | 1       |
| 13C2 PFDA  | 91        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 12:56 | 1       |

**Client Sample ID: WGNA-062117-FRB-0461**

**Lab Sample ID: 320-29346-8**

**Date Collected: 06/21/17 15:15**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15     | U         | 37  | 6.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:01 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.5    | U         | 19  | 2.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:01 | 1       |
| Perfluorononanoic acid (PFNA)        | 19     | U         | 22  | 7.5 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:01 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11     | U         | 28  | 5.2 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:01 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.7    | U         | 9.4 | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:01 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 34     | U         | 84  | 15  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:01 | 1       |

| Surrogate  | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 97        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:01 | 1       |
| 13C2 PFDA  | 89        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:01 | 1       |

**Client Sample ID: WGNA-062117-DUP02**

**Lab Sample ID: 320-29346-9**

**Date Collected: 06/21/17 07:00**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 17     | J         | 38  | 6.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:05 | 1       |
| Perfluorooctanoic acid (PFOA)        | 14     | J M       | 19  | 2.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:05 | 1       |
| Perfluorononanoic acid (PFNA)        | 19     | U         | 23  | 7.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:05 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11     | U         | 28  | 5.2 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:05 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 14     |           | 9.5 | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:05 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 34     | U         | 85  | 15  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:05 | 1       |

| Surrogate  | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 86        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:05 | 1       |
| 13C2 PFDA  | 96        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:05 | 1       |

# Client Sample Results

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-RW-0500**

**Lab Sample ID: 320-29346-10**

**Date Collected: 06/21/17 15:40**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 23        | J         | 39       | 6.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| Perfluorooctanoic acid (PFOA)        | 27        | M         | 19       | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| Perfluorononanoic acid (PFNA)        | 19        | U M       | 23       | 7.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 8.1       | J         | 29       | 5.3 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 7.3       | J         | 9.7      | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35        | U         | 87       | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 89        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |
| 13C2 PFDA                            | 90        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:10 | 1       |

**Client Sample ID: WGNA-062117-FRB-0500**

**Lab Sample ID: 320-29346-11**

**Date Collected: 06/21/17 15:35**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15        | U         | 37       | 6.3 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.4       | U         | 18       | 2.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| Perfluorononanoic acid (PFNA)        | 18        | U         | 22       | 7.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11        | U         | 28       | 5.1 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.7       | U         | 9.2      | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 33        | U         | 83       | 15  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 104       |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |
| 13C2 PFDA                            | 97        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:15 | 1       |

**Client Sample ID: WGNA-062117-RW-3933**

**Lab Sample ID: 320-29346-12**

**Date Collected: 06/21/17 10:55**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 17        | J         | 39       | 6.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| Perfluorooctanoic acid (PFOA)        | 18        | J M       | 20       | 2.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| Perfluorononanoic acid (PFNA)        | 20        | U         | 24       | 7.9 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11        | J         | 30       | 5.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 6.6       | J         | 9.9      | 1.9 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 36        | U         | 89       | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 87        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |
| 13C2 PFDA                            | 98        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:20 | 1       |

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-FRB-3933**

**Lab Sample ID: 320-29346-13**

**Date Collected: 06/21/17 10:50**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15     | U         | 39  | 6.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:24 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.7    | U         | 19  | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:24 | 1       |
| Perfluorononanoic acid (PFNA)        | 19     | U         | 23  | 7.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:24 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 12     | U         | 29  | 5.3 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:24 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.9    | U         | 9.7 | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:24 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35     | U         | 87  | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:24 | 1       |

| Surrogate  | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 99        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:24 | 1       |
| 13C2 PFDA  | 92        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:24 | 1       |

**Client Sample ID: WGNA-062117-RW-0404**

**Lab Sample ID: 320-29346-14**

**Date Collected: 06/21/17 10:35**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 21     | J         | 39  | 6.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:29 | 1       |
| Perfluorooctanoic acid (PFOA)        | 23     | M         | 19  | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:29 | 1       |
| Perfluorononanoic acid (PFNA)        | 19     | U M       | 23  | 7.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:29 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 7.4    | J         | 29  | 5.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:29 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 6.3    | J         | 9.7 | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:29 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35     | U         | 88  | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:29 | 1       |

| Surrogate  | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 88        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:29 | 1       |
| 13C2 PFDA  | 92        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:29 | 1       |

**Client Sample ID: WGNA-062117-FRB-0404**

**Lab Sample ID: 320-29346-15**

**Date Collected: 06/21/17 10:30**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result | Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15     | U         | 38  | 6.5 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:34 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.6    | U         | 19  | 2.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:34 | 1       |
| Perfluorononanoic acid (PFNA)        | 19     | U         | 23  | 7.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:34 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11     | U         | 29  | 5.2 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:34 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.8    | U         | 9.5 | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:34 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 34     | U         | 86  | 15  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:34 | 1       |

| Surrogate  | %Recovery | Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|-----------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 100       |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:34 | 1       |
| 13C2 PFDA  | 93        |           | 70 - 130 | 07/05/17 10:52 | 07/08/17 13:34 | 1       |

TestAmerica Sacramento

# Client Sample Results

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-RW-2426**

**Lab Sample ID: 320-29346-16**

**Date Collected: 06/21/17 08:35**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 18        | J         | 39       | 6.7 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| Perfluorooctanoic acid (PFOA)        | 14        | J M       | 20       | 2.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| Perfluorononanoic acid (PFNA)        | 20        | U M       | 24       | 7.9 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 12        | U         | 30       | 5.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 14        |           | 9.9      | 1.9 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 35        | U         | 89       | 16  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 86        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |
| 13C2 PFDA                            | 93        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:48 | 1       |

**Client Sample ID: WGNA-062117-FRB-2426**

**Lab Sample ID: 320-29346-17**

**Date Collected: 06/21/17 08:30**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

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

| Analyte                              | Result    | Qualifier | LOQ      | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|-----------|----------|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 15        | U         | 38       | 6.4 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| Perfluorooctanoic acid (PFOA)        | 7.5       | U         | 19       | 2.6 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| Perfluorononanoic acid (PFNA)        | 19        | U         | 23       | 7.5 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 11        | U         | 28       | 5.2 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 3.8       | U         | 9.4      | 1.8 | ng/L |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 34        | U         | 85       | 15  | ng/L |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| Surrogate                            | %Recovery | Qualifier | Limits   |     |      |   | Prepared       | Analyzed       | Dil Fac |
| 13C2 PFHxA                           | 97        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |
| 13C2 PFDA                            | 94        |           | 70 - 130 |     |      |   | 07/05/17 10:52 | 07/08/17 13:53 | 1       |

## Default Detection Limits

Client: Tetra Tech, Inc.

TestAmerica Job ID: 320-29346-1

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

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

#### Prep: 537

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



# Surrogate Summary

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

TestAmerica Job ID: 320-29346-1

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

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID       | Client Sample ID       | Percent Surrogate Recovery (Acceptance Limits) |                      |
|---------------------|------------------------|------------------------------------------------|----------------------|
|                     |                        | 3C2 PFHx<br>(70-130)                           | 3C2 PFD/<br>(70-130) |
| 320-29346-1         | WGNA-062117-RW-3148    | 94                                             | 92                   |
| 320-29346-2         | WGNA-062117-FRB-3148   | 95                                             | 95                   |
| 320-29346-3         | WGNA-062117-RW-0569    | 96                                             | 91                   |
| 320-29346-4         | WGNA-062117-FRB-0569   | 89                                             | 95                   |
| 320-29346-5         | WGNA-062117-RW-3097    | 83                                             | 95                   |
| 320-29346-6         | WGNA-062117-FRB-3097   | 96                                             | 90                   |
| 320-29346-7         | WGNA-062117-RW-0461    | 96                                             | 91                   |
| 320-29346-8         | WGNA-062117-FRB-0461   | 97                                             | 89                   |
| 320-29346-9         | WGNA-062117-DUP02      | 86                                             | 96                   |
| 320-29346-10        | WGNA-062117-RW-0500    | 89                                             | 90                   |
| 320-29346-11        | WGNA-062117-FRB-0500   | 104                                            | 97                   |
| 320-29346-12        | WGNA-062117-RW-3933    | 87                                             | 98                   |
| 320-29346-13        | WGNA-062117-FRB-3933   | 99                                             | 92                   |
| 320-29346-14        | WGNA-062117-RW-0404    | 88                                             | 92                   |
| 320-29346-15        | WGNA-062117-FRB-0404   | 100                                            | 93                   |
| 320-29346-16        | WGNA-062117-RW-2426    | 86                                             | 93                   |
| 320-29346-17        | WGNA-062117-FRB-2426   | 97                                             | 94                   |
| LCS 320-172426/2-A  | Lab Control Sample     | 99                                             | 103                  |
| LCSD 320-172426/3-A | Lab Control Sample Dup | 100                                            | 99                   |
| MB 320-172426/1-A   | Method Blank           | 99                                             | 100                  |

### Surrogate Legend

13C2 PFHxA = 13C2 PFHxA

13C2 PFDA = 13C2 PFDA

# QC Sample Results

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

TestAmerica Job ID: 320-29346-1

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

Lab Sample ID: MB 320-172426/1-A

Matrix: Water

Analysis Batch: 173114

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 172426

| Analyte                              | MB Result | MB Qualifier | LOQ | DL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|--------------------------------------|-----------|--------------|-----|-----|------|---|----------------|----------------|---------|
| Perfluorooctanesulfonic acid (PFOS)  | 16        | U            | 40  | 6.8 | ng/L | - | 07/05/17 10:52 | 07/08/17 11:54 | 1       |
| Perfluorooctanoic acid (PFOA)        | 8.0       | U            | 20  | 2.8 | ng/L | - | 07/05/17 10:52 | 07/08/17 11:54 | 1       |
| Perfluorononanoic acid (PFNA)        | 20        | U            | 24  | 8.0 | ng/L | - | 07/05/17 10:52 | 07/08/17 11:54 | 1       |
| Perfluorohexanesulfonic acid (PFHxS) | 12        | U            | 30  | 5.5 | ng/L | - | 07/05/17 10:52 | 07/08/17 11:54 | 1       |
| Perfluoroheptanoic acid (PFHpA)      | 4.0       | U            | 10  | 1.9 | ng/L | - | 07/05/17 10:52 | 07/08/17 11:54 | 1       |
| Perfluorobutanesulfonic acid (PFBS)  | 36        | U            | 90  | 16  | ng/L | - | 07/05/17 10:52 | 07/08/17 11:54 | 1       |

| Surrogate  | MB %Recovery | MB Qualifier | Limits   | Prepared       | Analyzed       | Dil Fac |
|------------|--------------|--------------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 99           |              | 70 - 130 | 07/05/17 10:52 | 07/08/17 11:54 | 1       |
| 13C2 PFDA  | 100          |              | 70 - 130 | 07/05/17 10:52 | 07/08/17 11:54 | 1       |

Lab Sample ID: LCS 320-172426/2-A

Matrix: Water

Analysis Batch: 173114

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 172426

| Analyte                              | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|--------------------------------------|-------------|------------|---------------|------|---|------|--------------|
| Perfluorooctanesulfonic acid (PFOS)  | 300         | 302        |               | ng/L | - | 101  | 70 - 130     |
| Perfluorooctanoic acid (PFOA)        | 150         | 161        | E             | ng/L | - | 107  | 70 - 130     |
| Perfluorononanoic acid (PFNA)        | 144         | 149        |               | ng/L | - | 103  | 70 - 130     |
| Perfluorohexanesulfonic acid (PFHxS) | 225         | 216        |               | ng/L | - | 96   | 70 - 130     |
| Perfluoroheptanoic acid (PFHpA)      | 74.3        | 82.2       | E             | ng/L | - | 111  | 70 - 130     |
| Perfluorobutanesulfonic acid (PFBS)  | 663         | 630        |               | ng/L | - | 95   | 70 - 130     |

| Surrogate  | LCS %Recovery | LCS Qualifier | Limits   |
|------------|---------------|---------------|----------|
| 13C2 PFHxA | 99            |               | 70 - 130 |
| 13C2 PFDA  | 103           |               | 70 - 130 |

Lab Sample ID: LCSD 320-172426/3-A

Matrix: Water

Analysis Batch: 173114

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 172426

| Analyte                              | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|--------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Perfluorooctanesulfonic acid (PFOS)  | 300         | 291         | M              | ng/L | - | 97   | 70 - 130     | 4   | 30        |
| Perfluorooctanoic acid (PFOA)        | 150         | 153         |                | ng/L | - | 102  | 70 - 130     | 5   | 30        |
| Perfluorononanoic acid (PFNA)        | 144         | 142         |                | ng/L | - | 99   | 70 - 130     | 4   | 30        |
| Perfluorohexanesulfonic acid (PFHxS) | 225         | 217         |                | ng/L | - | 96   | 70 - 130     | 1   | 30        |
| Perfluoroheptanoic acid (PFHpA)      | 74.3        | 73.4        |                | ng/L | - | 99   | 70 - 130     | 11  | 30        |
| Perfluorobutanesulfonic acid (PFBS)  | 663         | 590         |                | ng/L | - | 89   | 70 - 130     | 7   | 30        |

| Surrogate  | LCSD %Recovery | LCSD Qualifier | Limits   |
|------------|----------------|----------------|----------|
| 13C2 PFHxA | 100            |                | 70 - 130 |
| 13C2 PFDA  | 99             |                | 70 - 130 |

TestAmerica Sacramento

# QC Association Summary

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

TestAmerica Job ID: 320-29346-1

## LCMS

### Prep Batch: 172426

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-29346-1         | WGNA-062117-RW-3148    | Total/NA  | Water  | 537    |            |
| 320-29346-2         | WGNA-062117-FRB-3148   | Total/NA  | Water  | 537    |            |
| 320-29346-3         | WGNA-062117-RW-0569    | Total/NA  | Water  | 537    |            |
| 320-29346-4         | WGNA-062117-FRB-0569   | Total/NA  | Water  | 537    |            |
| 320-29346-5         | WGNA-062117-RW-3097    | Total/NA  | Water  | 537    |            |
| 320-29346-6         | WGNA-062117-FRB-3097   | Total/NA  | Water  | 537    |            |
| 320-29346-7         | WGNA-062117-RW-0461    | Total/NA  | Water  | 537    |            |
| 320-29346-8         | WGNA-062117-FRB-0461   | Total/NA  | Water  | 537    |            |
| 320-29346-9         | WGNA-062117-DUP02      | Total/NA  | Water  | 537    |            |
| 320-29346-10        | WGNA-062117-RW-0500    | Total/NA  | Water  | 537    |            |
| 320-29346-11        | WGNA-062117-FRB-0500   | Total/NA  | Water  | 537    |            |
| 320-29346-12        | WGNA-062117-RW-3933    | Total/NA  | Water  | 537    |            |
| 320-29346-13        | WGNA-062117-FRB-3933   | Total/NA  | Water  | 537    |            |
| 320-29346-14        | WGNA-062117-RW-0404    | Total/NA  | Water  | 537    |            |
| 320-29346-15        | WGNA-062117-FRB-0404   | Total/NA  | Water  | 537    |            |
| 320-29346-16        | WGNA-062117-RW-2426    | Total/NA  | Water  | 537    |            |
| 320-29346-17        | WGNA-062117-FRB-2426   | Total/NA  | Water  | 537    |            |
| MB 320-172426/1-A   | Method Blank           | Total/NA  | Water  | 537    |            |
| LCS 320-172426/2-A  | Lab Control Sample     | Total/NA  | Water  | 537    |            |
| LCSD 320-172426/3-A | Lab Control Sample Dup | Total/NA  | Water  | 537    |            |

### Analysis Batch: 173114

| Lab Sample ID       | Client Sample ID       | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-29346-1         | WGNA-062117-RW-3148    | Total/NA  | Water  | 537    | 172426     |
| 320-29346-2         | WGNA-062117-FRB-3148   | Total/NA  | Water  | 537    | 172426     |
| 320-29346-3         | WGNA-062117-RW-0569    | Total/NA  | Water  | 537    | 172426     |
| 320-29346-4         | WGNA-062117-FRB-0569   | Total/NA  | Water  | 537    | 172426     |
| 320-29346-5         | WGNA-062117-RW-3097    | Total/NA  | Water  | 537    | 172426     |
| MB 320-172426/1-A   | Method Blank           | Total/NA  | Water  | 537    | 172426     |
| LCS 320-172426/2-A  | Lab Control Sample     | Total/NA  | Water  | 537    | 172426     |
| LCSD 320-172426/3-A | Lab Control Sample Dup | Total/NA  | Water  | 537    | 172426     |

### Analysis Batch: 173116

| Lab Sample ID | Client Sample ID     | Prep Type | Matrix | Method | Prep Batch |
|---------------|----------------------|-----------|--------|--------|------------|
| 320-29346-6   | WGNA-062117-FRB-3097 | Total/NA  | Water  | 537    | 172426     |
| 320-29346-7   | WGNA-062117-RW-0461  | Total/NA  | Water  | 537    | 172426     |
| 320-29346-8   | WGNA-062117-FRB-0461 | Total/NA  | Water  | 537    | 172426     |
| 320-29346-9   | WGNA-062117-DUP02    | Total/NA  | Water  | 537    | 172426     |
| 320-29346-10  | WGNA-062117-RW-0500  | Total/NA  | Water  | 537    | 172426     |
| 320-29346-11  | WGNA-062117-FRB-0500 | Total/NA  | Water  | 537    | 172426     |
| 320-29346-12  | WGNA-062117-RW-3933  | Total/NA  | Water  | 537    | 172426     |
| 320-29346-13  | WGNA-062117-FRB-3933 | Total/NA  | Water  | 537    | 172426     |
| 320-29346-14  | WGNA-062117-RW-0404  | Total/NA  | Water  | 537    | 172426     |
| 320-29346-15  | WGNA-062117-FRB-0404 | Total/NA  | Water  | 537    | 172426     |

### Analysis Batch: 173117

| Lab Sample ID | Client Sample ID     | Prep Type | Matrix | Method | Prep Batch |
|---------------|----------------------|-----------|--------|--------|------------|
| 320-29346-16  | WGNA-062117-RW-2426  | Total/NA  | Water  | 537    | 172426     |
| 320-29346-17  | WGNA-062117-FRB-2426 | Total/NA  | Water  | 537    | 172426     |

# Lab Chronicle

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-RW-3148**

**Date Collected: 06/21/17 08:35**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-1**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173114       | 07/08/17 12:18       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-3148**

**Date Collected: 06/21/17 08:30**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-2**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173114       | 07/08/17 12:23       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-RW-0569**

**Date Collected: 06/21/17 13:20**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-3**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173114       | 07/08/17 12:27       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-0569**

**Date Collected: 06/21/17 15:15**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-4**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173114       | 07/08/17 12:32       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-RW-3097**

**Date Collected: 06/21/17 11:40**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-5**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173114       | 07/08/17 12:37       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-3097**

**Date Collected: 06/21/17 09:30**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-6**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 12:51       | JRB     | TAL SAC |

TestAmerica Sacramento

# Lab Chronicle

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-RW-0461**

**Date Collected: 06/21/17 15:20**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-7**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 12:56       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-0461**

**Date Collected: 06/21/17 15:15**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-8**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:01       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-DUP02**

**Date Collected: 06/21/17 07:00**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-9**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:05       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-RW-0500**

**Date Collected: 06/21/17 15:40**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-10**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:10       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-0500**

**Date Collected: 06/21/17 15:35**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-11**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:15       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-RW-3933**

**Date Collected: 06/21/17 10:55**

**Date Received: 06/22/17 09:30**

**Lab Sample ID: 320-29346-12**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:20       | JRB     | TAL SAC |

TestAmerica Sacramento

# Lab Chronicle

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

TestAmerica Job ID: 320-29346-1

**Client Sample ID: WGNA-062117-FRB-3933**

**Lab Sample ID: 320-29346-13**

**Date Collected: 06/21/17 10:50**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:24       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-RW-0404**

**Lab Sample ID: 320-29346-14**

**Date Collected: 06/21/17 10:35**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:29       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-0404**

**Lab Sample ID: 320-29346-15**

**Date Collected: 06/21/17 10:30**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173116       | 07/08/17 13:34       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-RW-2426**

**Lab Sample ID: 320-29346-16**

**Date Collected: 06/21/17 08:35**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173117       | 07/08/17 13:48       | JRB     | TAL SAC |

**Client Sample ID: WGNA-062117-FRB-2426**

**Lab Sample ID: 320-29346-17**

**Date Collected: 06/21/17 08:30**

**Matrix: Water**

**Date Received: 06/22/17 09:30**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab     |
|-----------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA  | Prep       | 537          |     |                 | 172426       | 07/05/17 10:52       | NS1     | TAL SAC |
| Total/NA  | Analysis   | 537          |     | 1               | 173117       | 07/08/17 13:53       | JRB     | TAL SAC |

## Laboratory References:

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

# Accreditation/Certification Summary

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

TestAmerica Job ID: 320-29346-1

## Laboratory: TestAmerica Sacramento

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------|---------|------------|-----------------------|-----------------|
| Oregon    | NELAP   | 10         | 4040                  | 01-28-18        |

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

| Analysis Method | Prep Method | Matrix | Analyte                              |
|-----------------|-------------|--------|--------------------------------------|
| 537             | 537         | Water  | Perfluorobutanesulfonic acid (PFBS)  |
| 537             | 537         | Water  | Perfluoroheptanoic acid (PFHpA)      |
| 537             | 537         | Water  | Perfluorohexanesulfonic acid (PFHxS) |
| 537             | 537         | Water  | Perfluorononanoic acid (PFNA)        |
| 537             | 537         | Water  | Perfluorooctanesulfonic acid (PFOS)  |
| 537             | 537         | Water  | Perfluorooctanoic acid (PFOA)        |

# Method Summary

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

TestAmerica Job ID: 320-29346-1

| 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: Tetra Tech, Inc.

TestAmerica Job ID: 320-29346-1

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

| Lab Sample ID | Client Sample ID     | Matrix | Collected      | Received       |
|---------------|----------------------|--------|----------------|----------------|
| 320-29346-1   | WGNA-062117-RW-3148  | Water  | 06/21/17 08:35 | 06/22/17 09:30 |
| 320-29346-2   | WGNA-062117-FRB-3148 | Water  | 06/21/17 08:30 | 06/22/17 09:30 |
| 320-29346-3   | WGNA-062117-RW-0569  | Water  | 06/21/17 13:20 | 06/22/17 09:30 |
| 320-29346-4   | WGNA-062117-FRB-0569 | Water  | 06/21/17 15:15 | 06/22/17 09:30 |
| 320-29346-5   | WGNA-062117-RW-3097  | Water  | 06/21/17 11:40 | 06/22/17 09:30 |
| 320-29346-6   | WGNA-062117-FRB-3097 | Water  | 06/21/17 09:30 | 06/22/17 09:30 |
| 320-29346-7   | WGNA-062117-RW-0461  | Water  | 06/21/17 15:20 | 06/22/17 09:30 |
| 320-29346-8   | WGNA-062117-FRB-0461 | Water  | 06/21/17 15:15 | 06/22/17 09:30 |
| 320-29346-9   | WGNA-062117-DUP02    | Water  | 06/21/17 07:00 | 06/22/17 09:30 |
| 320-29346-10  | WGNA-062117-RW-0500  | Water  | 06/21/17 15:40 | 06/22/17 09:30 |
| 320-29346-11  | WGNA-062117-FRB-0500 | Water  | 06/21/17 15:35 | 06/22/17 09:30 |
| 320-29346-12  | WGNA-062117-RW-3933  | Water  | 06/21/17 10:55 | 06/22/17 09:30 |
| 320-29346-13  | WGNA-062117-FRB-3933 | Water  | 06/21/17 10:50 | 06/22/17 09:30 |
| 320-29346-14  | WGNA-062117-RW-0404  | Water  | 06/21/17 10:35 | 06/22/17 09:30 |
| 320-29346-15  | WGNA-062117-FRB-0404 | Water  | 06/21/17 10:30 | 06/22/17 09:30 |
| 320-29346-16  | WGNA-062117-RW-2426  | Water  | 06/21/17 08:35 | 06/22/17 09:30 |
| 320-29346-17  | WGNA-062117-FRB-2426 | Water  | 06/21/17 08:30 | 06/22/17 09:30 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Instrument ID: A8\_N Analysis Batch Number: 172646Lab Sample ID: IC 320-172646/4 Client Sample ID: \_\_\_\_\_Date Analyzed: 07/05/17 19:50 Lab File ID: 2017.07.05\_537CURVE\_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                   | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|---------------------------------|-------------------|--------------------|----------|----------------|
|                                 |                   | REASON             | ANALYST  | DATE           |
| Perfluoroheptanoic acid (PFHpA) | 1.69              | Missed Peak        | barnettj | 07/06/17 11:03 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Instrument ID: A8\_N Analysis Batch Number: 173114Lab Sample ID: LCSD 320-172426/3-A Client Sample ID: \_\_\_\_\_Date Analyzed: 07/08/17 12:04 Lab File ID: 2017.07.08\_537A\_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                       | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------------|-------------------|--------------------|----------|----------------|
|                                     |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanesulfonic acid (PFOS) | 2.16              | Missed Peak        | barnettj | 07/10/17 09:50 |

Lab Sample ID: 320-29346-1 Client Sample ID: WGNA-062117-RW-3148Date Analyzed: 07/08/17 12:18 Lab File ID: 2017.07.08\_537A\_012.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.92              | Isomers            | barnettj | 07/10/17 09:54 |
| Perfluorononanoic acid (PFNA) | 2.16              | Split Peak         | barnettj | 07/10/17 10:03 |

Lab Sample ID: 320-29346-4 Client Sample ID: WGNA-062117-FRB-0569Date Analyzed: 07/08/17 12:32 Lab File ID: 2017.07.08\_537A\_015.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.91              | Isomers            | barnettj | 07/10/17 09:55 |

Lab Sample ID: 320-29346-5 Client Sample ID: WGNA-062117-RW-3097Date Analyzed: 07/08/17 12:37 Lab File ID: 2017.07.08\_537A\_016.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.91              | Isomers            | barnettj | 07/10/17 09:56 |
| Perfluorononanoic acid (PFNA) | 2.16              | Split Peak         | barnettj | 07/10/17 10:03 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Instrument ID: A8\_N Analysis Batch Number: 173116Lab Sample ID: 320-29346-9 Client Sample ID: WGNA-062117-DUP02Date Analyzed: 07/08/17 13:05 Lab File ID: 2017.07.08\_537A\_022.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.94              | Isomers            | barnettj | 07/10/17 09:58 |

Lab Sample ID: 320-29346-10 Client Sample ID: WGNA-062117-RW-0500Date Analyzed: 07/08/17 13:10 Lab File ID: 2017.07.08\_537A\_023.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.93              | Isomers            | barnettj | 07/10/17 09:58 |
| Perfluorononanoic acid (PFNA) | 2.17              | Split Peak         | barnettj | 07/10/17 09:59 |

Lab Sample ID: 320-29346-12 Client Sample ID: WGNA-062117-RW-3933Date Analyzed: 07/08/17 13:20 Lab File ID: 2017.07.08\_537A\_025.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.94              | Isomers            | barnettj | 07/10/17 10:00 |

Lab Sample ID: 320-29346-14 Client Sample ID: WGNA-062117-RW-0404Date Analyzed: 07/08/17 13:29 Lab File ID: 2017.07.08\_537A\_027.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.94              | Isomers            | barnettj | 07/10/17 10:02 |
| Perfluorononanoic acid (PFNA) | 2.18              | Split Peak         | barnettj | 07/10/17 10:01 |

## LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Instrument ID: A8\_N Analysis Batch Number: 173117Lab Sample ID: 320-29346-16 Client Sample ID: WGNA-062117-RW-2426Date Analyzed: 07/08/17 13:48 Lab File ID: 2017.07.08\_537A\_031.d GC Column: GeminiC18 3x1 ID: 3 (mm)

| COMPOUND NAME                 | RETENTION<br>TIME | MANUAL INTEGRATION |          |                |
|-------------------------------|-------------------|--------------------|----------|----------------|
|                               |                   | REASON             | ANALYST  | DATE           |
| Perfluorooctanoic acid (PFOA) | 1.93              | Isomers            | barnettj | 07/10/17 10:10 |
| Perfluorononanoic acid (PFNA) | 2.17              | Split Peak         | barnettj | 07/10/17 10:11 |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29346-1

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

| Reagent ID           | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume                | Parent Reagent      |              | Analyte                              | Concentration |
|----------------------|----------|-----------------------------------------|----------------------|-------------------------------------|---------------------|--------------|--------------------------------------|---------------|
|                      |          |                                         |                      |                                     | Reagent ID          | Volume Added |                                      |               |
| LC537-HSP_00018      | 08/09/17 | 03/23/17                                | Methanol, Lot 141039 | 20000 uL                            | LC537SPIM_00022     | 375 uL       | Perfluorobutane Sulfonate            | 1656.41 ng/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 1656.41 ng/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluoroheptanoic acid (PFHpA)      | 185.625 ng/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 563.639 ng/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluorononanoic acid (PFNA)        | 361.125 ng/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluorooctanoic acid (PFOA)        | 374.625 ng/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 750.617 ng/mL |
| .LC537SPIM_00022     | 08/09/17 | 03/22/17                                | Methanol, Lot 104453 | 10000 uL                            | LC537-PFBS_00007    | 440 uL       | Perfluorobutane Sulfonate            | 88.3417 ug/mL |
|                      |          |                                         |                      |                                     |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |
|                      |          |                                         |                      |                                     | LC537-PFHpA_00014   | 100 uL       | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                      |          |                                         |                      |                                     | LC537-PFHxS_00009   | 150 uL       | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                      |          |                                         |                      |                                     | LC537-PFNA_00012    | 200 uL       | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                      |          |                                         |                      |                                     | LC537-PFOA_00012    | 200 uL       | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |
|                      |          |                                         |                      |                                     | LC537-PFOS_00007    | 400 uL       | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ..LC537-PFBS_00007   | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 51.5 mL                             | LC537_PFBS_00002    | 0.1034 g     | Perfluorobutane Sulfonate            | 2007.77 ug/mL |
|                      |          |                                         |                      | Perfluorobutanesulfonic acid (PFBS) |                     |              | 2007.77 ug/mL                        |               |
| ...LC537_PFBS_00002  | 04/01/18 | Sigma, Lot MKBP8842V                    |                      |                                     | (Purchased Reagent) |              | Perfluorobutane Sulfonate            | 1 g/g         |
|                      |          |                                         |                      |                                     |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 1 g/g         |
| ..LC537-PFHpA_00014  | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 50 mL                               | LC537_PFHpA_00002   | 0.05 g       | Perfluoroheptanoic acid (PFHpA)      | 990 ug/mL     |
| ...LC537_PFHpA_00002 | 04/01/18 | Aldrich, Lot BCBM2579V                  |                      |                                     | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |
| ..LC537-PFHxS_00009  | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 54 mL                               | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ...LC537_PFHxS_00002 | 04/01/18 | Sigma, Lot BCBL3545V                    |                      |                                     | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ..LC537-PFNA_00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 23 mL                               | LC537_PFNA_00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ...LC537_PFNA_00002  | 04/01/18 | TCI America, Lot QN44F                  |                      |                                     | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ..LC537-PFOA_00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 21.5 mL                             | LC537_PFOA_00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ...LC537_PFOA_00002  | 11/04/18 | Fluka, Lot SZBD308XV                    |                      |                                     | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ..LC537-PFOS_00007   | 08/09/17 | 01/04/17                                | Methanol, Lot 090285 | 48.95 mL                            | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ...LC537_PFOS_00002  | 08/09/17 | Fluka, Lot SZBC222XV                    |                      |                                     | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |
| LC537-ICV_00020      | 07/25/17 | 02/21/17                                | MeOH/H2O, Lot 067374 | 10 mL                               | LC537-IS_00031      | 200 uL       | 13C2-PFOA                            | 10 ng/mL      |
|                      |          |                                         |                      |                                     |                     |              | 13C4 PFOS                            | 28.68 ng/mL   |
| .LC537-IS_00031      | 07/31/17 | 01/31/17                                | Methanol, Lot 090285 | 10000 uL                            | LCM2PFOA_00005      | 100 uL       | 13C2-PFOA                            | 0.5 ug/mL     |
|                      |          |                                         |                      |                                     | LCMPFOS_00019       | 300 uL       | 13C4 PFOS                            | 1.434 ug/mL   |
| ..LCM2PFOA_00005     | 06/19/18 | Wellington Laboratories, Lot M2PFOA0613 |                      |                                     | (Purchased Reagent) |              | 13C2-PFOA                            | 50 ug/mL      |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------------------------------------|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |                                         |                      |                      | Reagent ID          | Volume Added |                                      |               |
| ..LCMPFOS_00019       | 08/03/21 | Wellington Laboratories, Lot MPFOS0816  |                      |                      | (Purchased Reagent) |              | 13C4 PFOS                            | 47.8 ug/mL    |
| LC537-ICV_00020       | 07/25/17 | 02/21/17                                | MeOH/H2O, Lot 067374 | 10 mL                | LC537-SU_00030      | 500 uL       | 13C2 PFDA                            | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | 13C2 PFHxA                           | 10 ng/mL      |
|                       |          |                                         |                      |                      | LC537ICIM_00015     | 20 uL        | Perfluorobutanesulfonic acid (PFBS)  | 100.676 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 10.08 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 21.1854 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 20.0076 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 20.0186 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 20.6936 ng/mL |
| ..LC537-SU_00030      | 07/31/17 | 01/31/17                                | Methanol, Lot 104453 | 20000 uL             | LCMPFDA_00012       | 80 uL        | 13C2 PFDA                            | 0.2 ug/mL     |
|                       |          | LCMPFHxA_00013                          | 80 uL                | 13C2 PFHxA           | 0.2 ug/mL           |              |                                      |               |
| ..LCMPFDA_00012       | 09/30/21 | Wellington Laboratories, Lot MPFDA0916  |                      |                      | (Purchased Reagent) |              | 13C2 PFDA                            | 50 ug/mL      |
| ..LCMPFHxA_00013      | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 50 ug/mL      |
| LC537ICIM_00015       | 07/25/17 | 02/21/17                                | Methanol, Lot 090285 | 25 mL                | LC537-PFBS2_00007   | 0.55 mL      | Perfluorobutanesulfonic acid (PFBS)  | 50.3381 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFHxA2_00010  | 0.05 mL      | Perfluoroheptanoic acid (PFHpA)      | 5.04 ug/mL    |
|                       |          |                                         |                      |                      | LC537-PFHxS2_00007  | 0.13 mL      | Perfluorohexanesulfonic acid (PFHxS) | 10.5927 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFNA2_00008   | 0.093 mL     | Perfluorononanoic acid (PFNA)        | 10.0038 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFOA2_00008   | 0.142 mL     | Perfluorooctanoic acid (PFOA)        | 10.0093 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFOS2_00007   | 0.21 mL      | Perfluorooctanesulfonic acid (PFOS)  | 10.3468 ug/mL |
| ..LC537-PFBS2_00007   | 08/09/17 | 02/20/17                                | Methanol, Lot 090285 | 8.2 mL               | LC537_PFBS2_00001   | 0.0188 g     | Perfluorobutanesulfonic acid (PFBS)  | 2288.1 ug/mL  |
| ...LC537_PFBS2_00001  | 08/09/17 | Santa Cruz Biotechnology, Lot H0112     |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS)  | 0.998 g/g     |
| ..LC537-PFHxA2_00010  | 07/25/17 | 12/20/16                                | Methanol, Lot 09092  | 25 mL                | LC537_PFHxA2_00001  | 0.063 g      | Perfluoroheptanoic acid (PFHpA)      | 2520 ug/mL    |
| ...LC537_PFHxA2_00001 | 07/25/17 | Afla Aesar, Lot 10160443                |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 1 g/g         |
| ..LC537-PFHxS2_00007  | 07/25/17 | 02/20/17                                | Methanol, Lot 090285 | 10 mL                | LC537_PFHxS2_00001  | 0.0224 g     | Perfluorohexanesulfonic acid (PFHxS) | 2037.06 ug/mL |
| ...LC537_PFHxS2_00001 | 07/25/17 | Santa Cruz Biotechnology, Lot F2612     |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ..LC537-PFNA2_00008   | 07/25/17 | 12/20/16                                | Methanol, Lot 090285 | 10 mL                | LC537_PFNA2_00001   | 0.027 g      | Perfluorononanoic acid (PFNA)        | 2689.2 ug/mL  |
| ...LC537_PFNA2_00001  | 07/25/17 | Aldrich, Lot MKBJ2926V                  |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.996 g/g     |
| ..LC537-PFOA2_00008   | 07/25/17 | 12/20/16                                | Methanol, Lot 090285 | 10 mL                | LC537_PFOA2_00001   | 0.0178 g     | Perfluorooctanoic acid (PFOA)        | 1762.2 ug/mL  |
| ...LC537_PFOA2_00001  | 07/25/17 | Afla Aesar, Lot D24Y026                 |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.99 g/g      |
| ..LC537-PFOS2_00007   | 07/26/17 | 02/20/17                                | Methanol, Lot 090285 | 11 mL                | LC537_PFOS2_00001   | 0.0174 g     | Perfluorooctanesulfonic acid (PFOS)  | 1231.76 ug/mL |
| ...LC537_PFOS2_00001  | 07/26/17 | Sigma, Lot BCBF5116V                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.7787 g/g    |
| LC537-IS_00044        | 01/05/18 | 07/05/17                                | Methanol, Lot 090285 | 30000 uL             | LCM2PFOA_00007      | 60 uL        | 13C2-PFOA                            | 0.1 ug/mL     |
|                       |          |                                         |                      |                      | LCMPFOS_00019       | 180 uL       | 13C4 PFOS                            | 0.2868 ug/mL  |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume | Parent Reagent                      |               | Analyte                              | Concentration |                                      |               |
|-----------------------|----------|-----------------------------------------|----------------------|----------------------|-------------------------------------|---------------|--------------------------------------|---------------|--------------------------------------|---------------|
|                       |          |                                         |                      |                      | Reagent ID                          | Volume Added  |                                      |               |                                      |               |
| .LCM2PFOA_00007       | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 |                      |                      | (Purchased Reagent)                 |               | 13C2-PFOA                            | 50 ug/mL      |                                      |               |
| .LCMPFOS_00019        | 08/03/21 | Wellington Laboratories, Lot MPFOS0816  |                      |                      | (Purchased Reagent)                 |               | 13C4 PFOS                            | 47.8 ug/mL    |                                      |               |
| LC537-L1_00019        | 08/09/17 | 07/05/17                                | MeOH/H2O, Lot 090285 | 5 mL                 | LC537-IS_00045                      | 500 uL        | 13C2-PFOA                            | 10 ng/mL      |                                      |               |
|                       |          |                                         |                      |                      | LC537-MSP_00025                     | 50 uL         | 13C4 PFOS                            | 28.68 ng/mL   |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorobutanesulfonic acid (PFBS)  | 8.83417 ng/mL |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluoroheptanoic acid (PFHpA)      | 0.99 ng/mL    |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorohexanesulfonic acid (PFHxS) | 3.00607 ng/mL |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorononanoic acid (PFNA)        | 1.926 ng/mL   |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorooctanoic acid (PFOA)        | 1.998 ng/mL   |                                      |               |
|                       |          |                                         |                      |                      | Perfluorooctanesulfonic acid (PFOS) | 4.00329 ng/mL |                                      |               |                                      |               |
| LC537-SU_00045        | 500 uL   | 13C2 PFDA                               | 10 ng/mL             |                      |                                     |               |                                      |               |                                      |               |
| .LC537-IS_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 090285 | 30000 uL             | LCM2PFOA_00007                      | 60 uL         | 13C2-PFOA                            | 0.1 ug/mL     |                                      |               |
|                       |          |                                         |                      |                      | LCMPFOS_00019                       | 180 uL        | 13C4 PFOS                            | 0.2868 ug/mL  |                                      |               |
| ..LCM2PFOA_00007      | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 |                      |                      | (Purchased Reagent)                 |               | 13C2-PFOA                            | 50 ug/mL      |                                      |               |
| ..LCMPFOS_00019       | 08/03/21 | Wellington Laboratories, Lot MPFOS0816  |                      |                      | (Purchased Reagent)                 |               | 13C4 PFOS                            | 47.8 ug/mL    |                                      |               |
| .LC537-MSP_00025      | 08/09/17 | 03/30/17                                | Methanol, Lot 141039 | 20000 uL             | LC537SPIM_00022                     | 200 uL        | Perfluorobutanesulfonic acid (PFBS)  | 883.417 ng/mL |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluoroheptanoic acid (PFHpA)      | 99 ng/mL      |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorohexanesulfonic acid (PFHxS) | 300.607 ng/mL |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorononanoic acid (PFNA)        | 192.6 ng/mL   |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorooctanoic acid (PFOA)        | 199.8 ng/mL   |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | Perfluorooctanesulfonic acid (PFOS)  | 400.329 ng/mL |                                      |               |
| ..LC537SPIM_00022     | 08/09/17 | 03/22/17                                | Methanol, Lot 104453 | 10000 uL             | LC537-PFBS_00007                    | 440 uL        | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |                                      |               |
|                       |          |                                         |                      |                      |                                     |               | LC537-PFHpA_00014                    | 100 uL        | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                       |          |                                         |                      |                      |                                     |               | LC537-PFHxS_00009                    | 150 uL        | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                       |          |                                         |                      |                      |                                     |               | LC537-PFNA_00012                     | 200 uL        | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                       |          |                                         |                      |                      |                                     |               | LC537-PFOA_00012                     | 200 uL        | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |
|                       |          |                                         |                      |                      |                                     |               | LC537-PFOS_00007                     | 400 uL        | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ...LC537-PFBS_00007   | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 51.5 mL              | LC537_PFBS_00002                    | 0.1034 g      | Perfluorobutanesulfonic acid (PFBS)  | 2007.77 ug/mL |                                      |               |
| ....LC537_PFBS_00002  | 04/01/18 | Sigma, Lot MKBP8842V                    |                      |                      | (Purchased Reagent)                 |               | Perfluorobutanesulfonic acid (PFBS)  | 1 g/g         |                                      |               |
| ...LC537-PFHpA_00014  | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 50 mL                | LC537_PFHpA_00002                   | 0.05 g        | Perfluoroheptanoic acid (PFHpA)      | 990 ug/mL     |                                      |               |
| ....LC537_PFHpA_00002 | 04/01/18 | Aldrich, Lot BCBM2579V                  |                      |                      | (Purchased Reagent)                 |               | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |                                      |               |



# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------------------------------------|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |                                         |                      |                      | Reagent ID          | Volume Added |                                      |               |
| ...LC537-PFHxS_00009  | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 54 mL                | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ....LC537_PFHxS_00002 | 04/01/18 | Sigma, Lot BCBL3545V                    |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ...LC537-PFNA 00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 23 mL                | LC537 PFNA 00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ...LC537 PFNA 00002   | 04/01/18 | TCI America, Lot QN44F                  |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ...LC537-PFOA 00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 21.5 mL              | LC537 PFOA 00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ...LC537 PFOA 00002   | 11/04/18 | Fluka, Lot SZBD308XV                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ...LC537-PFOS_00007   | 08/09/17 | 01/04/17                                | Methanol, Lot 090285 | 48.95 mL             | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ....LC537_PFOS_00002  | 08/09/17 | Fluka, Lot SZBC222XV                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |
| .LC537-SU_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 104453 | 30000 uL             | LCMPFDA 00012       | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
|                       |          |                                         |                      |                      | LCMPFHxA 00013      | 60 uL        | 13C2 PFHxA                           | 0.1 ug/mL     |
| ..LCMPFDA 00012       | 09/30/21 | Wellington Laboratories, Lot MPFDA0916  |                      |                      | (Purchased Reagent) |              | 13C2 PFDA                            | 50 ug/mL      |
| ..LCMPFHxA 00013      | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 50 ug/mL      |
| <b>LC537-L2_00019</b> | 08/09/17 | 07/05/17                                | MeOH/H2O, Lot 090285 | 5 mL                 | LC537-HSP_00019     | 64 uL        | Perfluorobutanesulfonic acid (PFBS)  | 21.202 ng/mL  |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 2.376 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 7.21457 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 4.6224 ng/mL  |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 4.7952 ng/mL  |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 9.6079 ng/mL  |
|                       |          |                                         |                      |                      | LC537-IS_00045      | 500 uL       | 13C2-PFOA                            | 10 ng/mL      |
| .LC537-HSP_00019      | 08/09/17 | 03/30/17                                | Methanol, Lot 141039 | 20000 uL             | LC537SPIM_00022     | 375 uL       | 13C4 PFOS                            | 28.68 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | 13C2 PFDA                            | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | 13C2 PFHxA                           | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 1656.41 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 185.625 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 563.639 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 361.125 ng/mL |
| ..LC537SPIM_00022     | 08/09/17 | 03/22/17                                | Methanol, Lot 104453 | 10000 uL             | LC537-PFBS_00007    | 440 uL       | Perfluorooctanoic acid (PFOA)        | 374.625 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 750.617 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFNA 00012    | 200 uL       | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                       |          |                                         |                      |                      | LC537-PFOA_00012    | 200 uL       | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------------------------------------|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |                                         |                      |                      | Reagent ID          | Volume Added |                                      |               |
|                       |          |                                         |                      |                      | LC537-PFOS_00007    | 400 uL       | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ...LC537-PFBS_00007   | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 51.5 mL              | LC537_PFBS_00002    | 0.1034 g     | Perfluorobutanesulfonic acid (PFBS)  | 2007.77 ug/mL |
| ....LC537_PFBS_00002  | 04/01/18 | Sigma, Lot MKBP8842V                    |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS)  | 1 g/g         |
| ...LC537-PFHpA_00014  | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 50 mL                | LC537_PFHpA_00002   | 0.05 g       | Perfluoroheptanoic acid (PFHpA)      | 990 ug/mL     |
| ....LC537_PFHpA_00002 | 04/01/18 | Aldrich, Lot BCBM2579V                  |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |
| ...LC537-PFHxS_00009  | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 54 mL                | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ....LC537_PFHxS_00002 | 04/01/18 | Sigma, Lot BCBL3545V                    |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ...LC537-PFNA_00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 23 mL                | LC537_PFNA_00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ....LC537_PFNA_00002  | 04/01/18 | TCI America, Lot QN44F                  |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ...LC537-PFOA_00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 21.5 mL              | LC537_PFOA_00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ....LC537_PFOA_00002  | 11/04/18 | Fluka, Lot SZBD308XV                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ...LC537-PFOS_00007   | 08/09/17 | 01/04/17                                | Methanol, Lot 090285 | 48.95 mL             | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ....LC537_PFOS_00002  | 08/09/17 | Fluka, Lot SZBC222XV                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |
| .LC537-IS_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 090285 | 30000 uL             | LCM2PFOA_00007      | 60 uL        | 13C2-PFOA                            | 0.1 ug/mL     |
| ..LCM2PFOA_00007      | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 |                      |                      | LCMPFOS_00019       | 180 uL       | 13C4 PFOS                            | 0.2868 ug/mL  |
| ..LCMPFOS_00019       | 08/03/21 | Wellington Laboratories, Lot MPFOS0816  |                      |                      | (Purchased Reagent) |              | 13C2-PFOA                            | 50 ug/mL      |
| .LC537-SU_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 104453 | 30000 uL             | LCMPFDA_00012       | 60 uL        | 13C4 PFOS                            | 47.8 ug/mL    |
| ..LCMPFDA_00012       | 09/30/21 | Wellington Laboratories, Lot MPFDA0916  |                      |                      | LCMPFHxA_00013      | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
| ..LCMPFHxA_00013      | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 50 ug/mL      |
| <b>LC537-L3_00022</b> | 08/09/17 | 07/05/17                                | MeOH/H2O, Lot 090285 | 5 mL                 | LC537-HSP_00019     | 134 uL       | Perfluorobutanesulfonic acid (PFBS)  | 44.3917 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 4.97475 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 15.1055 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 9.67815 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 10.0399 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 20.1165 ng/mL |
|                       |          |                                         |                      |                      |                     |              | 13C2-PFOA                            | 10 ng/mL      |
| .LC537-HSP_00019      | 08/09/17 | 03/30/17                                | Methanol, Lot 141039 | 20000 uL             | LC537SPIM_00022     | 375 uL       | 13C4 PFOS                            | 28.68 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | 13C2 PFDA                            | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | 13C2 PFHxA                           | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 1656.41 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 185.625 ng/mL |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                           | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------|-----------------------------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |           |                                         |                      | Reagent ID          | Volume Added |                                      |               |
|                       |          |           |                                         |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 563.639 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorononanoic acid (PFNA)        | 361.125 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 374.625 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 750.617 ng/mL |
| ..LC537SPIM_00022     | 08/09/17 | 03/22/17  | Methanol, Lot 104453                    | 10000 uL             | LC537-PFBS_00007    | 440 uL       | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |
|                       |          |           |                                         |                      | LC537-PFHpA_00014   | 100 uL       | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                       |          |           |                                         |                      | LC537-PFHxS_00009   | 150 uL       | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                       |          |           |                                         |                      | LC537-PFNA_00012    | 200 uL       | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                       |          |           |                                         |                      | LC537-PFOA_00012    | 200 uL       | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |
|                       |          |           |                                         |                      | LC537-PFOS_00007    | 400 uL       | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ...LC537-PFBS_00007   | 01/04/18 | 01/04/17  | Methanol, Lot 090285                    | 51.5 mL              | LC537_PFBS_00002    | 0.1034 g     | Perfluorobutanesulfonic acid (PFBS)  | 2007.77 ug/mL |
| ....LC537_PFBS_00002  | 04/01/18 |           | Sigma, Lot MKBP8842V                    |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS)  | 1 g/g         |
| ...LC537-PFHpA_00014  | 03/22/18 | 03/22/17  | Methanol, Lot 090285                    | 50 mL                | LC537_PFHpA_00002   | 0.05 g       | Perfluoroheptanoic acid (PFHpA)      | 990 ug/mL     |
| ....LC537_PFHpA_00002 | 04/01/18 |           | Aldrich, Lot BCBM2579V                  |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |
| ...LC537-PFHxS_00009  | 01/04/18 | 01/04/17  | Methanol, Lot 090285                    | 54 mL                | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ....LC537_PFHxS_00002 | 04/01/18 |           | Sigma, Lot BCBL3545V                    |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ...LC537-PFNA_00012   | 03/22/18 | 03/22/17  | Methanol, Lot 090285                    | 23 mL                | LC537 PFNA_00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ....LC537 PFNA_00002  | 04/01/18 |           | TCI America, Lot QN44F                  |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ...LC537-PFOA_00012   | 03/22/18 | 03/22/17  | Methanol, Lot 090285                    | 21.5 mL              | LC537 PFOA_00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ....LC537 PFOA_00002  | 11/04/18 |           | Fluka, Lot SZBD308XV                    |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ...LC537-PFOS_00007   | 08/09/17 | 01/04/17  | Methanol, Lot 090285                    | 48.95 mL             | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ....LC537_PFOS_00002  | 08/09/17 |           | Fluka, Lot SZBC222XV                    |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |
| .LC537-IS_00045       | 01/05/18 | 07/05/17  | Methanol, Lot 090285                    | 30000 uL             | LCM2PFOA_00007      | 60 uL        | 13C2-PFOA                            | 0.1 ug/mL     |
|                       |          |           |                                         |                      | LCMPFOS_00019       | 180 uL       | 13C4 PFOS                            | 0.2868 ug/mL  |
| ..LCM2PFOA_00007      | 02/12/21 |           | Wellington Laboratories, Lot M2PFOA0216 |                      | (Purchased Reagent) |              | 13C2-PFOA                            | 50 ug/mL      |
| ..LCMPFOS_00019       | 08/03/21 |           | Wellington Laboratories, Lot MPFOS0816  |                      | (Purchased Reagent) |              | 13C4 PFOS                            | 47.8 ug/mL    |
| .LC537-SU_00045       | 01/05/18 | 07/05/17  | Methanol, Lot 104453                    | 30000 uL             | LCMPFDA_00012       | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
|                       |          |           |                                         |                      | LCMPFHxA_00013      | 60 uL        | 13C2 PFHxA                           | 0.1 ug/mL     |
| ..LCMPFDA_00012       | 09/30/21 |           | Wellington Laboratories, Lot MPFDA0916  |                      | (Purchased Reagent) |              | 13C2 PFDA                            | 50 ug/mL      |
| ..LCMPFHxA_00013      | 04/08/21 |           | Wellington Laboratories, Lot MPFHxA0416 |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 50 ug/mL      |
| <b>LC537-L4_00019</b> | 08/09/17 | 07/05/17  | MeOH/H2O, Lot 090285                    | 5 mL                 | LC537-HSP_00019     | 270 uL       | Perfluorobutanesulfonic acid (PFBS)  | 89.446 ng/mL  |
|                       |          |           |                                         |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 10.0238 ng/mL |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date              | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|------------------------|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |                        |                      |                      | Reagent ID          | Volume Added |                                      |               |
|                       |          |                        |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 30.4365 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 19.5008 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 20.2297 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 40.5333 ng/mL |
|                       |          |                        |                      |                      | LC537-IS_00045      | 500 uL       | 13C2-PFOA                            | 10 ng/mL      |
|                       |          |                        |                      |                      | LC537-SU_00045      | 500 uL       | 13C4 PFOS                            | 28.68 ng/mL   |
|                       |          |                        |                      |                      |                     |              | 13C2 PFDA                            | 10 ng/mL      |
| .LC537-HSP_00019      | 08/09/17 | 03/30/17               | Methanol, Lot 141039 | 20000 uL             | LC537SPIM_00022     | 375 uL       | 13C2 PFHxA                           | 10 ng/mL      |
|                       |          |                        |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 1656.41 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 185.625 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 563.639 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 361.125 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 374.625 ng/mL |
| ..LC537SPIM_00022     | 08/09/17 | 03/22/17               | Methanol, Lot 104453 | 10000 uL             | LC537-PFBS_00007    | 440 uL       | Perfluorooctanesulfonic acid (PFOS)  | 750.617 ng/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |
|                       |          |                        |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                       |          |                        |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                       |          |                        |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                       |          |                        |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |
|                       |          |                        |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ...LC537-PFBS_00007   | 01/04/18 | 01/04/17               | Methanol, Lot 090285 | 51.5 mL              | LC537_PFBS_00002    | 0.1034 g     | Perfluorobutanesulfonic acid (PFBS)  | 2007.77 ug/mL |
| ....LC537_PFBS_00002  | 04/01/18 | Sigma, Lot MKBP8842V   |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 1 g/g         |
| ...LC537-PFHxA_00014  | 03/22/18 | 03/22/17               | Methanol, Lot 090285 | 50 mL                | LC537_PFHxA_00002   | 0.05 g       | Perfluorohexanesulfonic acid (PFHxS) | 990 ug/mL     |
| ....LC537_PFHxA_00002 | 04/01/18 | Aldrich, Lot BCBM2579V |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |
| ...LC537-PFHxS_00009  | 01/04/18 | 01/04/17               | Methanol, Lot 090285 | 54 mL                | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ....LC537_PFHxS_00002 | 04/01/18 | Sigma, Lot BCBL3545V   |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ...LC537-PFNA_00012   | 03/22/18 | 03/22/17               | Methanol, Lot 090285 | 23 mL                | LC537 PFNA_00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ....LC537 PFNA_00002  | 04/01/18 | TCI America, Lot QN44F |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ...LC537-PFOA_00012   | 03/22/18 | 03/22/17               | Methanol, Lot 090285 | 21.5 mL              | LC537 PFOA_00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ....LC537 PFOA_00002  | 11/04/18 | Fluka, Lot SZBD308XV   |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ...LC537-PFOS_00007   | 08/09/17 | 01/04/17               | Methanol, Lot 090285 | 48.95 mL             | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ....LC537_PFOS_00002  | 08/09/17 | Fluka, Lot SZBC222XV   |                      |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |

## REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------------------------------------|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |                                         |                      |                      | Reagent ID          | Volume Added |                                      |               |
| .LC537-IS_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 090285 | 30000 uL             | LCM2PFOA_00007      | 60 uL        | 13C2-PFOA                            | 0.1 ug/mL     |
|                       |          |                                         |                      |                      | LCMPFOS_00019       | 180 uL       | 13C4 PFOS                            | 0.2868 ug/mL  |
| ..LCM2PFOA_00007      | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 |                      |                      | (Purchased Reagent) |              | 13C2-PFOA                            | 50 ug/mL      |
| ..LCMPFOS_00019       | 08/03/21 | Wellington Laboratories, Lot MPFOS0816  |                      |                      | (Purchased Reagent) |              | 13C4 PFOS                            | 47.8 ug/mL    |
| .LC537-SU_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 104453 | 30000 uL             | LCMPFDA_00012       | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
|                       |          |                                         |                      |                      | LCMPFHxA_00013      | 60 uL        | 13C2 PFHxA                           | 0.1 ug/mL     |
| ..LCMPFDA_00012       | 09/30/21 | Wellington Laboratories, Lot MPFDA0916  |                      |                      | (Purchased Reagent) |              | 13C2 PFDA                            | 50 ug/mL      |
| ..LCMPFHxA_00013      | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 50 ug/mL      |
| <b>LC537-L5_00023</b> | 08/09/17 | 07/05/17                                | MeOH/H2O, Lot 090285 | 5 mL                 | LC537-HSP_00019     | 400 uL       | Perfluorobutanesulfonic acid (PFBS)  | 132.513 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 14.85 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 45.0911 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 28.89 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 29.97 ng/mL   |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 60.0494 ng/mL |
|                       |          |                                         |                      |                      | LC537-IS_00045      | 500 uL       | 13C2-PFOA                            | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | 13C4 PFOS                            | 28.68 ng/mL   |
|                       |          |                                         |                      |                      | LC537-SU_00045      | 500 uL       | 13C2 PFDA                            | 10 ng/mL      |
|                       |          |                                         |                      |                      |                     |              | 13C2 PFHxA                           | 10 ng/mL      |
| .LC537-HSP_00019      | 08/09/17 | 03/30/17                                | Methanol, Lot 141039 | 20000 uL             | LC537SPIM_00022     | 375 uL       | Perfluorobutanesulfonic acid (PFBS)  | 1656.41 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 185.625 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 563.639 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorononanoic acid (PFNA)        | 361.125 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 374.625 ng/mL |
|                       |          |                                         |                      |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 750.617 ng/mL |
| ..LC537SPIM_00022     | 08/09/17 | 03/22/17                                | Methanol, Lot 104453 | 10000 uL             | LC537-PFBS_00007    | 440 uL       | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFHxA_00014   | 100 uL       | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                       |          |                                         |                      |                      | LC537-PFHxS_00009   | 150 uL       | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFNA_00012    | 200 uL       | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                       |          |                                         |                      |                      | LC537-PFOA_00012    | 200 uL       | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |
|                       |          |                                         |                      |                      | LC537-PFOS_00007    | 400 uL       | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ...LC537-PFBS_00007   | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 51.5 mL              | LC537_PFBS_00002    | 0.1034 g     | Perfluorobutanesulfonic acid (PFBS)  | 2007.77 ug/mL |
| ....LC537_PFBS_00002  | 04/01/18 | Sigma, Lot MKBP8842V                    |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS)  | 1 g/g         |
| ...LC537-PFHxA_00014  | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 50 mL                | LC537_PFHxA_00002   | 0.05 g       | Perfluoroheptanoic acid (PFHpA)      | 990 ug/mL     |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date | Dilutant Used                           | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------|-----------------------------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |           |                                         |                      | Reagent ID          | Volume Added |                                      |               |
| ....LC537_PFHpA_00002 | 04/01/18 |           | Aldrich, Lot BCBM2579V                  |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |
| ...LC537-PFHxS_00009  | 01/04/18 | 01/04/17  | Methanol, Lot 090285                    | 54 mL                | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ....LC537_PFHxS_00002 | 04/01/18 |           | Sigma, Lot BCBL3545V                    |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ...LC537-PFNA_00012   | 03/22/18 | 03/22/17  | Methanol, Lot 090285                    | 23 mL                | LC537_PFNA_00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ....LC537 PFNA_00002  | 04/01/18 |           | TCI America, Lot QN44F                  |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ...LC537-PFOA_00012   | 03/22/18 | 03/22/17  | Methanol, Lot 090285                    | 21.5 mL              | LC537_PFOA_00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ....LC537_PFOA_00002  | 11/04/18 |           | Fluka, Lot SZBD308XV                    |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ...LC537-PFOS_00007   | 08/09/17 | 01/04/17  | Methanol, Lot 090285                    | 48.95 mL             | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ....LC537_PFOS_00002  | 08/09/17 |           | Fluka, Lot SZBC222XV                    |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |
| .LC537-IS_00045       | 01/05/18 | 07/05/17  | Methanol, Lot 090285                    | 30000 uL             | LCM2PFOA_00007      | 60 uL        | 13C2-PFOA                            | 0.1 ug/mL     |
| ..LCM2PFOA_00007      | 02/12/21 |           | Wellington Laboratories, Lot M2PFOA0216 |                      | LCMPFOS_00019       | 180 uL       | 13C4 PFOS                            | 0.2868 ug/mL  |
| ..LCMPFOS_00019       | 08/03/21 |           | Wellington Laboratories, Lot MPFOS0816  |                      | (Purchased Reagent) |              | 13C2-PFOA                            | 50 ug/mL      |
| .LC537-SU_00045       | 01/05/18 | 07/05/17  | Methanol, Lot 104453                    | 30000 uL             | LCMPFDA_00012       | 60 uL        | 13C4 PFOS                            | 47.8 ug/mL    |
| ..LCMPFDA_00012       | 09/30/21 |           | Wellington Laboratories, Lot MPFDA0916  |                      | LCMPFHxA_00013      | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
| ..LCMPFHxA_00013      | 04/08/21 |           | Wellington Laboratories, Lot MPFHxA0416 |                      | (Purchased Reagent) |              | 13C2 PFDA                            | 50 ug/mL      |
| <b>LC537-L6_00018</b> | 08/09/17 | 07/05/17  | MeOH/H2O, Lot 090285                    | 5 mL                 | LC537-HSP_00019     | 530 uL       | Perfluorobutanesulfonic acid (PFBS)  | 175.579 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 19.6763 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 59.7457 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorononanoic acid (PFNA)        | 38.2792 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 39.7103 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorooctanesulfonic acid (PFOS)  | 79.5654 ng/mL |
|                       |          |           |                                         |                      | LC537-IS_00045      | 500 uL       | 13C2-PFOA                            | 10 ng/mL      |
|                       |          |           |                                         |                      |                     |              | 13C4 PFOS                            | 28.68 ng/mL   |
|                       |          |           |                                         |                      |                     |              | 13C2 PFDA                            | 10 ng/mL      |
| .LC537-HSP_00019      | 08/09/17 | 03/30/17  | Methanol, Lot 141039                    | 20000 uL             | LC537SPIM_00022     | 375 uL       | 13C2 PFHxA                           | 10 ng/mL      |
|                       |          |           |                                         |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 1656.41 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluoroheptanoic acid (PFHpA)      | 185.625 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorohexanesulfonic acid (PFHxS) | 563.639 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorononanoic acid (PFNA)        | 361.125 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorooctanoic acid (PFOA)        | 374.625 ng/mL |
| ..LC537SPIM_00022     | 08/09/17 | 03/22/17  | Methanol, Lot 104453                    | 10000 uL             | LC537-PFBS_00007    | 440 uL       | Perfluorooctanesulfonic acid (PFOS)  | 750.617 ng/mL |
|                       |          |           |                                         |                      |                     |              | Perfluorobutanesulfonic acid (PFBS)  | 88.3417 ug/mL |

# REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

| Reagent ID            | Exp Date | Prep Date                               | Dilutant Used        | Reagent Final Volume | Parent Reagent      |              | Analyte                              | Concentration |
|-----------------------|----------|-----------------------------------------|----------------------|----------------------|---------------------|--------------|--------------------------------------|---------------|
|                       |          |                                         |                      |                      | Reagent ID          | Volume Added |                                      |               |
|                       |          |                                         |                      |                      | LC537-PFHpA_00014   | 100 uL       | Perfluoroheptanoic acid (PFHpA)      | 9.9 ug/mL     |
|                       |          |                                         |                      |                      | LC537-PFHxS_00009   | 150 uL       | Perfluorohexanesulfonic acid (PFHxS) | 30.0607 ug/mL |
|                       |          |                                         |                      |                      | LC537-PFNA_00012    | 200 uL       | Perfluorononanoic acid (PFNA)        | 19.26 ug/mL   |
|                       |          |                                         |                      |                      | LC537-PFOA_00012    | 200 uL       | Perfluorooctanoic acid (PFOA)        | 19.98 ug/mL   |
|                       |          |                                         |                      |                      | LC537-PFOS_00007    | 400 uL       | Perfluorooctanesulfonic acid (PFOS)  | 40.0329 ug/mL |
| ...LC537-PFBS_00007   | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 51.5 mL              | LC537_PFBS_00002    | 0.1034 g     | Perfluorobutanesulfonic acid (PFBS)  | 2007.77 ug/mL |
| ....LC537_PFBS_00002  | 04/01/18 | Sigma, Lot MKBP8842V                    |                      |                      | (Purchased Reagent) |              | Perfluorobutanesulfonic acid (PFBS)  | 1 g/g         |
| ...LC537-PFHpA_00014  | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 50 mL                | LC537_PFHpA_00002   | 0.05 g       | Perfluoroheptanoic acid (PFHpA)      | 990 ug/mL     |
| ....LC537_PFHpA_00002 | 04/01/18 | Aldrich, Lot BCBM2579V                  |                      |                      | (Purchased Reagent) |              | Perfluoroheptanoic acid (PFHpA)      | 0.99 g/g      |
| ...LC537-PFHxS_00009  | 01/04/18 | 01/04/17                                | Methanol, Lot 090285 | 54 mL                | LC537_PFHxS_00002   | 0.119 g      | Perfluorohexanesulfonic acid (PFHxS) | 2004.05 ug/mL |
| ....LC537_PFHxS_00002 | 04/01/18 | Sigma, Lot BCBL3545V                    |                      |                      | (Purchased Reagent) |              | Perfluorohexanesulfonic acid (PFHxS) | 0.9094 g/g    |
| ...LC537-PFNA_00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 23 mL                | LC537_PFNA_00002    | 0.023 g      | Perfluorononanoic acid (PFNA)        | 963 ug/mL     |
| ....LC537 PFNA_00002  | 04/01/18 | TCI America, Lot QN44F                  |                      |                      | (Purchased Reagent) |              | Perfluorononanoic acid (PFNA)        | 0.963 g/g     |
| ...LC537-PFOA_00012   | 03/22/18 | 03/22/17                                | Methanol, Lot 090285 | 21.5 mL              | LC537_PFOA_00002    | 0.0215 g     | Perfluorooctanoic acid (PFOA)        | 999 ug/mL     |
| ....LC537 PFOA_00002  | 11/04/18 | Fluka, Lot SZBD308XV                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanoic acid (PFOA)        | 0.999 g/g     |
| ...LC537-PFOS_00007   | 08/09/17 | 01/04/17                                | Methanol, Lot 090285 | 48.95 mL             | LC537_PFOS_00002    | 0.0538 g     | Perfluorooctanesulfonic acid (PFOS)  | 1000.82 ug/mL |
| ....LC537_PFOS_00002  | 08/09/17 | Fluka, Lot SZBC222XV                    |                      |                      | (Purchased Reagent) |              | Perfluorooctanesulfonic acid (PFOS)  | 0.9106 g/g    |
| .LC537-IS_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 090285 | 30000 uL             | LCM2PFOA_00007      | 60 uL        | 13C2-PFOA                            | 0.1 ug/mL     |
| ..LCM2PFOA_00007      | 02/12/21 | Wellington Laboratories, Lot M2PFOA0216 |                      |                      | LCMPFOS_00019       | 180 uL       | 13C4 PFOS                            | 0.2868 ug/mL  |
| ..LCMPFOS_00019       | 08/03/21 | Wellington Laboratories, Lot MPFOS0816  |                      |                      | (Purchased Reagent) |              | 13C2-PFOA                            | 50 ug/mL      |
| .LC537-SU_00045       | 01/05/18 | 07/05/17                                | Methanol, Lot 104453 | 30000 uL             | LCMPFDA_00012       | 60 uL        | 13C4 PFOS                            | 47.8 ug/mL    |
| ..LCMPFDA_00012       | 09/30/21 | Wellington Laboratories, Lot MPFDA0916  |                      |                      | LCMPFHxA_00013      | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
| ..LCMPFHxA_00013      | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 0.1 ug/mL     |
| ..LCMPFHxA_00013      | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFDA                            | 50 ug/mL      |
| <b>LC537-SU_00044</b> | 12/20/17 | 06/20/17                                | Methanol, Lot 104453 | 30000 uL             | LCMPFDA_00012       | 60 uL        | 13C2 PFHxA                           | 50 ug/mL      |
| .LCMPFDA_00012        | 09/30/21 | Wellington Laboratories, Lot MPFDA0916  |                      |                      | LCMPFHxA_00013      | 60 uL        | 13C2 PFDA                            | 0.1 ug/mL     |
| .LCMPFHxA_00013       | 04/08/21 | Wellington Laboratories, Lot MPFHxA0416 |                      |                      | (Purchased Reagent) |              | 13C2 PFHxA                           | 50 ug/mL      |

Reagent

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**LC537\_PFB\_00002**



4/1/15 SPV

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Email USA: [techserv@sial.com](mailto:techserv@sial.com)

Outside USA: [eurtechserv@sial.com](mailto:eurtechserv@sial.com)

## Certificate of Analysis

Product Name:

Nonafluorobutane-1-sulfonic acid - 97%

Product Number:

562629

Batch Number:

MKBP8842V

Brand:

ALDRICH

CAS Number:

375-73-5

MDL Number:

MFCD01320794

Formula:

C<sub>4</sub>HF<sub>9</sub>O<sub>3</sub>S

Formula Weight:

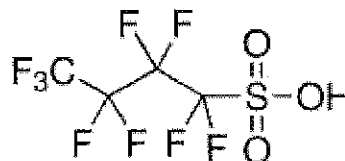
300.10 g/mol

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

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**LC537\_PFB2\_00001**



*The Power to Question*

# CERTIFICATE OF ANALYSIS

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

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

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

Reagent

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**LC537\_PFHpA\_00002**

## 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

PFH<sub>7</sub>A

| 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 Geithner  
Manager Quality Control  
Buchs, Switzerland

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

Reagent

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**LC537\_PFHpA2\_00001**

# Certificate of Analysis

**Alfa Aesar**  
A Johnson Matthey Company

Product No.: A12092  
Product: Perfluoroheptanoic acid, 98+%  
Lot No.: 10160443

PFHpA

Appearance: White crystalline powder  
Melting Point: 28.2 (slip point)  
Assay (Aqueous acid-base titration): 100.2%

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**GERMANY**  
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Fax: 0800 10 20 67 or  
+33 (0)3 8862 6864  
Email: [frventes@alfa.com](mailto:frventes@alfa.com)

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+91 8008 812525 or  
+91 8008 812626  
Fax: +91 8418 260060  
Email: [india@alfa.com](mailto:india@alfa.com)

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Fax: +86 (010) 8567-8601  
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**KOREA**  
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Fax: +82-2-3140-6002  
Email: [saleskorea@alfa-asia.com](mailto:saleskorea@alfa-asia.com)

Reagent

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**LC537\_PFHxS\_00002**



r: 4/1/15 stw

**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:** TRIDECAFLUOROHXANE-1-SULFONIC ACID POTASSIUM SALT  
**Product Number:** 50929  
**Batch Number:** BCBL3545V  
**Brand:** Aldrich  
**CAS Number:** 3871-99-6  
**Formula:**  $C_{13}F_{27}KO_2S$   
**Formula Weight:** 438.20  
**Quality Release Date:** 20 JUN 2013

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

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

*Claudia Geitner*

Dr. Claudia Geitner  
Manager Quality Control  
Buchs, Switzerland

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

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

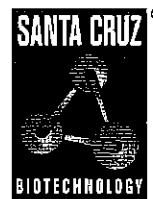
stw 4/1/15

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

Reagent

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**LC537\_PFHxS2\_00001**

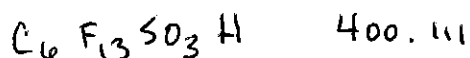
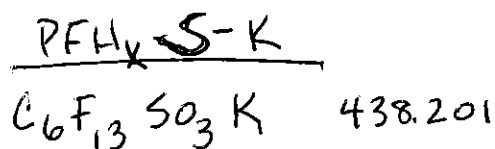


# CERTIFICATE OF ANALYSIS

The Power to Question

Catalog Number: sc-237289  
Product Name: Tridecafluorohexane-1-sulfonic acid potassium salt  
CAS Number: 3871-99-6  
Molecular Formula:  $C_6F_{13}KO_3S$   
Molecular Weight: 438.20  
Lot Number: F2612

| Test                             | Specification                           | Result       |
|----------------------------------|-----------------------------------------|--------------|
| Appearance                       | White to faint beige powder or crystals | White powder |
| Infrared Spectrum                | Conforms to structure                   | Complies     |
| Purity (Titration, Ion Exchange) | $\geq 98.0\%$                           | 99.6 %       |



$$\text{MW correction} = \frac{400.111}{438.201} = 0.91307 \quad \begin{array}{l} \text{PFH}_x\text{S} \\ \text{CAS } 355-46-4 \end{array}$$

$$\text{Purity} \times \text{MW correction} = 90.9\%$$

Reagent

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**LC537\_PfNA\_00002**

R: 4/1/15 SKV



# Certificate of Analysis

Apr 2, 2015 (JST)

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

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

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

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

## Customer service:

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

PFNA

Reagent

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**LC537\_PFNA2\_00001**

3050 Spruce Street, Saint Louis, MO 63103, USA

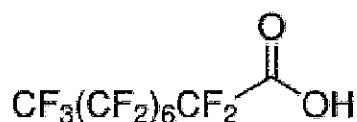
Website: [www.sigmaaldrich.com](http://www.sigmaaldrich.com)Email USA: [techserv@sial.com](mailto:techserv@sial.com)Outside USA: [eurtechserv@sial.com](mailto:eurtechserv@sial.com)

## Certificate of Analysis

Product Name:

Perfluorononanoic acid - 97%

Product Number: 394459  
Lot Number: MKBJ2926V  
Brand: ALDRICH  
CAS Number: 375-95-1  
MDL Number: MFCD00039605  
Formula: C<sub>9</sub>H<sub>17</sub>O<sub>2</sub>  
Formula Weight: 464.08 g/mol  
Quality Release Date: 20 OCT 2011



| Test                                               | Specification         | Result   |
|----------------------------------------------------|-----------------------|----------|
| Appearance (Color)                                 | White to Off-White    | White    |
| Appearance (Form)                                  | Powder or Crystals or | Powder   |
| Crystalline Chunk(s) or Granule or Flakes or Solid |                       |          |
| Infrared spectrum                                  | Conforms to Structure | Conforms |
| Purity (Titration by NaOH)                         | 96.5 - 103.5 %        | 100.3 %  |
| GC (area %)                                        | ≥ 96.5 %              | 99.6 %   |



Jamie Gleason, Manager  
Quality Control  
Milwaukee, Wisconsin US

PFNA

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at [Sigma-Aldrich.com](http://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.

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**LC537\_PFOA\_00002**



3/20/15

# SIGMA-ALDRICH®

## CERTIFICATE OF ANALYSIS

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

Seelze, 13.11.2013/505378/13/24029

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 04.Nov.2013

Expiry Date: 04.Nov.2018

Article/Product: 33824

Batch : SZBD308XV

Pentadecafluorooctanoic acid OEKANAL®

PFOA

### Reference Material (RM)

#### 1. General Information

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

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

Usage : PFOA

Molar mass: 414.07 g/Mole

Recomm. storage temp.: roomtemp.

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

#### 2. Batch Analysis

identity (GC-MS)

Assay (GCMS)

Date of Analysis

complying

99.4 %

13.Nov.2013

#### 3. Advice and Remarks

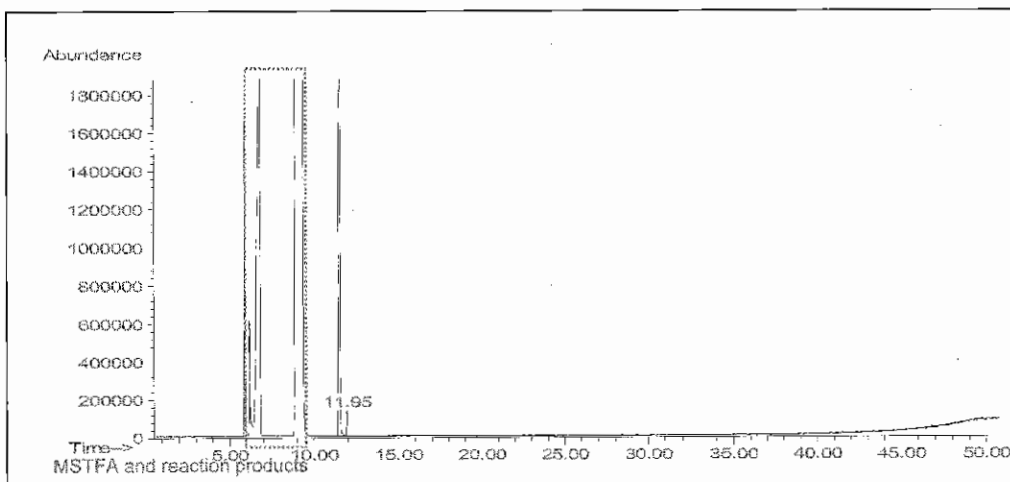
- The expiry date is based on the current knowledge and holds only for proper storage conditions in the originally closed flasks/ packages.
- Whenever the container is opened for removal of aliquot portions of the substance, the person handling the substance must assure, that the integrity of the substance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

Sigma-Aldrich Laborchemikalien GmbH  
Quality Management SA-LC

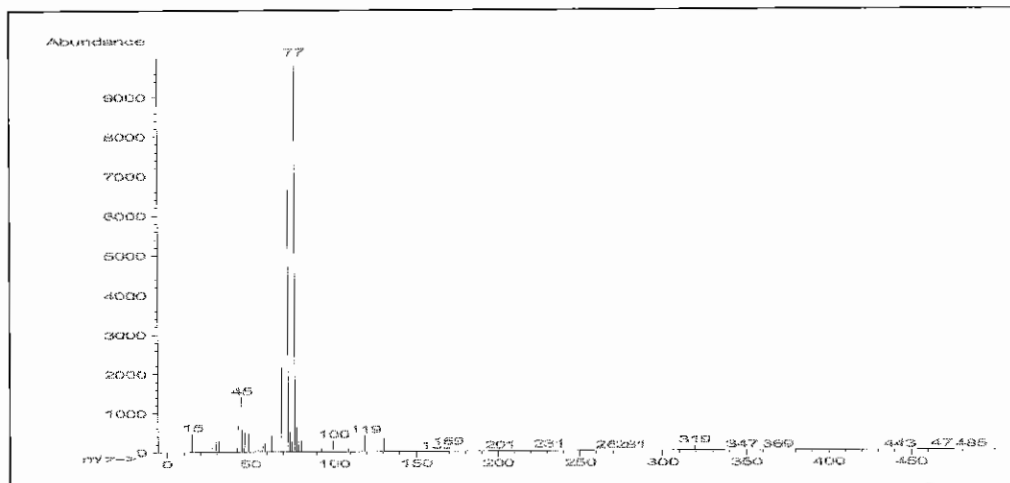
This document was produced electronically and is valid without a signature

**GC/MS-Method****Analytical Department****Article:** Pentadecafluorooctanoic acid OEKANAL**Article-No.:** 33824**Batch:** SZBD308XV**Column:** XTI-5 (Restek); 30 m; fs cap.; I.D.:0.25 mm; 1 µm df**Injector:** Split mode**Injection:** approx. 1 µl of reaction mixture with MSTFA (approx. 10 mg + 200 µl MSTFA)**Inj.-temp.:** 280°C**Oven-temp.:** 40°C (for 2 min) to 320°C (6°C/min) hold for 2 min**Split:** 1:100**Flow:** 1 ml He/min (Constant flow mode)**Detector:** MSD**Mass range:** 10-600 amu (Scan mode)**Evaluation:** Purity: Total Ion Chromatogram  
(MSTFA and reaction products blinded out in report)

Identity: Mass spectrum complies

**Operator:** Ahrens / 2013-11-13**Total Ion Chromatogram:**

| Ret.time | Area     | Area-% | Com                                         |
|----------|----------|--------|---------------------------------------------|
| 11.54    | 565.1670 | 99.4   | Pentadecafluorooctanoic acid (as TMS-ester) |
| 11.95    | 3.6792   | 0.64   |                                             |

**Mass spectrum (rt = 11.54 min):**

Reagent

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**LC537\_PFOA2\_00001**

# Certificate of Analysis

**Alfa Aesar**  
A Johnson Matthey Company

Product No.: L08862  
Product: Perfluorooctanoic acid, 95%  
Lot No.: D24Y026

PFOA

Appearance White solid  
Melting point 58 - 60°C  
Assay 99 %  
Identity Matches reference

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**LC537\_PFOS\_00002**

F: 4/1/15 SV

# SIGMA-ALDRICH®

## CERTIFICATE OF ANALYSIS

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

Seelze, 13.08.2012/419060/12/17583

Order-No.:

Customer-No.:

Order-Code:

Quantity:

Production Date: 09.Aug.2012

Expiry Date: 09.Aug.2017 - *ex date*

Article/Product: 33829

Batch : SZBC222XV

Heptadecafluorooctanesulfonic acid potassium salt OEKANAL®

*PFOS-K<sup>+</sup>*

### Reference Material (RM)

#### 1. General Information

Formula: C8F17KO3S

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

Usage : PFOS

Molar mass: 538.22 g/Mole

Recomm. storage temp.: roomtemp.

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

#### 2. Batch Analysis

Identity

Assay (LC-MS)

Date of Analysis

complying

98 %

10.Aug.2012

*PW-correction:*

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

*Purity = 91.66%*

#### 3. Advice and Remarks

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

Sigma-Aldrich Laborchemikalien GmbH  
Quality Management SA-LC

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**LC537\_PFOS2\_00001**

## Certificate of Analysis

Inv 820  
12LCMS 0579

|                           |                                                                   |
|---------------------------|-------------------------------------------------------------------|
| <b>Product Name:</b>      | HEPTADECAFLUOROOCOTANESULFONIC ACID TETRAETHYLAMMONIUM SALT       |
|                           | 98 %                                                              |
| <b>Product Number:</b>    | 365289                                                            |
| <b>Product Brand:</b>     | Aldrich                                                           |
| <b>Molecular Formula:</b> | C <sub>16</sub> H <sub>20</sub> F <sub>17</sub> NO <sub>3</sub> S |
| <b>Molecular Mass:</b>    | 629.37                                                            |
| <b>CAS Number:</b>        | 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              |

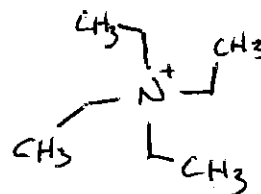
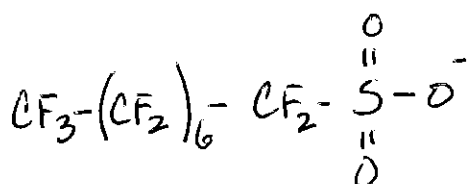
QC RELEASE DATE 13/APR/11

Mass correction =  $\frac{500.125}{629.37} = 0.7946$   
~~Mass = 79.46%~~ Jeh 7-26-12

Purity + MW Correction = 77.87%.

E. Schönl

Edeltraud Schwärzler, Manager  
Quality Control  
Buchs, Switzerland



|            |                                                      |
|------------|------------------------------------------------------|
|            | <u>C<sub>8</sub>F<sub>17</sub>SO<sub>3</sub> + H</u> |
| C = 12.011 | 96.088                                               |
| F = 18.998 | 322.966                                              |
| S = 32.066 | 32.066                                               |
| O = 15.999 | 47.997                                               |
| H = 1.008  | 1.008                                                |
| N = 14.007 | -                                                    |
|            | <hr/> 500.125                                        |

$$\begin{array}{r} \text{C}_8\text{H}_{20}\text{N} \\ \hline 96.088 \\ - \\ - \\ - \\ - \\ 20.160 \\ 14.007 \\ \hline 130.255 \end{array} \rightarrow$$

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## Certificate of Origin

**Product Name:** Heptadecafluorooctanesulfonic acid tetraethylammonium salt  
98 %  
**Product Number:** 365289  
**Product Brand:** Aldrich  
**Lot:** BCBF5116V  
**Molecular Formula:**  $C_{16}H_{20}F_{17}NO_3S$   
**Molecular Mass:** 629.37  
**CAS Number:** 56773-42-3  
**Date of Issue:** 30-MAR-11

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**Country of Origin** China

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

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Reagent

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**LCM2PFOA\_00005**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

M2PFOA

**LOT NUMBER:**

M2PFOA0613

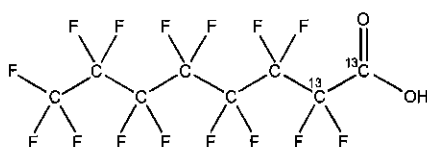
**COMPOUND:**

Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]octanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>H<sub>15</sub>O<sub>2</sub>

**MOLECULAR WEIGHT:**

416.05

**CONCENTRATION:**

50 ± 2.5 µg/ml

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

**LAST TESTED:** (mm/dd/yyyy)

06/19/2013

(1,2-<sup>13</sup>C<sub>2</sub>)

**EXPIRY DATE:** (mm/dd/yyyy)

06/19/2018

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

B.G. Chittim

Date: 07/16/2013

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

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

**TRACEABILITY:**

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

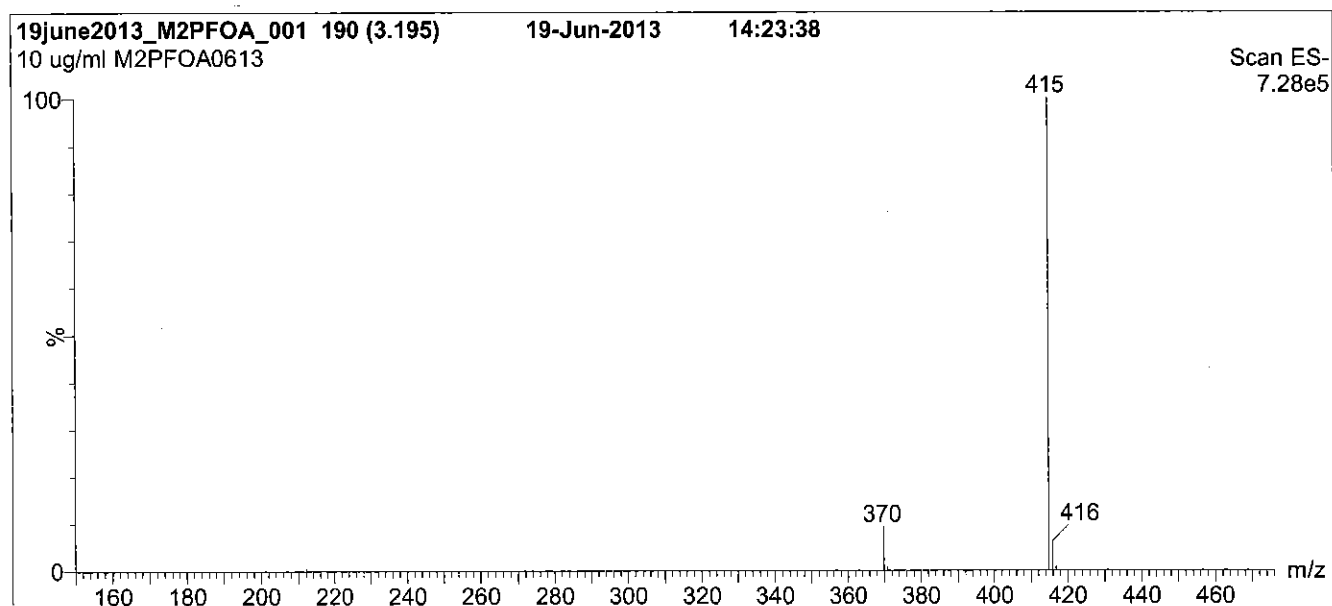
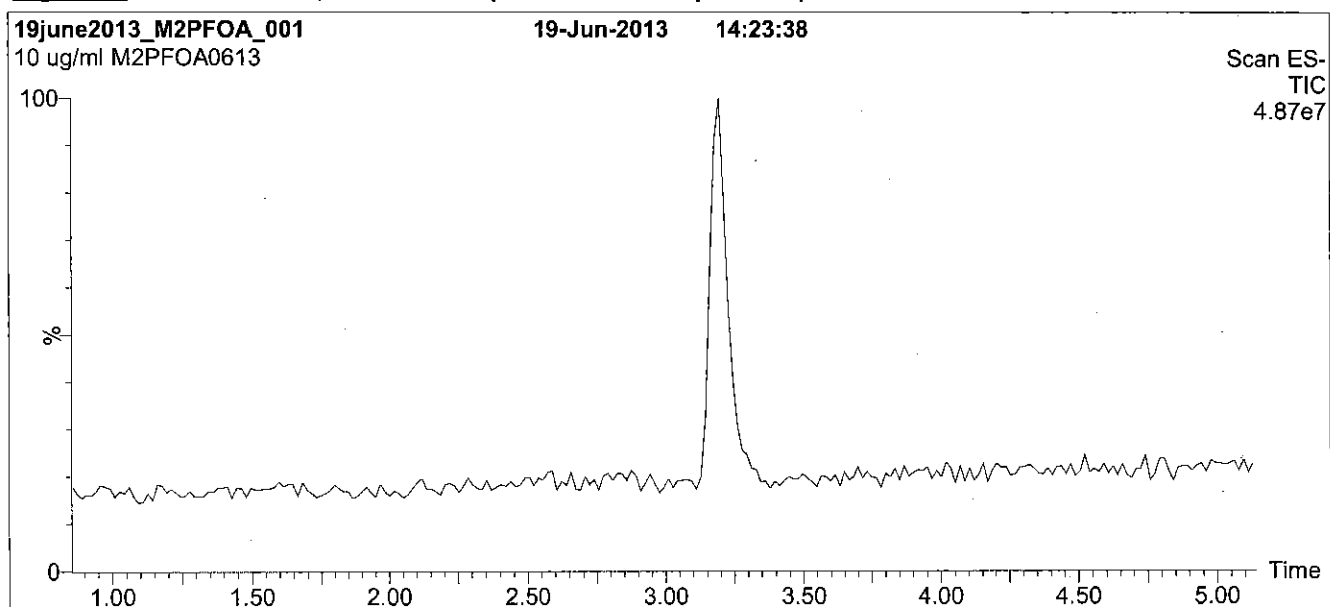
**QUALITY MANAGEMENT:**

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



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

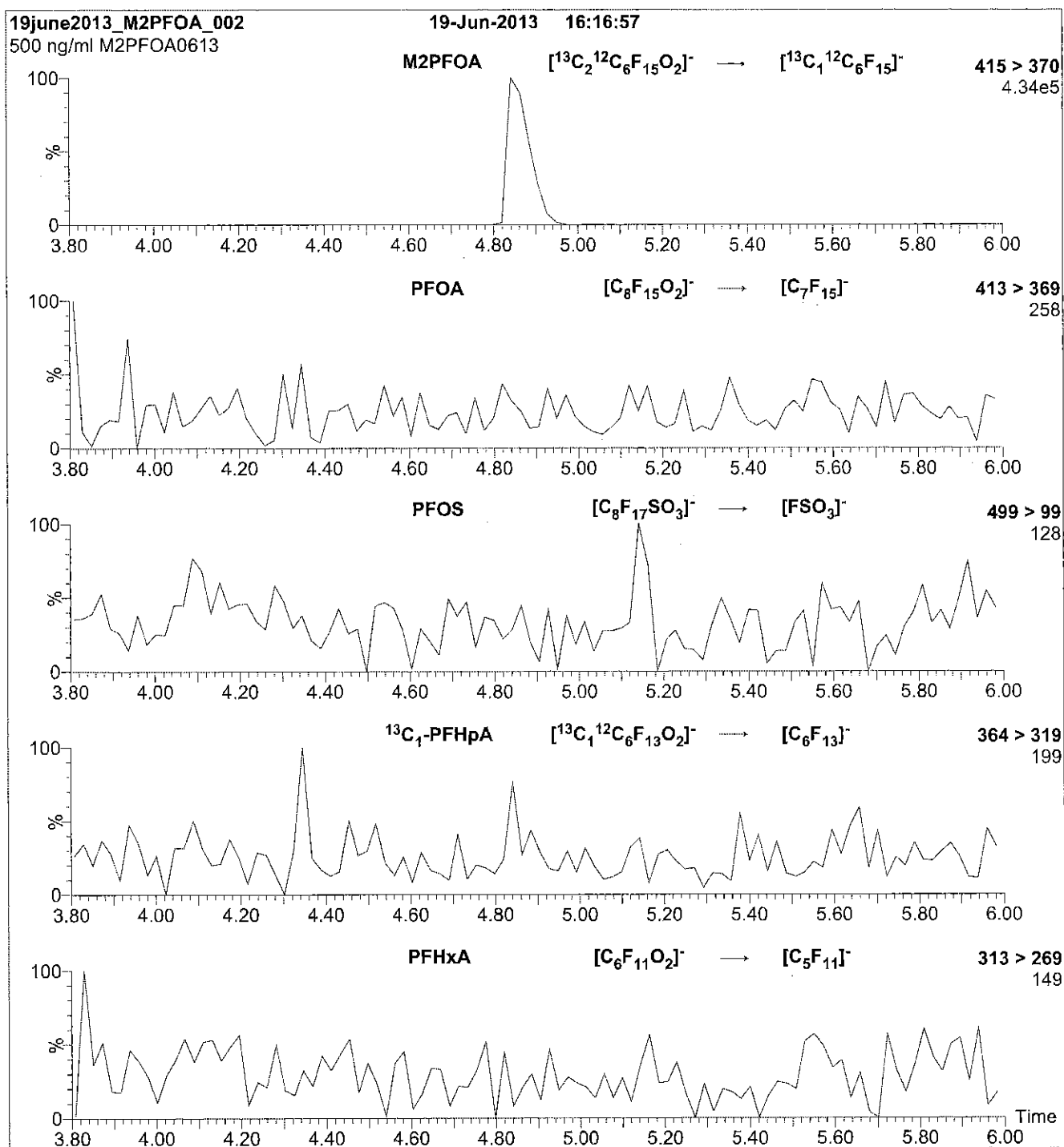
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2PFOA)

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

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

**MS Parameters**

Collision Gas (mbar) = 3.66e-3  
Collision Energy (eV) = 11

Reagent

---

**LCM2PFOA\_00007**



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

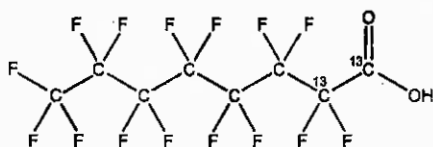
M2PFOA

**LOT NUMBER:**

M2PFOA0216

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

Not available

**MOLECULAR FORMULA:**<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>HF<sub>16</sub>O<sub>2</sub>**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

416.05

**SOLVENT(S):**

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

02/12/2016

**EXPIRY DATE:** (mm/dd/yyyy)

02/12/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

  
B.G. Chittim

Date: 02/24/2016

(mm/dd/yyyy)

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



**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

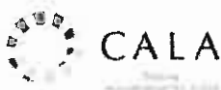
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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

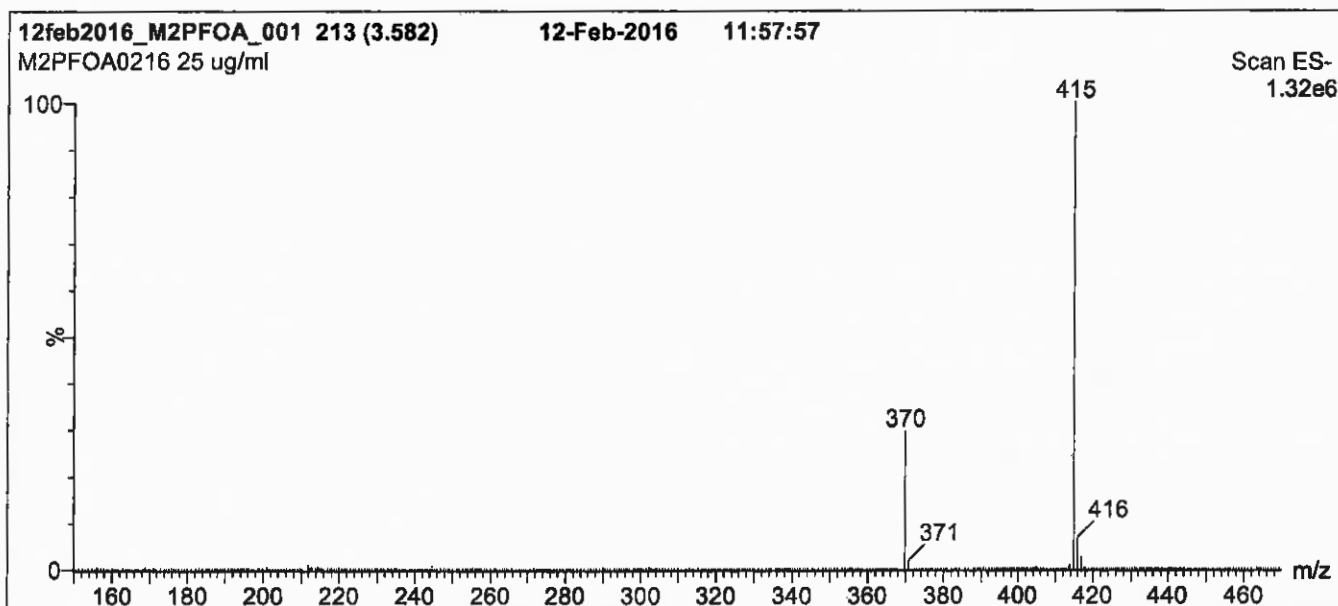
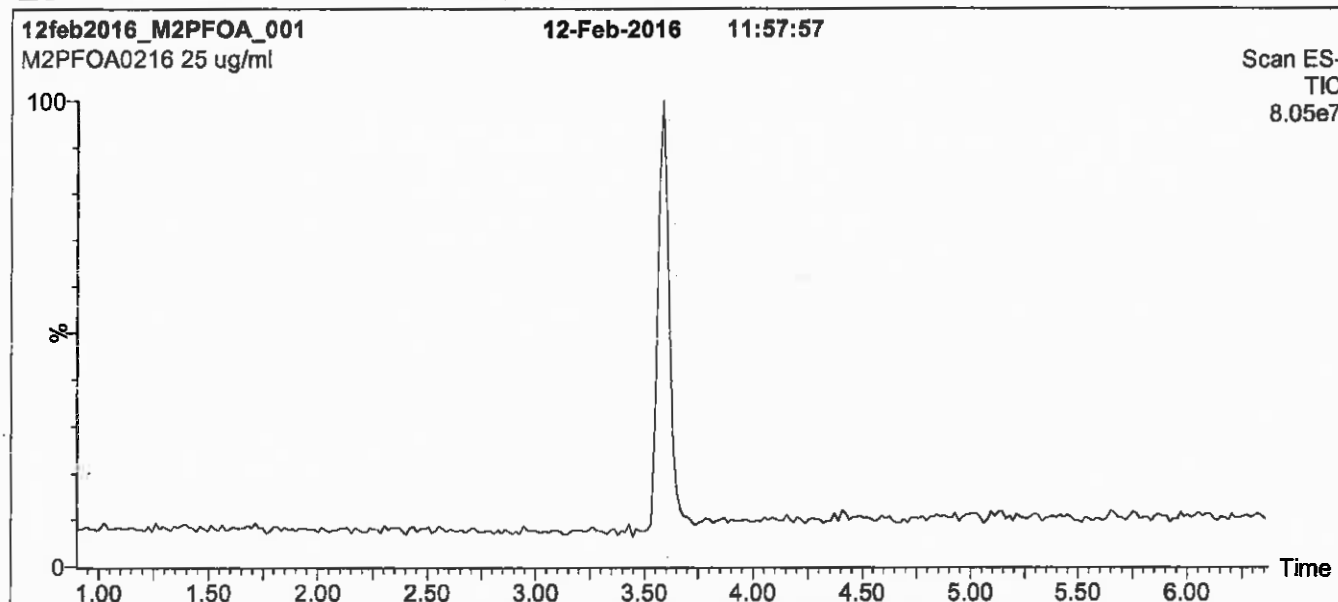
**QUALITY MANAGEMENT:**

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



**\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\***

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7.5 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

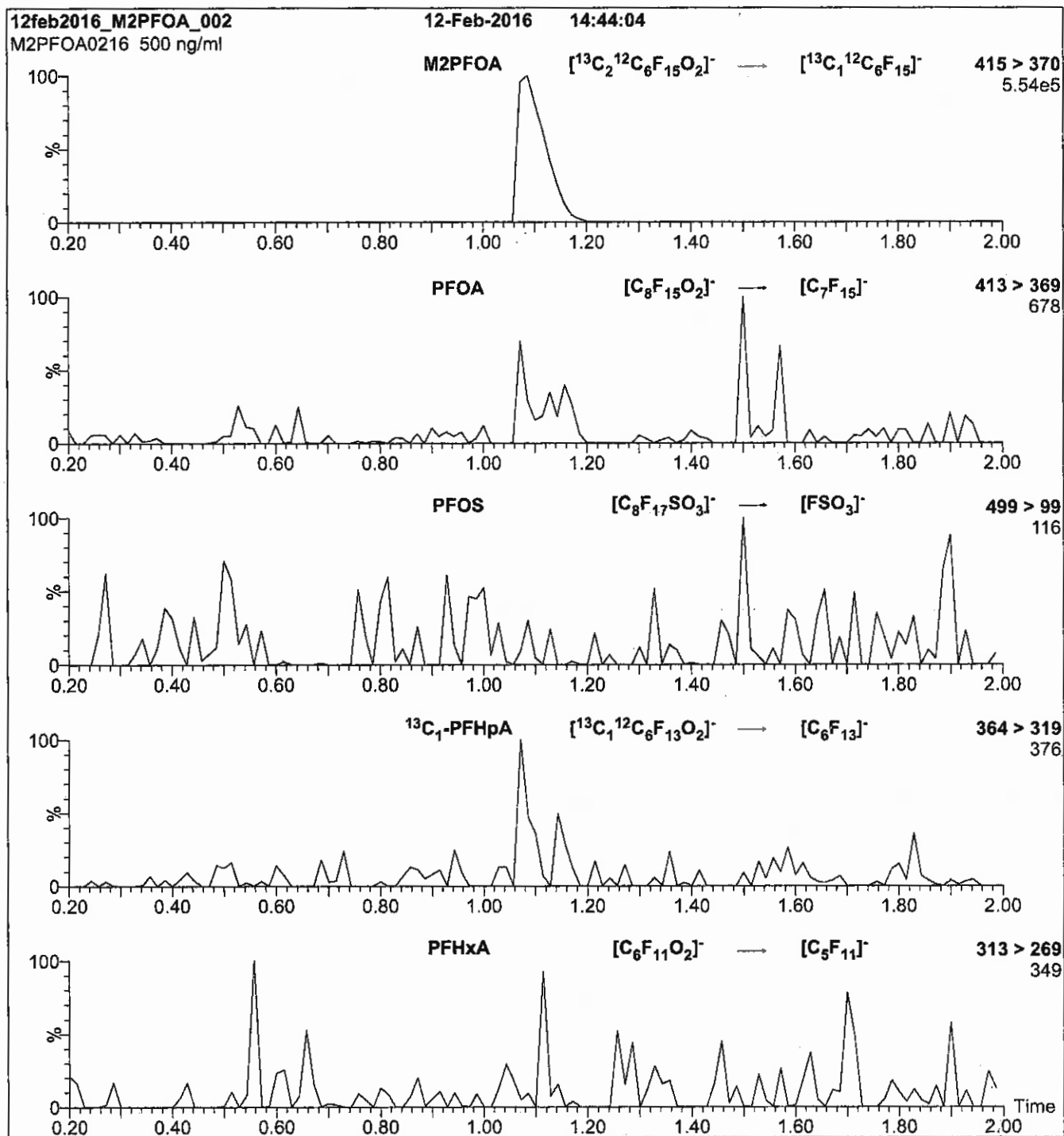
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

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

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20%  $\text{H}_2\text{O}$

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

**MS Parameters**

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

Reagent

---

**LCMPFDA\_00012**

R: SBC 12/21/16



814255

ID: LCMFDA\_00012

Exp: 09/30/21 Prod: SBC

13C2-Perfluorodecanoic a



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

MPFDA

**LOT NUMBER:**

MPFDA0916

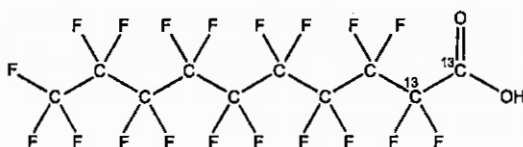
**COMPOUND:**

Perfluoro-n-[1,2-<sup>13</sup>C<sub>2</sub>]decanoic acid

**STRUCTURE:**

**CAS #:**

Not available



**MOLECULAR FORMULA:**

<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>8</sub>HF<sub>19</sub>O<sub>2</sub>

**MOLECULAR WEIGHT:**

516.07

**CONCENTRATION:**

50 ± 2.5 µg/ml

**SOLVENT(S):**

Methanol

Water (<1%)

**CHEMICAL PURITY:**

>98%

**ISOTOPIC PURITY:**

≥99% <sup>13</sup>C

**LAST TESTED:** (mm/dd/yyyy)

09/30/2016

(1,2-<sup>13</sup>C<sub>2</sub>)

**EXPIRY DATE:** (mm/dd/yyyy)

09/30/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of <sup>13</sup>C<sub>1</sub>-PFNA.

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

Certified By:

B.G. Crittitt

Date: 10/07/2016

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

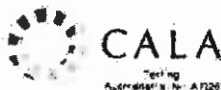
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

**LIMITED WARRANTY:**

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

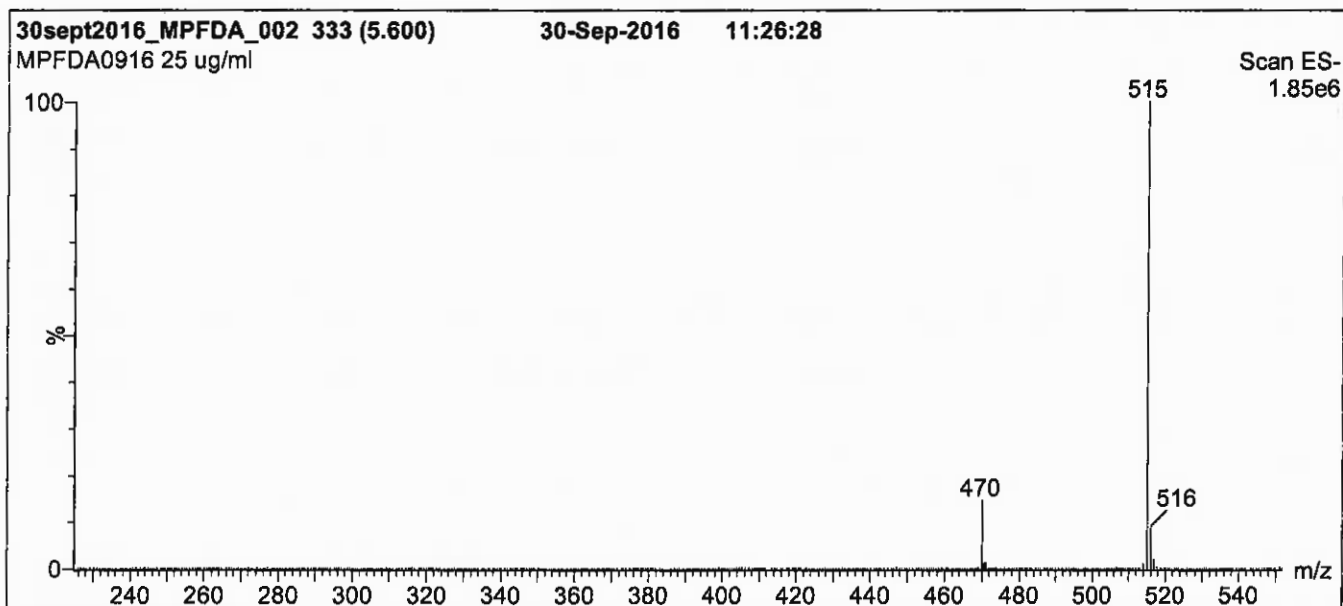
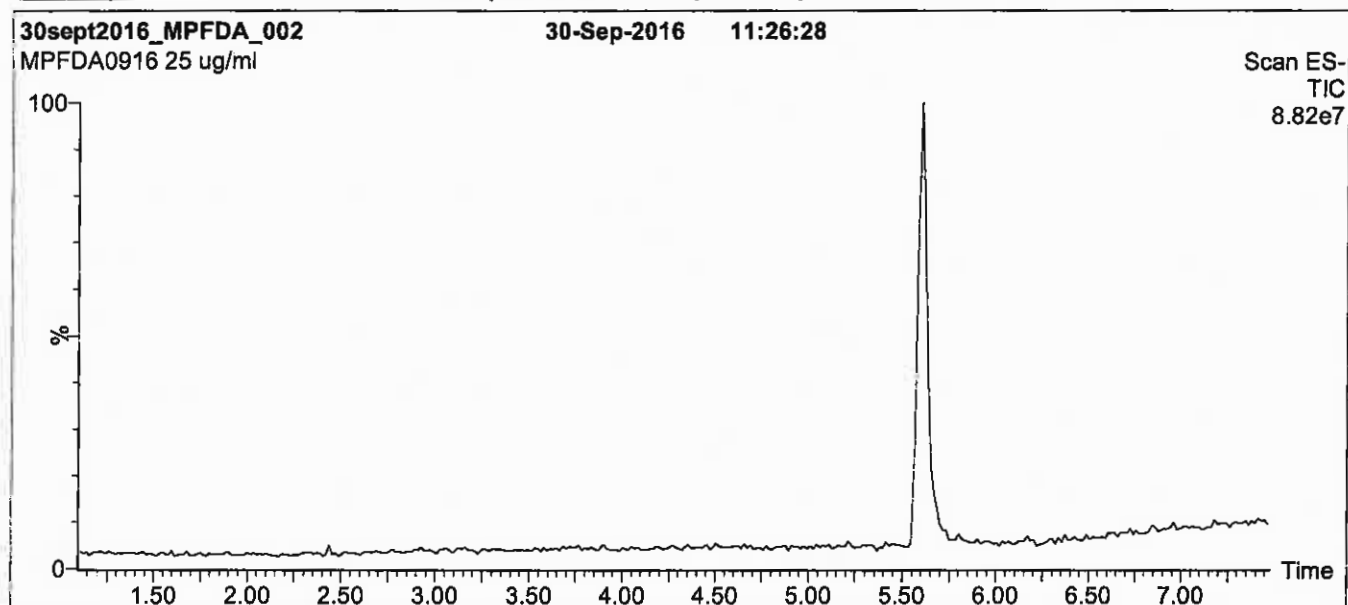
**QUALITY MANAGEMENT:**

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



**\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\***

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient  
Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

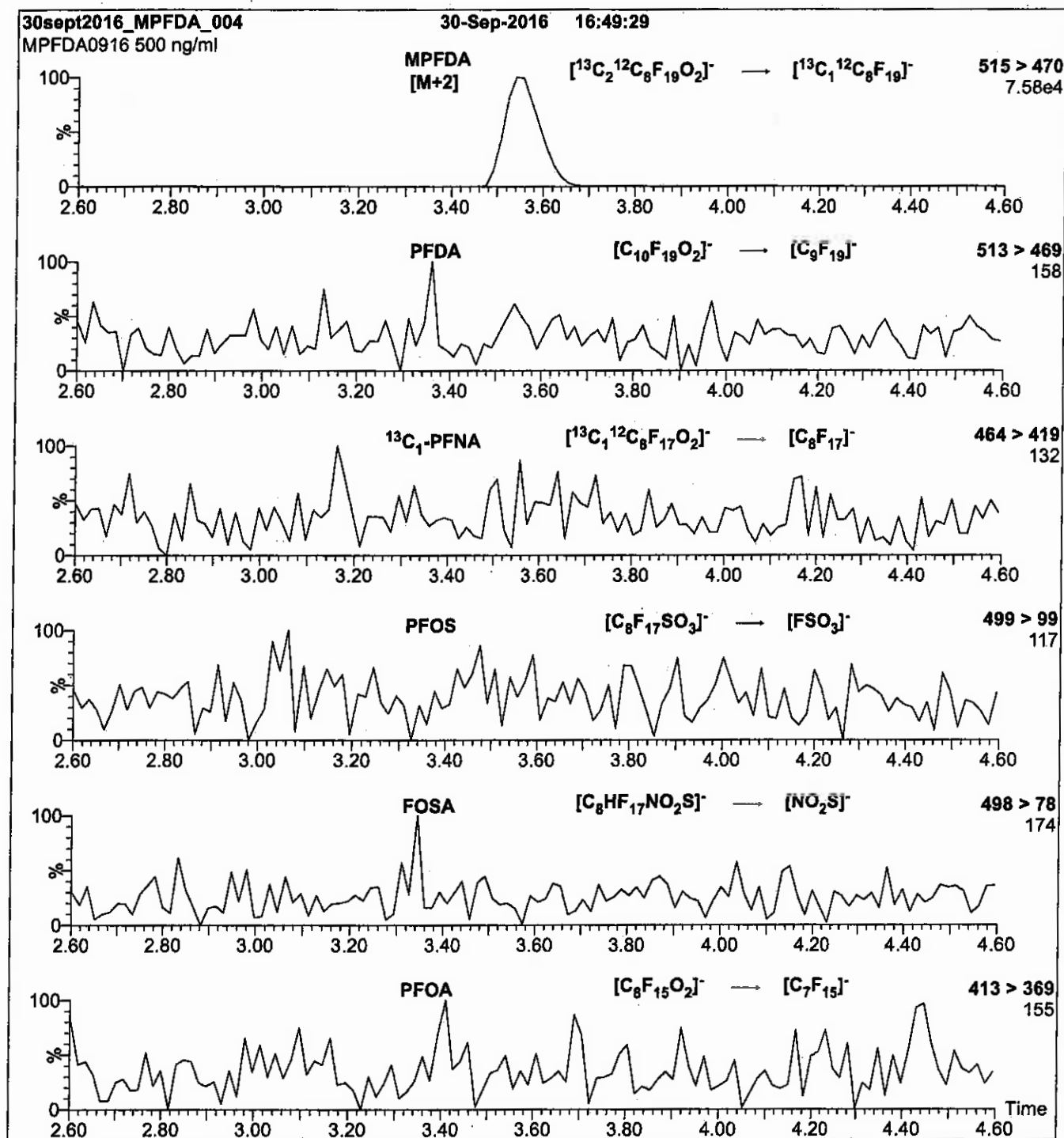
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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

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



**Conditions for Figure 2:**

Injection: Direct loop Injection  
10  $\mu$ l (500 ng/ml MPFDA)

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

Flow: 300  $\mu$ l/min

**MS Parameters**

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



Reagent

---

**LCMPFHxA\_00013**

R: SBC 12/21/16



814258

ID: LCMPFHxA\_00013

Exp: 04/08/21 Ppdt: SBC

13C2-Perfluorohexanoic ac

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

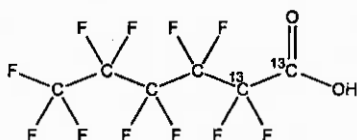
MPFHxA

**LOT NUMBER:**

MPFHxA0416

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

Not available

**MOLECULAR FORMULA:**<sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>4</sub>HF<sub>11</sub>O<sub>2</sub>**CONCENTRATION:**

50 ± 2.5 µg/ml

**MOLECULAR WEIGHT:**

316.04

**SOLVENT(S):**

Methanol

Water (&lt;1%)

**CHEMICAL PURITY:**

&gt;98%

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

04/08/2016

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

04/08/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

  
B.G. Chittim

Date: 04/29/2016

(mm/dd/yyyy)

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

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

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

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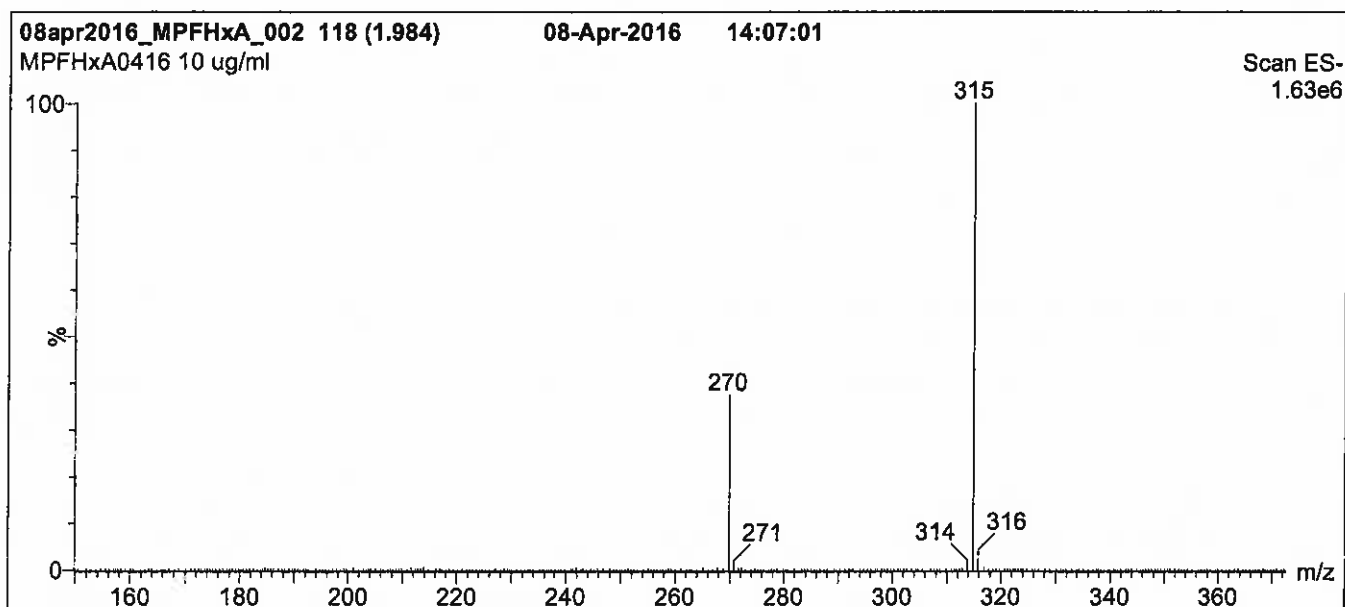
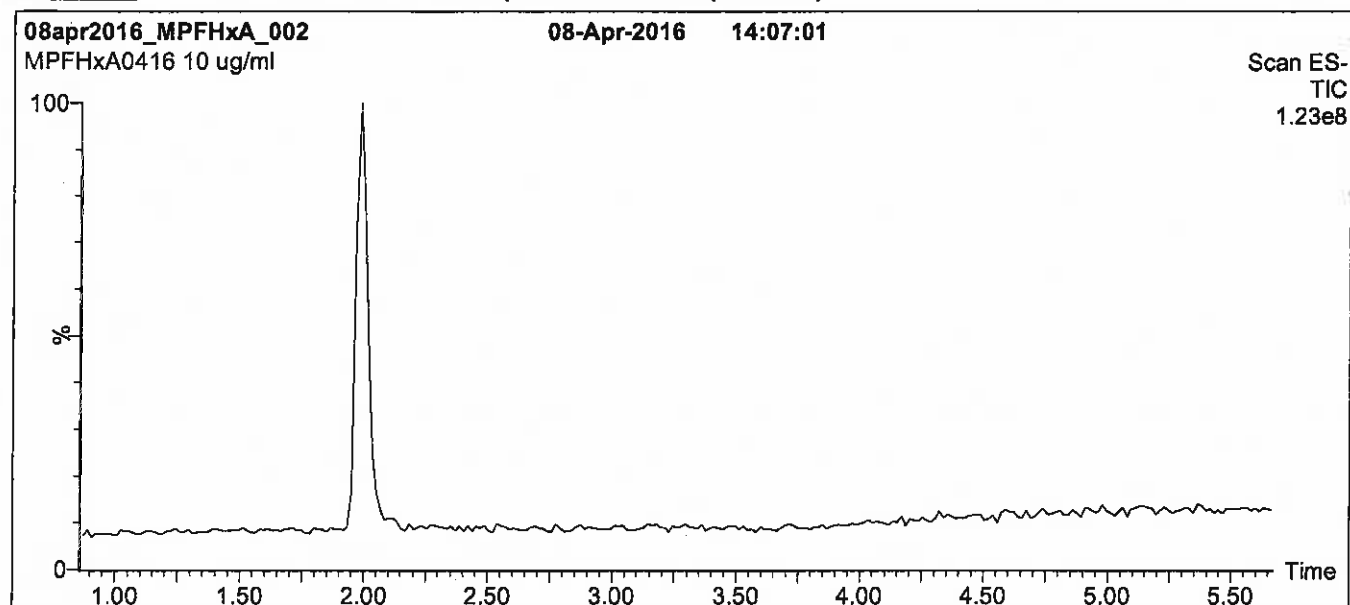
#### **QUALITY MANAGEMENT:**

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7.5 min and hold for 1.5 min  
before returning to initial conditions over 0.5 min.  
Time: 10 min

Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

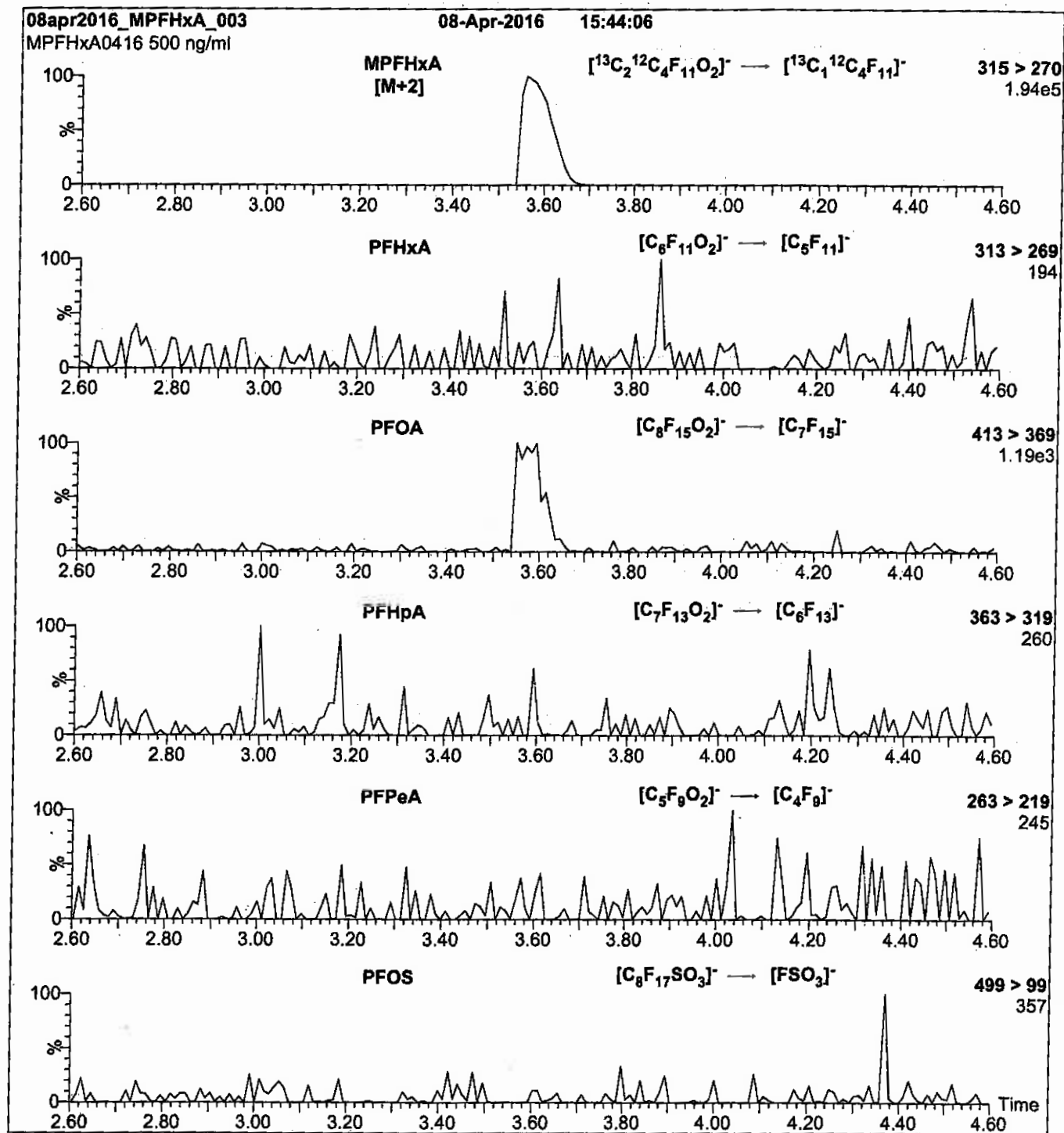
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 15.00

Cone Gas Flow (l/hr) = 100

Desolvation Gas Flow (l/hr) = 750

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml MPFHxA)

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

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

**MS Parameters**

Collision Gas (mbar) =  $3.39\text{e-}3$   
Collision Energy (eV) = 10

Reagent

---

**LCMPFOS\_00019**

R: SBC 12/21/16



814253

ID: LCMFOS\_00019

Exp: 08/03/21 Pipd: SBC

13C4-Perfluorooctanesulfo

WELLINGTON  
LABORATORIESCERTIFICATE OF ANALYSIS  
DOCUMENTATION**PRODUCT CODE:**

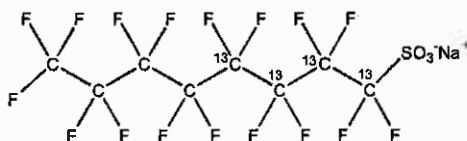
MPFOS

**LOT NUMBER:**

MPFOS0816

**COMPOUND:**Sodium perfluoro-1-[1,2,3,4-<sup>13</sup>C<sub>4</sub>]octanesulfonate**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**<sup>13</sup>C<sub>4</sub><sup>12</sup>C<sub>4</sub>F<sub>17</sub>SO<sub>3</sub>Na**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)

47.8 ± 2.4 µg/ml (MPFOS anion)

**MOLECULAR WEIGHT:**

526.08

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

&gt;98%

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

08/03/2016

(1,2,3,4-<sup>13</sup>C<sub>4</sub>)**EXPIRY DATE:** (mm/dd/yyyy)

08/03/2021

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

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

Certified By:

  
B.G. Chittim

Date: 08/05/2016

(mm/dd/yyyy)

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

**INTENDED USE:**

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

**HAZARDS:**

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

**SYNTHESIS / CHARACTERIZATION:**

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

**HOMOGENEITY:**

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

**UNCERTAINTY:**

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

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

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

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

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

**TRACEABILITY:**

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

**EXPIRY DATE / PERIOD OF VALIDITY:**

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

**LIMITED WARRANTY:**

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

**QUALITY MANAGEMENT:**

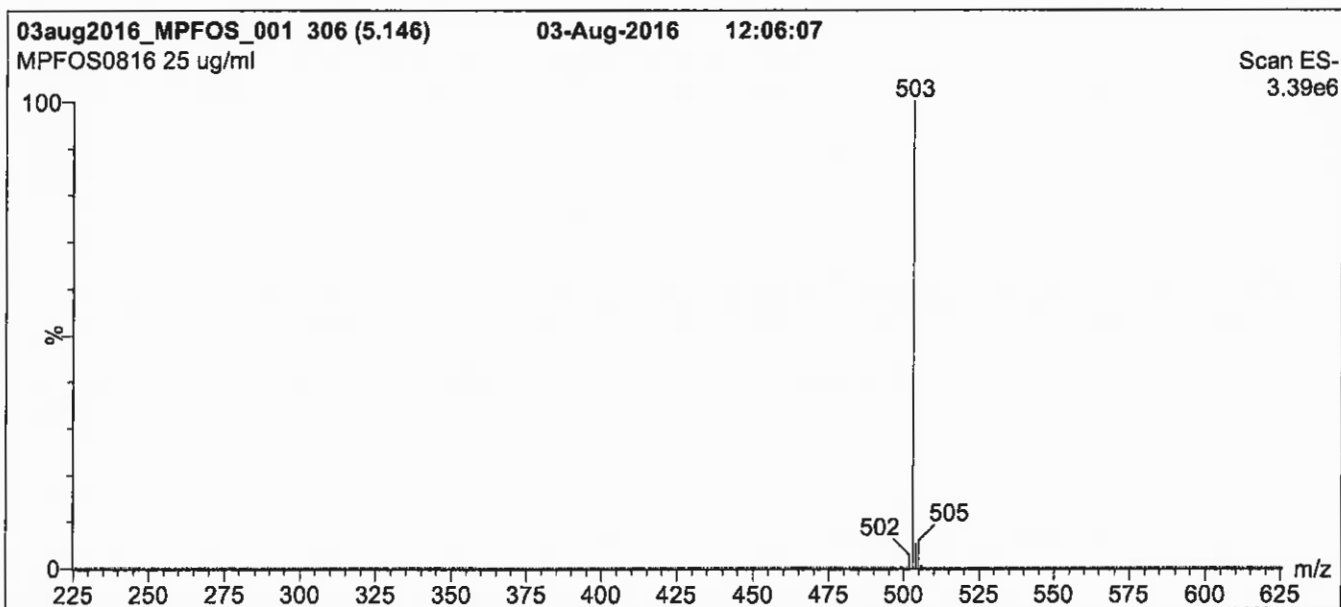
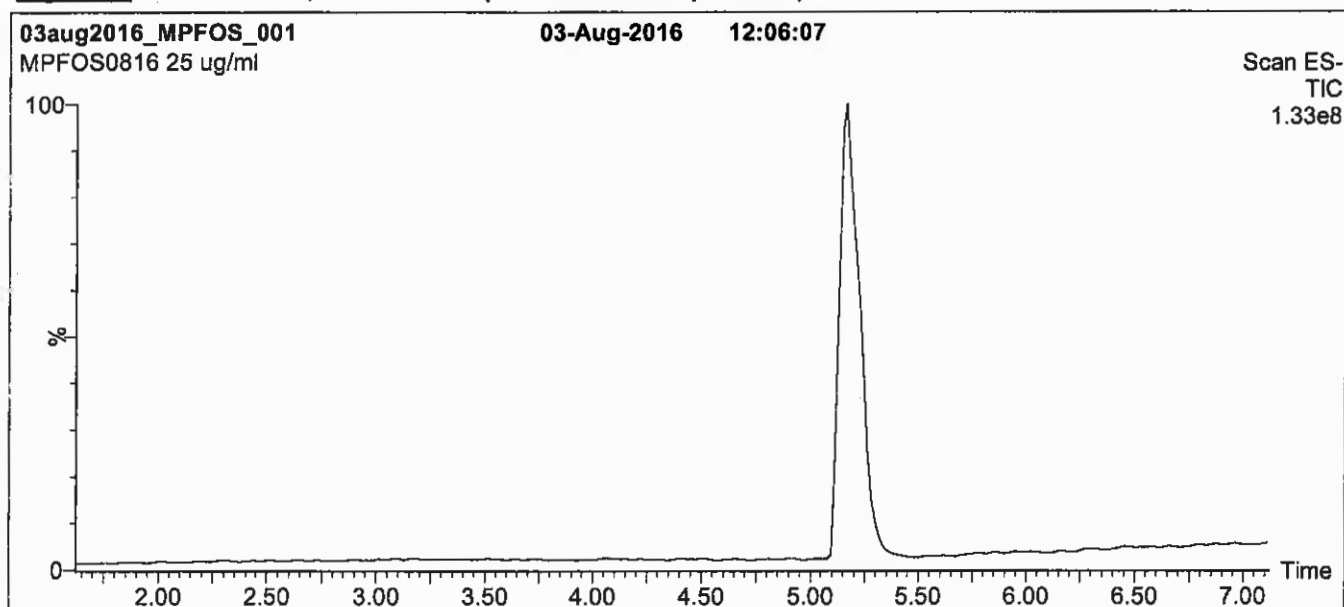
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



\*\*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at [www.well-labs.com](http://www.well-labs.com) or contact us directly at [info@well-labs.com](mailto:info@well-labs.com)\*\*



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions**

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

**Mobile phase:** Gradient

Start: 45% (80:20 MeOH:ACN) / 55% H<sub>2</sub>O  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 7 min and hold for 1.5 min  
before returning to initial conditions in 0.5 min.  
Time: 10 min

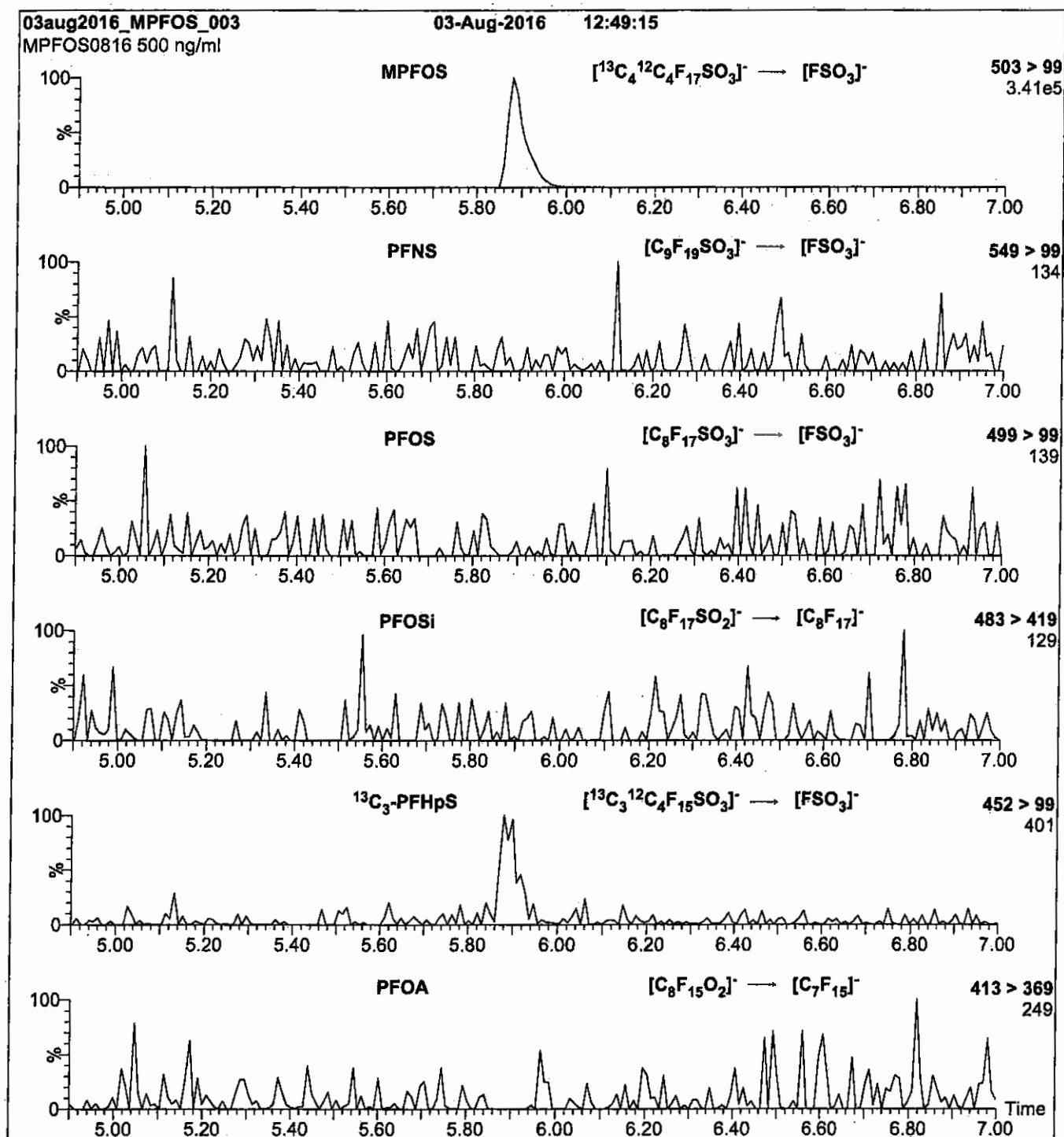
Flow: 300  $\mu$ l/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

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

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



**Conditions for Figure 2:**

Injection: Direct loop injection  
10  $\mu\text{l}$  (500 ng/ml MPFOS)

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

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

**MS Parameters**

Collision Gas (mbar) = 3.46e-3

Collision Energy (eV) = 40

# Method 537 DOD

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

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Matrix: Water Level: Low

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

| Client Sample ID     | Lab Sample ID          | PFHxA # | PFDA # |
|----------------------|------------------------|---------|--------|
| WGNA-062117-RW-3148  | 320-29346-1            | 94      | 92     |
| WGNA-062117-FRB-3148 | 320-29346-2            | 95      | 95     |
| WGNA-062117-RW-0569  | 320-29346-3            | 96      | 91     |
| WGNA-062117-FRB-0569 | 320-29346-4            | 89      | 95     |
| WGNA-062117-RW-3097  | 320-29346-5            | 83      | 95     |
| WGNA-062117-FRB-3097 | 320-29346-6            | 96      | 90     |
| WGNA-062117-RW-0461  | 320-29346-7            | 96      | 91     |
| WGNA-062117-FRB-0461 | 320-29346-8            | 97      | 89     |
| WGNA-062117-DUP02    | 320-29346-9            | 86      | 96     |
| WGNA-062117-RW-0500  | 320-29346-10           | 89      | 90     |
| WGNA-062117-FRB-0500 | 320-29346-11           | 104     | 97     |
| WGNA-062117-RW-3933  | 320-29346-12           | 87      | 98     |
| WGNA-062117-FRB-3933 | 320-29346-13           | 99      | 92     |
| WGNA-062117-RW-0404  | 320-29346-14           | 88      | 92     |
| WGNA-062117-FRB-0404 | 320-29346-15           | 100     | 93     |
| WGNA-062117-RW-2426  | 320-29346-16           | 86      | 93     |
| WGNA-062117-FRB-2426 | 320-29346-17           | 97      | 94     |
|                      | MB<br>320-172426/1-A   | 99      | 100    |
|                      | LCS<br>320-172426/2-A  | 99      | 103    |
|                      | LCSD<br>320-172426/3-A | 100     | 99     |

PFHxA = 13C2 PFHxA  
PFDA = 13C2 PFDA

QC LIMITS  
70-130  
70-130

# Column to be used to flag recovery values

FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2017.07.08\_537A\_008.d  
 Lab ID: LCS 320-172426/2-A Client ID: \_\_\_\_\_

| COMPOUND                             | SPIKE<br>ADDED<br>(ng/L) | LCS<br>CONCENTRATION<br>(ng/L) | LCS<br>%<br>REC | QC<br>LIMITS<br>REC | # |
|--------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS)  | 300                      | 302                            | 101             | 70-130              |   |
| Perfluorooctanoic acid (PFOA)        | 150                      | 161                            | 107             | 70-130              | E |
| Perfluorononanoic acid (PFNA)        | 144                      | 149                            | 103             | 70-130              |   |
| Perfluorohexanesulfonic acid (PFHxS) | 225                      | 216                            | 96              | 70-130              |   |
| Perfluoroheptanoic acid (PFHpA)      | 74.3                     | 82.2                           | 111             | 70-130              | E |
| Perfluorobutanesulfonic acid (PFBS)  | 663                      | 630                            | 95              | 70-130              |   |

# Column to be used to flag recovery and RPD values

FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2017.07.08\_537A\_009.d  
 Lab ID: LCSD 320-172426/3-A Client ID: \_\_\_\_\_

| COMPOUND                             | SPIKE<br>ADDED<br>(ng/L) | LCSD<br>CONCENTRATION<br>(ng/L) | LCSD<br>%<br>REC | %<br>RPD | QC LIMITS |        | # |
|--------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
|                                      |                          |                                 |                  |          | RPD       | REC    |   |
| Perfluorooctanesulfonic acid (PFOS)  | 300                      | 291                             | 97               | 4        | 30        | 70-130 | M |
| Perfluorooctanoic acid (PFOA)        | 150                      | 153                             | 102              | 5        | 30        | 70-130 |   |
| Perfluorononanoic acid (PFNA)        | 144                      | 142                             | 99               | 4        | 30        | 70-130 |   |
| Perfluorohexanesulfonic acid (PFHxS) | 225                      | 217                             | 96               | 1        | 30        | 70-130 |   |
| Perfluoroheptanoic acid (PFHpA)      | 74.3                     | 73.4                            | 99               | 11       | 30        | 70-130 |   |
| Perfluorobutanesulfonic acid (PFBS)  | 663                      | 590                             | 89               | 7        | 30        | 70-130 |   |

# Column to be used to flag recovery and RPD values

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2017.07.08\_537A\_007.d Lab Sample ID: MB 320-172426/1-A  
 Matrix: Water Date Extracted: 07/05/2017 10:52  
 Instrument ID: A8\_N Date Analyzed: 07/08/2017 11:54  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID     | LAB SAMPLE ID       | LAB<br>FILE ID        | DATE ANALYZED    |
|----------------------|---------------------|-----------------------|------------------|
|                      | LCS 320-172426/2-A  | 2017.07.08_537A 008.d | 07/08/2017 11:59 |
|                      | LCSD 320-172426/3-A | 2017.07.08_537A 009.d | 07/08/2017 12:04 |
| WGNA-062117-RW-3148  | 320-29346-1         | 2017.07.08_537A 012.d | 07/08/2017 12:18 |
| WGNA-062117-FRB-3148 | 320-29346-2         | 2017.07.08_537A 013.d | 07/08/2017 12:23 |
| WGNA-062117-RW-0569  | 320-29346-3         | 2017.07.08_537A 014.d | 07/08/2017 12:27 |
| WGNA-062117-FRB-0569 | 320-29346-4         | 2017.07.08_537A 015.d | 07/08/2017 12:32 |
| WGNA-062117-RW-3097  | 320-29346-5         | 2017.07.08_537A 016.d | 07/08/2017 12:37 |
| WGNA-062117-FRB-3097 | 320-29346-6         | 2017.07.08_537A 019.d | 07/08/2017 12:51 |
| WGNA-062117-RW-0461  | 320-29346-7         | 2017.07.08_537A 020.d | 07/08/2017 12:56 |
| WGNA-062117-FRB-0461 | 320-29346-8         | 2017.07.08_537A 021.d | 07/08/2017 13:01 |
| WGNA-062117-DUP02    | 320-29346-9         | 2017.07.08_537A 022.d | 07/08/2017 13:05 |
| WGNA-062117-RW-0500  | 320-29346-10        | 2017.07.08_537A 023.d | 07/08/2017 13:10 |
| WGNA-062117-FRB-0500 | 320-29346-11        | 2017.07.08_537A 024.d | 07/08/2017 13:15 |
| WGNA-062117-RW-3933  | 320-29346-12        | 2017.07.08_537A 025.d | 07/08/2017 13:20 |
| WGNA-062117-FRB-3933 | 320-29346-13        | 2017.07.08_537A 026.d | 07/08/2017 13:24 |
| WGNA-062117-RW-0404  | 320-29346-14        | 2017.07.08_537A 027.d | 07/08/2017 13:29 |
| WGNA-062117-FRB-0404 | 320-29346-15        | 2017.07.08_537A 028.d | 07/08/2017 13:34 |
| WGNA-062117-RW-2426  | 320-29346-16        | 2017.07.08_537A 031.d | 07/08/2017 13:48 |
| WGNA-062117-FRB-2426 | 320-29346-17        | 2017.07.08_537A 032.d | 07/08/2017 13:53 |

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 07/05/2017 20:13  
 Calibration ID: 32198

|                                           |                      | 13PFOA  |      | PFOS    |      |        |      |
|-------------------------------------------|----------------------|---------|------|---------|------|--------|------|
|                                           |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT |                      | 966867  | 1.88 | 2790947 | 2.12 |        |      |
| UPPER LIMIT                               |                      | 1450301 | 2.38 | 4186421 | 2.62 |        |      |
| LOWER LIMIT                               |                      | 483434  | 1.38 | 1395474 | 1.62 |        |      |
| LAB SAMPLE ID                             | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| CCVL 320-172646/11                        |                      | 960063  | 1.87 | 2831967 | 2.11 |        |      |
| ICV 320-172646/13                         |                      | 920859  | 1.87 | 2667731 | 2.11 |        |      |
| CCVL 320-173114/4                         |                      | 980863  | 1.94 | 3129733 | 2.17 |        |      |
| CCV 320-173114/5<br>CCVIS                 |                      | 942853  | 1.93 | 3248548 | 2.16 |        |      |
| MB 320-172426/1-A                         |                      | 964941  | 1.93 | 3151444 | 2.16 |        |      |
| LCS 320-172426/2-A                        |                      | 933319  | 1.93 | 3136705 | 2.16 |        |      |
| LCSD 320-172426/3-A                       |                      | 964655  | 1.93 | 3136305 | 2.16 |        |      |
| 320-29346-1                               | WGNA-062117-RW-3148  | 956259  | 1.91 | 3088691 | 2.15 |        |      |
| 320-29346-2                               | WGNA-062117-FRB-3148 | 1005161 | 1.91 | 3124310 | 2.15 |        |      |
| 320-29346-3                               | WGNA-062117-RW-0569  | 1074440 | 1.91 | 3403793 | 2.16 |        |      |
| 320-29346-4                               | WGNA-062117-FRB-0569 | 932576  | 1.91 | 3071649 | 2.15 |        |      |
| 320-29346-5                               | WGNA-062117-RW-3097  | 949831  | 1.91 | 3004027 | 2.15 |        |      |
| CCV 320-173114/17<br>CCVIS                |                      | 947388  | 1.91 | 3016336 | 2.15 |        |      |
| CCV 320-173116/17<br>CCVIS                |                      | 947388  | 1.91 | 3016336 | 2.15 |        |      |
| 320-29346-6                               | WGNA-062117-FRB-3097 | 935887  | 1.92 | 2954087 | 2.16 |        |      |
| 320-29346-7                               | WGNA-062117-RW-0461  | 944306  | 1.92 | 3038844 | 2.16 |        |      |
| 320-29346-8                               | WGNA-062117-FRB-0461 | 966603  | 1.92 | 3126086 | 2.16 |        |      |
| 320-29346-9                               | WGNA-062117-DUP02    | 926788  | 1.94 | 3073775 | 2.17 |        |      |
| 320-29346-10                              | WGNA-062117-RW-0500  | 994119  | 1.93 | 3208745 | 2.16 |        |      |
| 320-29346-11                              | WGNA-062117-FRB-0500 | 906406  | 1.93 | 3056099 | 2.16 |        |      |
| 320-29346-12                              | WGNA-062117-RW-3933  | 902311  | 1.94 | 3000823 | 2.17 |        |      |
| 320-29346-13                              | WGNA-062117-FRB-3933 | 932828  | 1.94 | 3012668 | 2.17 |        |      |
| 320-29346-14                              | WGNA-062117-RW-0404  | 1079406 | 1.94 | 3512651 | 2.16 |        |      |
| 320-29346-15                              | WGNA-062117-FRB-0404 | 909149  | 1.94 | 2916020 | 2.17 |        |      |
| CCV 320-173116/29<br>CCVIS                |                      | 869614  | 1.93 | 3053864 | 2.16 |        |      |
| CCV 320-173117/29<br>CCVIS                |                      | 869614  | 1.93 | 3053864 | 2.16 |        |      |
| 320-29346-16                              | WGNA-062117-RW-2426  | 903934  | 1.93 | 2923055 | 2.16 |        |      |
| 320-29346-17                              | WGNA-062117-FRB-2426 | 936994  | 1.93 | 2958006 | 2.16 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area  
 RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3 (mm) Calibration End Date: 07/05/2017 20:13  
 Calibration ID: 32198

|                                           | 13PFOA           |                | PFOS            |      |        |      |
|-------------------------------------------|------------------|----------------|-----------------|------|--------|------|
|                                           | AREA #           | RT #           | AREA #          | RT # | AREA # | RT # |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT | 966867           | 1.88           | 2790947         | 2.12 |        |      |
| UPPER LIMIT                               | 1450301          | 2.38           | 4186421         | 2.62 |        |      |
| LOWER LIMIT                               | 483434           | 1.38           | 1395474         | 1.62 |        |      |
| LAB SAMPLE ID                             | CLIENT SAMPLE ID |                |                 |      |        |      |
| CCV 320-173117/38<br>CCVIS                |                  | 860316<br>1.93 | 3010705<br>2.16 |      |        |      |

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

Area Limit = 50%-150% of internal standard area  
 RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173114/5 Date Analyzed: 07/08/2017 11:45  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_005 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                     |                      | 13PFOA  |      | PFOS    |      |        |      |
|---------------------|----------------------|---------|------|---------|------|--------|------|
|                     |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| 12/24 HOUR STD      |                      | 942853  | 1.93 | 3248548 | 2.16 |        |      |
| UPPER LIMIT         |                      | 1319994 | 2.43 | 4547967 | 2.66 |        |      |
| LOWER LIMIT         |                      | 659997  | 1.43 | 2273984 | 1.66 |        |      |
| LAB SAMPLE ID       | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| MB 320-172426/1-A   |                      | 964941  | 1.93 | 3151444 | 2.16 |        |      |
| LCS 320-172426/2-A  |                      | 933319  | 1.93 | 3136705 | 2.16 |        |      |
| LCSD 320-172426/3-A |                      | 964655  | 1.93 | 3136305 | 2.16 |        |      |
| 320-29346-1         | WGNA-062117-RW-3148  | 956259  | 1.91 | 3088691 | 2.15 |        |      |
| 320-29346-2         | WGNA-062117-FRB-3148 | 1005161 | 1.91 | 3124310 | 2.15 |        |      |
| 320-29346-3         | WGNA-062117-RW-0569  | 1074440 | 1.91 | 3403793 | 2.16 |        |      |
| 320-29346-4         | WGNA-062117-FRB-0569 | 932576  | 1.91 | 3071649 | 2.15 |        |      |
| 320-29346-5         | WGNA-062117-RW-3097  | 949831  | 1.91 | 3004027 | 2.15 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173114/17 Date Analyzed: 07/08/2017 12:42  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_017 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                     |                      | 13PFOA  |      | PFOS    |      |        |      |
|---------------------|----------------------|---------|------|---------|------|--------|------|
|                     |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| 12/24 HOUR STD      |                      | 947388  | 1.91 | 3016336 | 2.15 |        |      |
| UPPER LIMIT         |                      | 1326343 | 2.41 | 4222870 | 2.65 |        |      |
| LOWER LIMIT         |                      | 663172  | 1.41 | 2111435 | 1.65 |        |      |
| LAB SAMPLE ID       | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| MB 320-172426/1-A   |                      | 964941  | 1.93 | 3151444 | 2.16 |        |      |
| LCS 320-172426/2-A  |                      | 933319  | 1.93 | 3136705 | 2.16 |        |      |
| LCSD 320-172426/3-A |                      | 964655  | 1.93 | 3136305 | 2.16 |        |      |
| 320-29346-1         | WGNA-062117-RW-3148  | 956259  | 1.91 | 3088691 | 2.15 |        |      |
| 320-29346-2         | WGNA-062117-FRB-3148 | 1005161 | 1.91 | 3124310 | 2.15 |        |      |
| 320-29346-3         | WGNA-062117-RW-0569  | 1074440 | 1.91 | 3403793 | 2.16 |        |      |
| 320-29346-4         | WGNA-062117-FRB-0569 | 932576  | 1.91 | 3071649 | 2.15 |        |      |
| 320-29346-5         | WGNA-062117-RW-3097  | 949831  | 1.91 | 3004027 | 2.15 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173116/17 Date Analyzed: 07/08/2017 12:42  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_017 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |      | PFOS    |      |         |      |
|----------------|----------------------|------|---------|------|---------|------|
|                | AREA #               | RT # | AREA #  | RT # | AREA #  | RT # |
| 12/24 HOUR STD | 947388               | 1.91 | 3016336 | 2.15 |         |      |
| UPPER LIMIT    | 1326343              | 2.41 | 4222870 | 2.65 |         |      |
| LOWER LIMIT    | 663172               | 1.41 | 2111435 | 1.65 |         |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |      |         |      |         |      |
| 320-29346-6    | WGNA-062117-FRB-3097 |      | 935887  | 1.92 | 2954087 | 2.16 |
| 320-29346-7    | WGNA-062117-RW-0461  |      | 944306  | 1.92 | 3038844 | 2.16 |
| 320-29346-8    | WGNA-062117-FRB-0461 |      | 966603  | 1.92 | 3126086 | 2.16 |
| 320-29346-9    | WGNA-062117-DUP02    |      | 926788  | 1.94 | 3073775 | 2.17 |
| 320-29346-10   | WGNA-062117-RW-0500  |      | 994119  | 1.93 | 3208745 | 2.16 |
| 320-29346-11   | WGNA-062117-FRB-0500 |      | 906406  | 1.93 | 3056099 | 2.16 |
| 320-29346-12   | WGNA-062117-RW-3933  |      | 902311  | 1.94 | 3000823 | 2.17 |
| 320-29346-13   | WGNA-062117-FRB-3933 |      | 932828  | 1.94 | 3012668 | 2.17 |
| 320-29346-14   | WGNA-062117-RW-0404  |      | 1079406 | 1.94 | 3512651 | 2.16 |
| 320-29346-15   | WGNA-062117-FRB-0404 |      | 909149  | 1.94 | 2916020 | 2.17 |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173116/29 Date Analyzed: 07/08/2017 13:39  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_029 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                |                      | 13PFOA  |      | PFOS    |      |        |      |
|----------------|----------------------|---------|------|---------|------|--------|------|
|                |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| 12/24 HOUR STD |                      | 869614  | 1.93 | 3053864 | 2.16 |        |      |
| UPPER LIMIT    |                      | 1217460 | 2.43 | 4275410 | 2.66 |        |      |
| LOWER LIMIT    |                      | 608730  | 1.43 | 2137705 | 1.66 |        |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| 320-29346-6    | WGNA-062117-FRB-3097 | 935887  | 1.92 | 2954087 | 2.16 |        |      |
| 320-29346-7    | WGNA-062117-RW-0461  | 944306  | 1.92 | 3038844 | 2.16 |        |      |
| 320-29346-8    | WGNA-062117-FRB-0461 | 966603  | 1.92 | 3126086 | 2.16 |        |      |
| 320-29346-9    | WGNA-062117-DUP02    | 926788  | 1.94 | 3073775 | 2.17 |        |      |
| 320-29346-10   | WGNA-062117-RW-0500  | 994119  | 1.93 | 3208745 | 2.16 |        |      |
| 320-29346-11   | WGNA-062117-FRB-0500 | 906406  | 1.93 | 3056099 | 2.16 |        |      |
| 320-29346-12   | WGNA-062117-RW-3933  | 902311  | 1.94 | 3000823 | 2.17 |        |      |
| 320-29346-13   | WGNA-062117-FRB-3933 | 932828  | 1.94 | 3012668 | 2.17 |        |      |
| 320-29346-14   | WGNA-062117-RW-0404  | 1079406 | 1.94 | 3512651 | 2.16 |        |      |
| 320-29346-15   | WGNA-062117-FRB-0404 | 909149  | 1.94 | 2916020 | 2.17 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173117/29 Date Analyzed: 07/08/2017 13:39  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_029 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |      | PFOS    |      |         |      |
|----------------|----------------------|------|---------|------|---------|------|
|                | AREA #               | RT # | AREA #  | RT # | AREA #  | RT # |
| 12/24 HOUR STD | 869614               | 1.93 | 3053864 | 2.16 |         |      |
| UPPER LIMIT    | 1217460              | 2.43 | 4275410 | 2.66 |         |      |
| LOWER LIMIT    | 608730               | 1.43 | 2137705 | 1.66 |         |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |      |         |      |         |      |
| 320-29346-16   | WGNA-062117-RW-2426  |      | 903934  | 1.93 | 2923055 | 2.16 |
| 320-29346-17   | WGNA-062117-FRB-2426 |      | 936994  | 1.93 | 2958006 | 2.16 |

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

Area Limit = 70%-140% of internal standard area  
 RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173117/38 Date Analyzed: 07/08/2017 14:21  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_038 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |      | PFOS    |      |         |      |
|----------------|----------------------|------|---------|------|---------|------|
|                | AREA #               | RT # | AREA #  | RT # | AREA #  | RT # |
| 12/24 HOUR STD | 860316               | 1.93 | 3010705 | 2.16 |         |      |
| UPPER LIMIT    | 1204442              | 2.43 | 4214987 | 2.66 |         |      |
| LOWER LIMIT    | 602221               | 1.43 | 2107494 | 1.66 |         |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |      |         |      |         |      |
| 320-29346-16   | WGNA-062117-RW-2426  |      | 903934  | 1.93 | 2923055 | 2.16 |
| 320-29346-17   | WGNA-062117-FRB-2426 |      | 936994  | 1.93 | 2958006 | 2.16 |

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

Area Limit = 70%-140% of internal standard area  
 RT Limit =  $\pm$  0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3148</u> | Lab Sample ID: <u>320-29346-1</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_012.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 08:35</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>256.8 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:18</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173114</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 22     | J   | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 27     | M   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | J   | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 7.8    | J   | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 88  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 92   |   | 70-130 |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_012.d  
 Lims ID: 320-29346-A-1-A  
 Client ID: WGNA-062117-RW-3148  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:18:21 ALS Bottle#: 6 Worklist Smp#: 12  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:54:33

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.411 | 1.404     | 0.007     | 1.000     | 204043   | 2.13            |                 | 50.5 |       |
| 298.90 > 99.00                  | 1.411 | 1.404     | 0.007     | 1.000     | 151823   |                 | 1.34(0.00-0.00) | 61.8 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.555 | 1.539     | 0.016     | 1.000     | 1020148  | 9.39            |                 | 5107 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.715 | 1.691     | 0.024     | 1.000     | 201288   | 2.01            |                 | 25.8 |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.715 | 1.692     | 0.023     | 1.000     | 433997   | 2.89            |                 | 103  |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.912 | 1.878     | 0.034     |           | 956259   | 10.0            |                 | 3654 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.920 | 1.879     | 0.041     | 1.000     | 619466   | 7.03            |                 | 40.1 | M     |
| 413.00 > 169.00                 | 1.920 | 1.879     | 0.041     | 1.000     | 393822   |                 | 1.57(0.00-0.00) | 434  | M     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.147 | 2.117     | 0.030     |           | 3088691  | 28.7            |                 | 2369 |       |
| 9 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 463.00 > 419.00                 | 2.155 | 2.124     | 0.031     | 1.000     | 70089    | 0.8894          |                 | 1.8  | M     |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.155 | 2.162     | -0.007    | 1.000     | 625713   | 5.67            |                 | 287  |       |
| 499.00 > 99.00                  | 2.155 | 2.162     | -0.007    | 1.000     | 121244   |                 | 5.16(0.00-0.00) | 164  |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.306 | 2.281     | 0.025     | 1.000     | 738485   | 9.20            |                 | 1496 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_012.d

Injection Date: 08-Jul-2017 12:18:21

Instrument ID: A8\_N

Lims ID: 320-29346-A-1-A

Lab Sample ID: 320-29346-1

Client ID: WGNA-062117-RW-3148

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

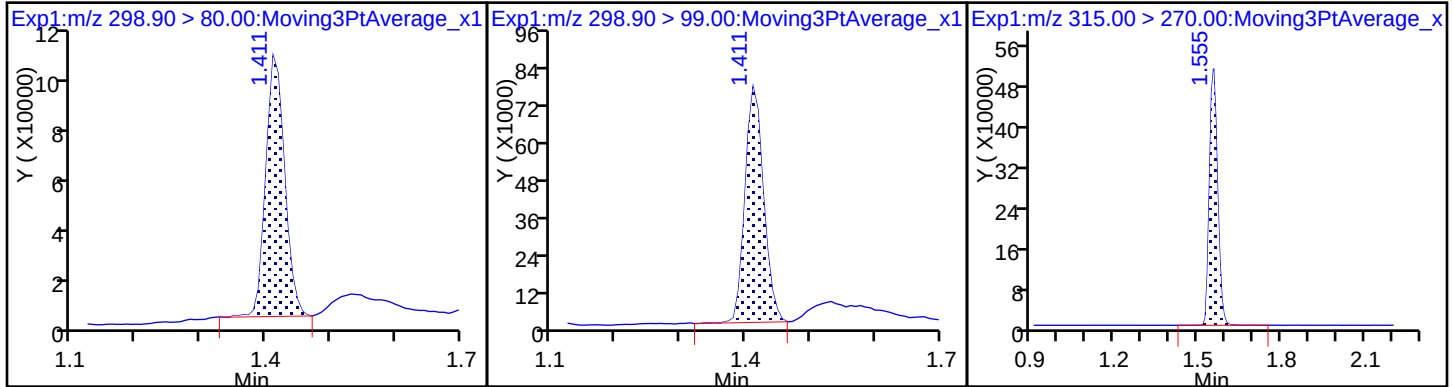
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

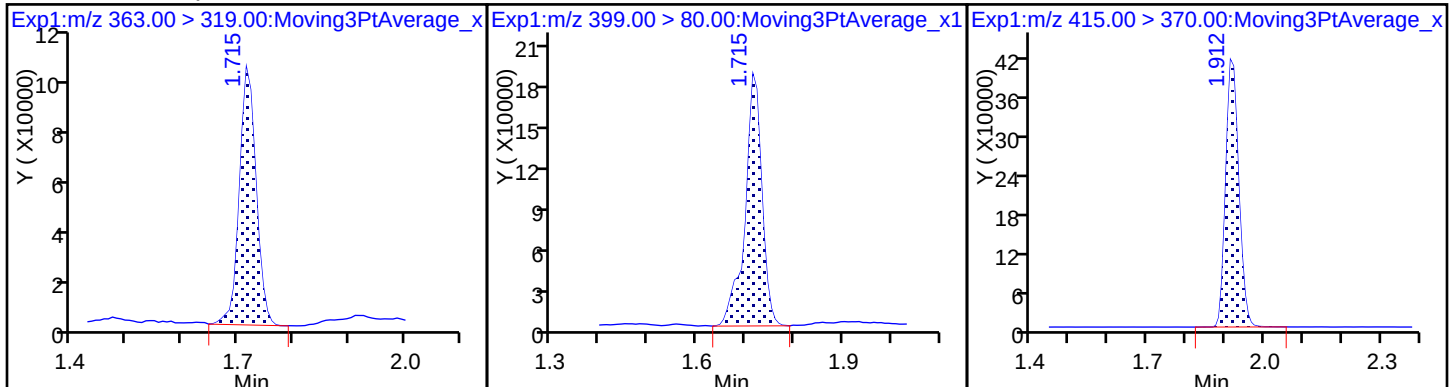
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

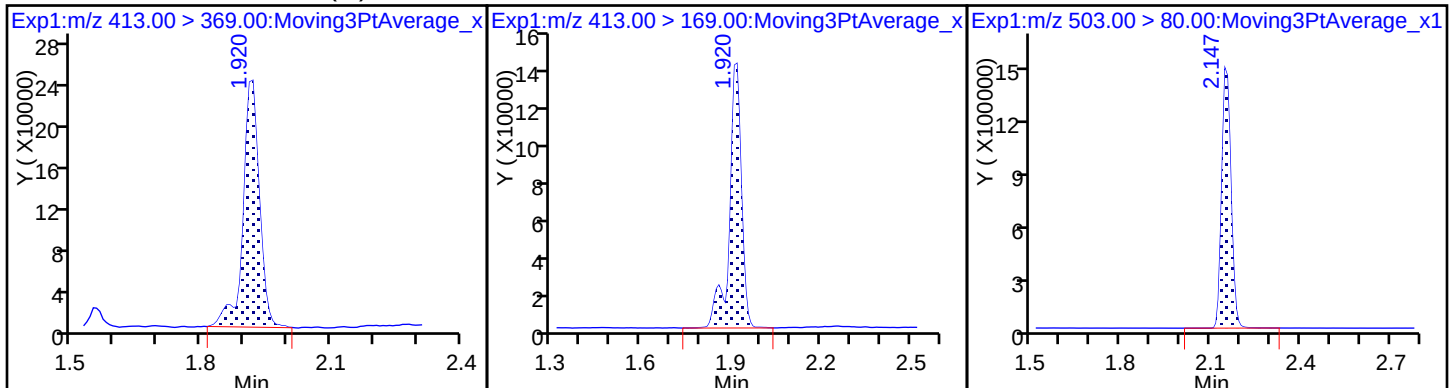
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

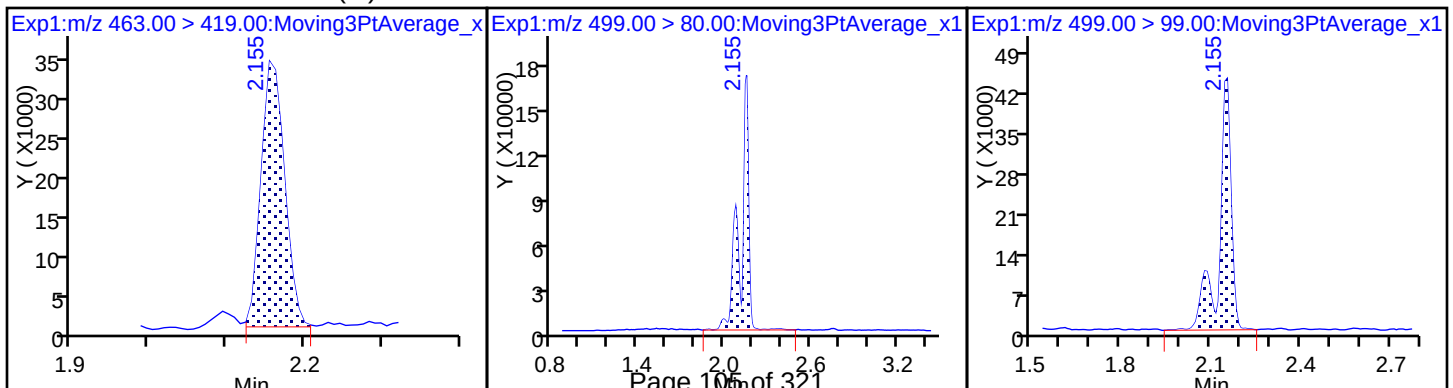
\* 7 13C4 PFOS



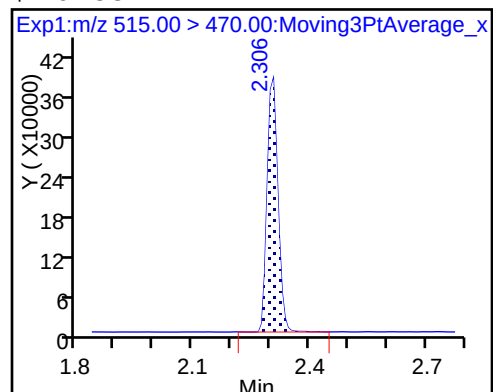
9 Perfluorononanoic acid (M)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_012.d  
Lims ID: 320-29346-A-1-A  
Client ID: WGNA-062117-RW-3148  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:18:21 ALS Bottle#: 6 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-1-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:54:33

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.39             | 93.90  |
| \$ 10 13C2 PFDA | 10.0         | 9.20             | 91.99  |

## TestAmerica Sacramento

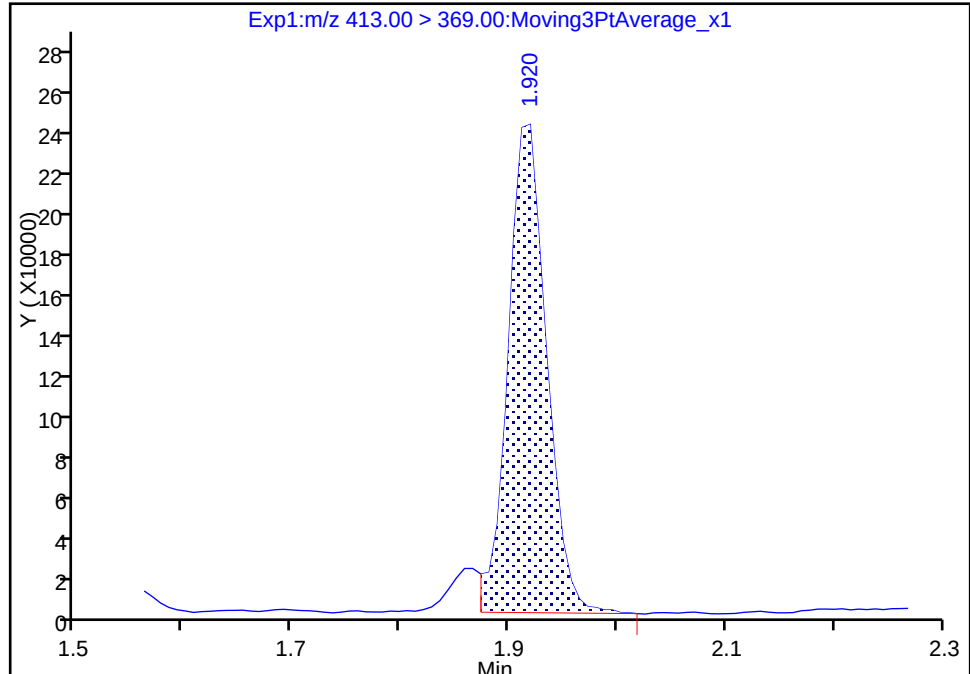
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_012.d  
Injection Date: 08-Jul-2017 12:18:21 Instrument ID: A8\_N  
Lims ID: 320-29346-A-1-A Lab Sample ID: 320-29346-1  
Client ID: WGNA-062117-RW-3148  
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 12  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

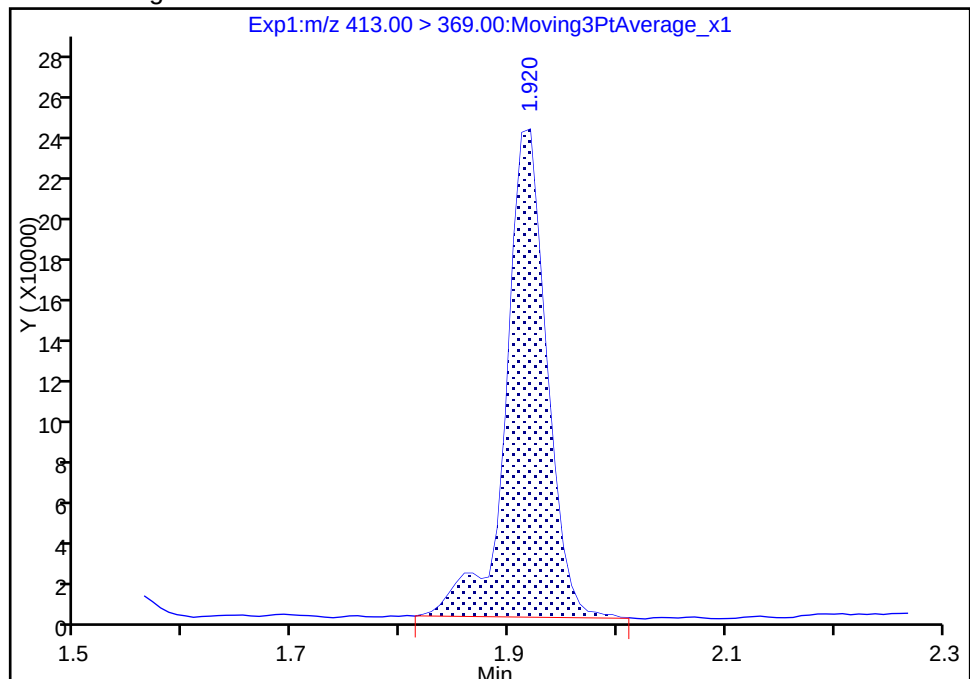
RT: 1.92  
Area: 581647  
Amount: 6.599326  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.92  
Area: 619466  
Amount: 7.028417  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 09:54:19

Audit Action: Manually Integrated

Audit Reason: Isomers

## TestAmerica Sacramento

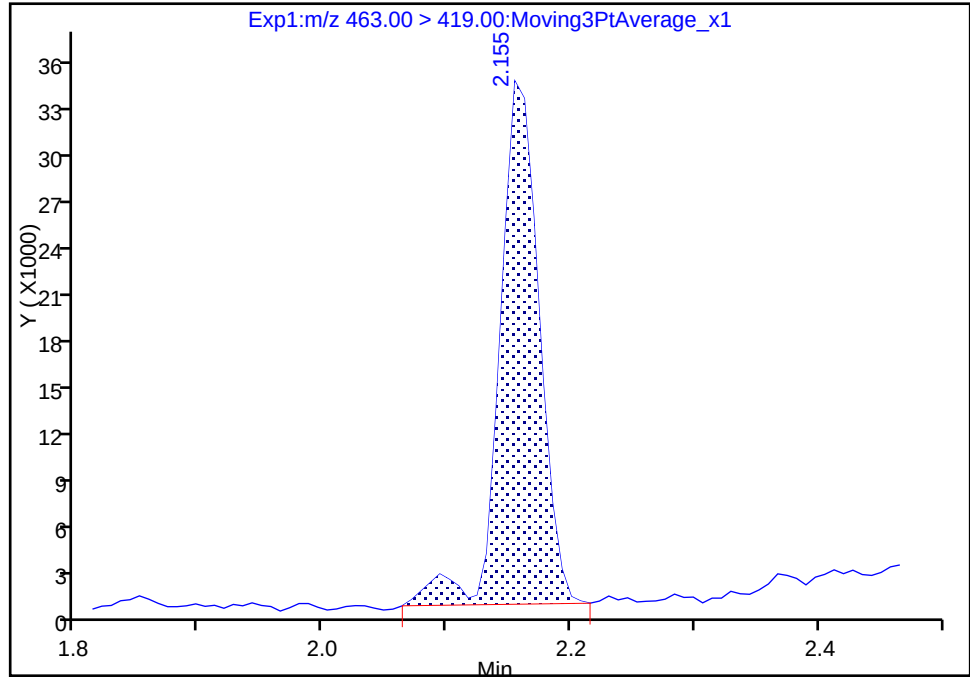
|                 |                                                                            |                |             |                |    |
|-----------------|----------------------------------------------------------------------------|----------------|-------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20170708-45208.b\2017.07.08_537A_012.d |                |             |                |    |
| Injection Date: | 08-Jul-2017 12:18:21                                                       | Instrument ID: | A8_N        |                |    |
| Lims ID:        | 320-29346-A-1-A                                                            | Lab Sample ID: | 320-29346-1 |                |    |
| Client ID:      | WGNA-062117-RW-3148                                                        |                |             |                |    |
| Operator ID:    | SACINSTLCMS01                                                              | ALS Bottle#:   | 6           | Worklist Smp#: | 12 |
| Injection Vol:  | 2.0 ul                                                                     | Dil. Factor:   | 1.0000      |                |    |
| Method:         | 537_A8_N                                                                   | Limit Group:   | LC 537 ICAL |                |    |
| Column:         |                                                                            | Detector       | EXP1        |                |    |

**9 Perfluorononanoic acid, CAS: 375-95-1**

Signal: 1

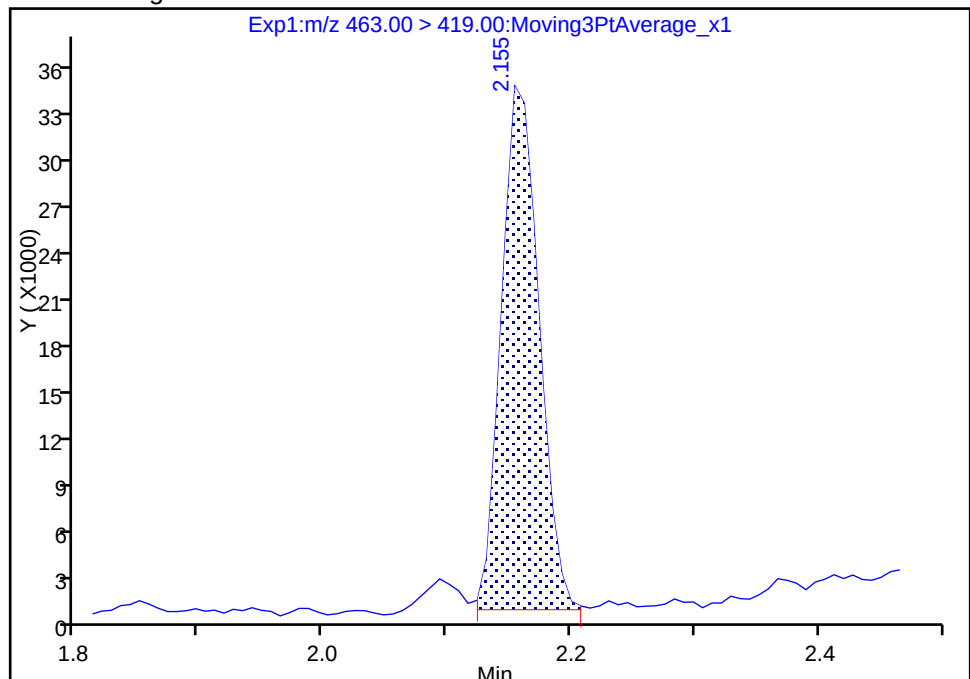
RT: 2.15  
Area: 73647  
Amount: 0.934546  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.15  
Area: 70089  
Amount: 0.889397  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:03:18  
Audit Action: Manually Integrated

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

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3148</u> | Lab Sample ID: <u>320-29346-2</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_013.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 08:30</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>258.9(mL)</u>               | Date Analyzed: <u>07/08/2017 12:23</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173114</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 15     | U | 39  | 15  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.7    | U | 19  | 7.7 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U | 23  | 19  | 7.7 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 87  | 35  | 16  |

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



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_013.d  
 Lims ID: 320-29346-A-2-A  
 Client ID: WGNA-062117-FRB-3148  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:23:05 ALS Bottle#: 7 Worklist Smp#: 13  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-2-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:54:45

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|

\$ 2 13C2 PFHxA

315.00 &gt; 270.00 1.555 1.539 0.016 1.000 1082560 9.48 5713

\* 6 13C2-PFOA

415.00 &gt; 370.00 1.912 1.878 0.034 1005161 10.0 3672

\* 7 13C4 PFOS

503.00 &gt; 80.00 2.147 2.117 0.030 3124310 28.7 4084

\$ 10 13C2 PFDA

515.00 &gt; 470.00 2.299 2.281 0.018 1.000 803687 9.52 1612

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_013.d

Injection Date: 08-Jul-2017 12:23:05

Instrument ID: A8\_N

Lims ID: 320-29346-A-2-A

Lab Sample ID: 320-29346-2

Client ID: WGNA-062117-FRB-3148

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

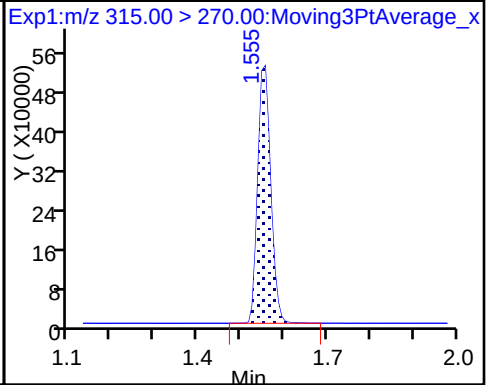
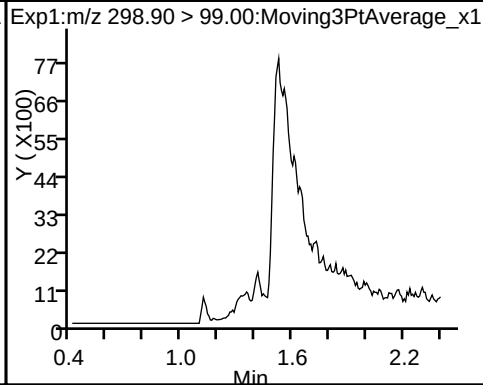
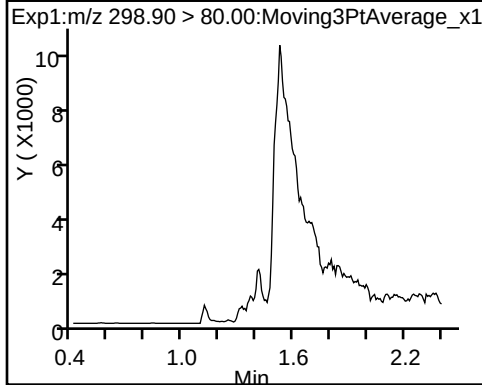
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

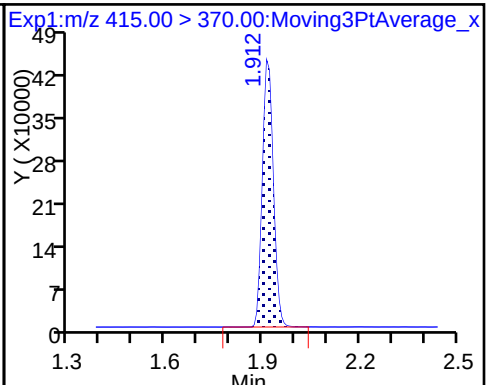
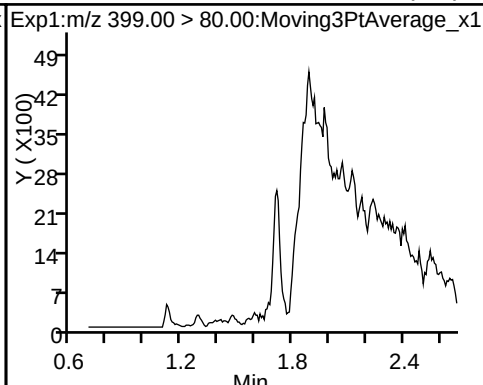
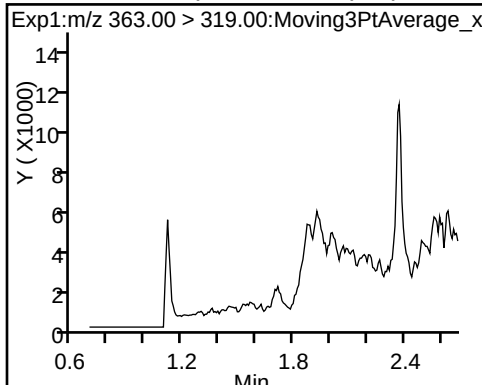
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

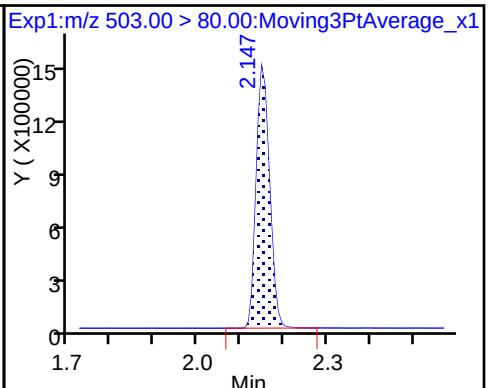
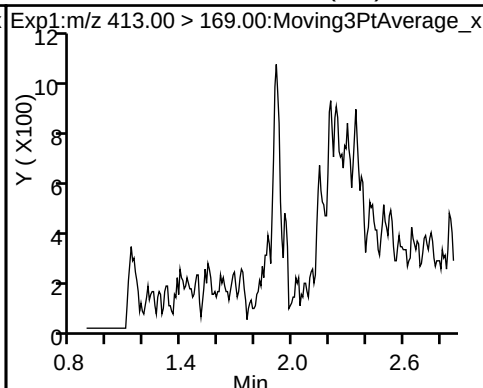
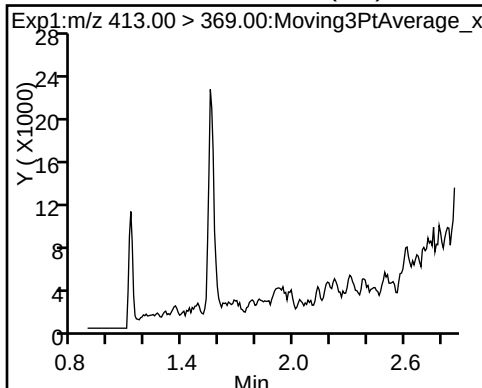
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

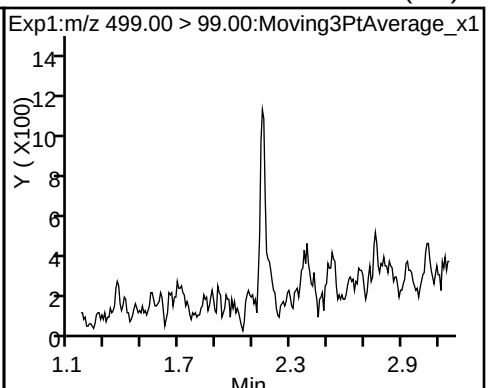
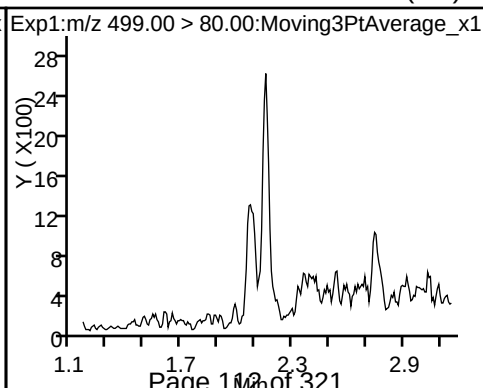
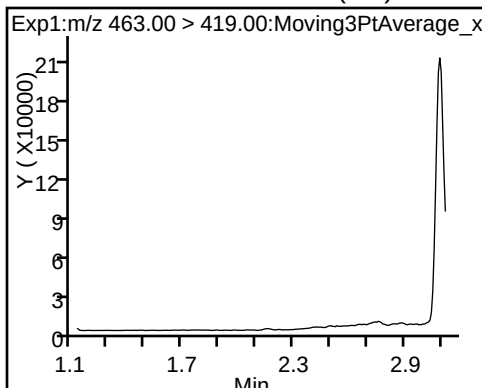
\* 7 13C4 PFOS



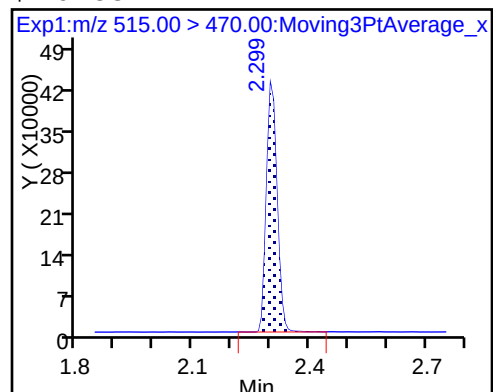
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_013.d  
Lims ID: 320-29346-A-2-A  
Client ID: WGNA-062117-FRB-3148  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:23:05 ALS Bottle#: 7 Worklist Smp#: 13  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-2-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:54:45

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.48             | 94.79  |
| \$ 10 13C2 PFDA | 10.0         | 9.52             | 95.24  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-0569</u> | Lab Sample ID: <u>320-29346-3</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_014.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 13:20</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>265.4 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:27</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173114</u>            | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 91   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_014.d  
 Lims ID: 320-29346-A-3-A  
 Client ID: WGNA-062117-RW-0569  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:27:50 ALS Bottle#: 8 Worklist Smp#: 14  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-3-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

| Signal          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N  | Flags |
|-----------------|-------|-----------|-----------|-----------|----------|-----------------|---------------|------|-------|
| \$ 2 13C2 PFHxA |       |           |           |           |          |                 |               |      |       |
| 315.00 > 270.00 | 1.555 | 1.539     | 0.016     | 1.000     | 1171407  | 9.60            |               | 5631 |       |
| * 6 13C2-PFOA   |       |           |           |           |          |                 |               |      |       |
| 415.00 > 370.00 | 1.912 | 1.878     | 0.034     |           | 1074440  | 10.0            |               | 4303 |       |
| * 7 13C4 PFOS   |       |           |           |           |          |                 |               |      |       |
| 503.00 > 80.00  | 2.155 | 2.117     | 0.038     |           | 3403793  | 28.7            |               | 5148 |       |
| \$ 10 13C2 PFDA |       |           |           |           |          |                 |               |      |       |
| 515.00 > 470.00 | 2.306 | 2.281     | 0.025     | 1.000     | 816417   | 9.05            |               | 1670 |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_014.d

Injection Date: 08-Jul-2017 12:27:50

Instrument ID: A8\_N

Lims ID: 320-29346-A-3-A

Lab Sample ID: 320-29346-3

Client ID: WGNA-062117-RW-0569

Operator ID: SACINSTLCMS01

ALS Bottle#: 8

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

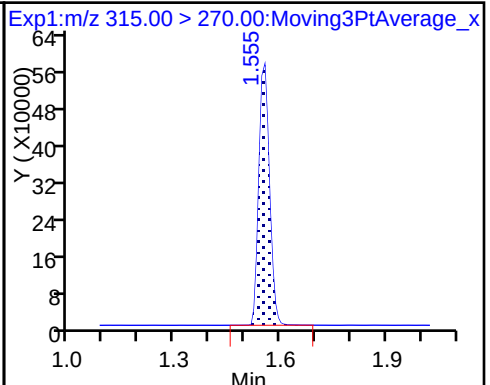
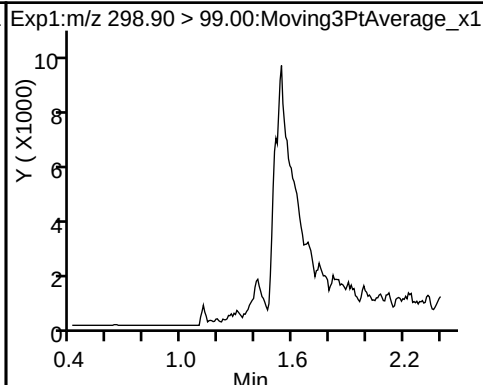
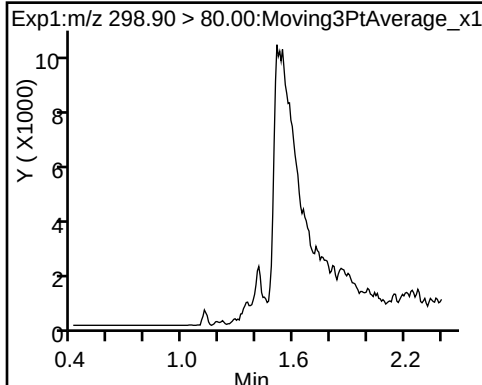
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

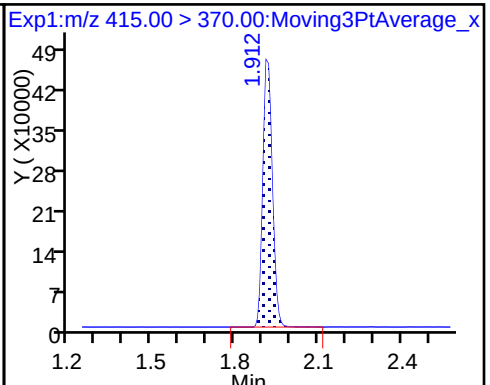
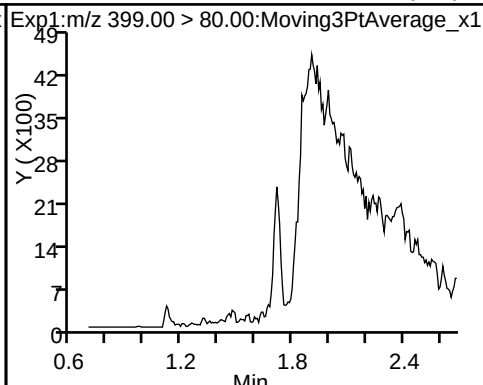
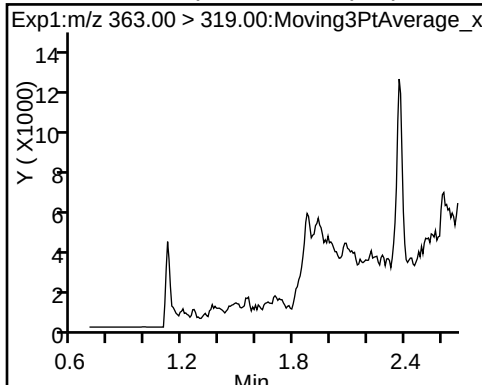
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

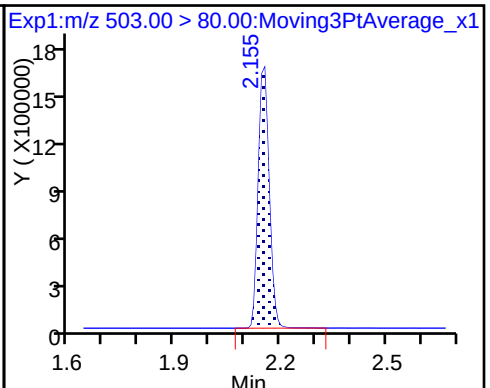
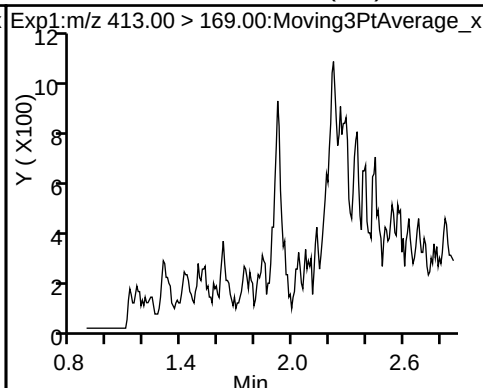
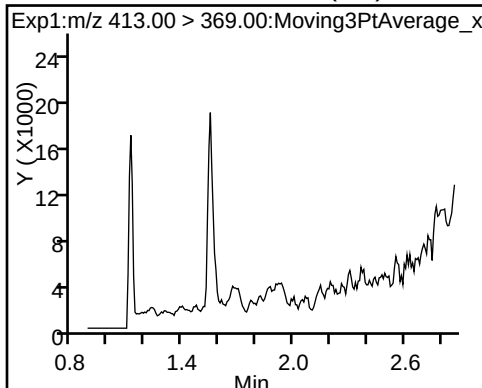
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

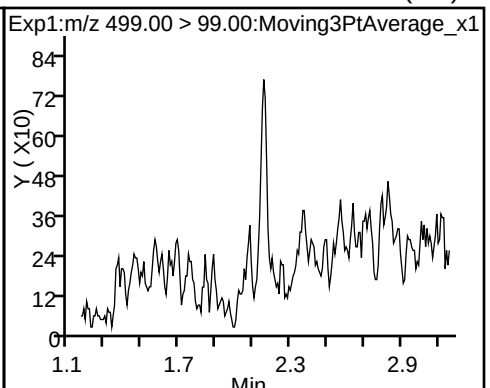
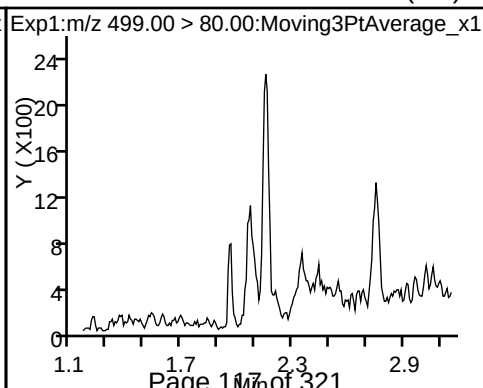
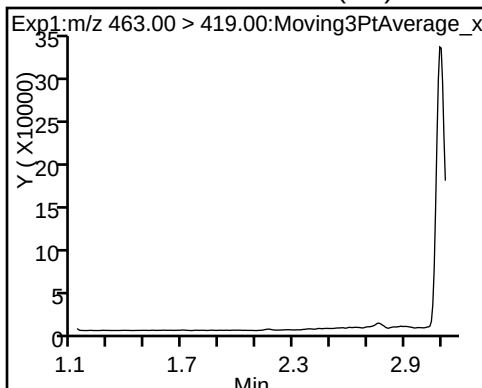
\* 7 13C4 PFOS



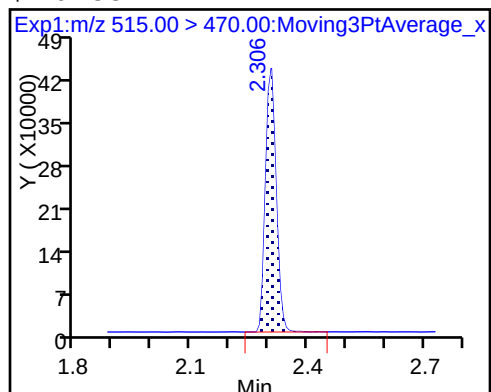
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA





TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_014.d  
Lims ID: 320-29346-A-3-A  
Client ID: WGNA-062117-RW-0569  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:27:50 ALS Bottle#: 8 Worklist Smp#: 14  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-3-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.60             | 95.96  |
| \$ 10 13C2 PFDA | 10.0         | 9.05             | 90.51  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-0569</u> | Lab Sample ID: <u>320-29346-4</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_015.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 15:15</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>251.9(mL)</u>               | Date Analyzed: <u>07/08/2017 12:32</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173114</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 22     | J | 40  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 28     | M | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 6.3    | J | 30  | 12  | 5.5 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 8.2    | J | 9.9 | 4.0 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 36     | U | 89  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 89   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 95   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_015.d  
 Lims ID: 320-29346-B-4-A  
 Client ID: WGNA-062117-FRB-0569  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:32:34 ALS Bottle#: 9 Worklist Smp#: 15  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-b-4-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:56:03

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.411 | 1.404     | 0.007     | 1.000     | 254055   | 2.66            |                 | 62.8 |       |
| 298.90 > 99.00                  | 1.411 | 1.404     | 0.007     | 1.000     | 190528   |                 | 1.33(0.00-0.00) | 73.8 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.548 | 1.539     | 0.009     | 1.000     | 940684   | 8.88            |                 | 4195 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.715 | 1.691     | 0.024     | 1.000     | 202136   | 2.07            |                 | 21.8 |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.715 | 1.692     | 0.023     | 1.000     | 237580   | 1.59            |                 | 48.9 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.912 | 1.878     | 0.034     |           | 932576   | 10.0            |                 | 3489 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.912 | 1.879     | 0.033     | 1.000     | 600936   | 6.99            |                 | 38.3 | M     |
| 413.00 > 169.00                 | 1.912 | 1.879     | 0.033     | 1.000     | 407316   |                 | 1.48(0.00-0.00) | 423  | M     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.147 | 2.117     | 0.030     |           | 3071649  | 28.7            |                 | 1972 |       |
| 9 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 463.00 > 419.00                 | 2.155 | 2.124     | 0.031     | 1.000     | 58074    | 0.7556          |                 | 1.5  |       |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.147 | 2.162     | -0.015    | 1.000     | 600440   | 5.47            |                 | 187  |       |
| 499.00 > 99.00                  | 2.147 | 2.162     | -0.015    | 1.000     | 99507    |                 | 6.03(0.00-0.00) | 106  |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.299 | 2.281     | 0.018     | 1.000     | 746639   | 9.54            |                 | 1710 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_015.d

Injection Date: 08-Jul-2017 12:32:34

Instrument ID: A8\_N

Lims ID: 320-29346-B-4-A

Lab Sample ID: 320-29346-4

Client ID: WGNA-062117-FRB-0569

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

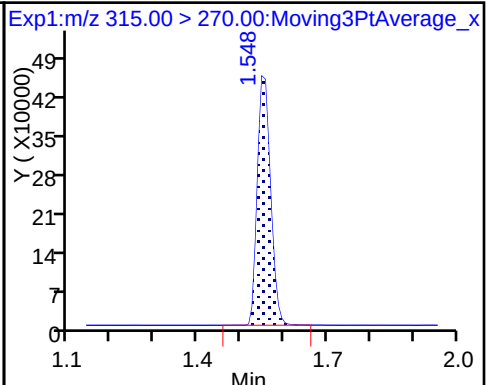
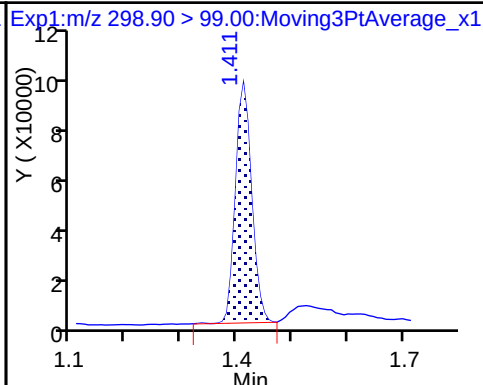
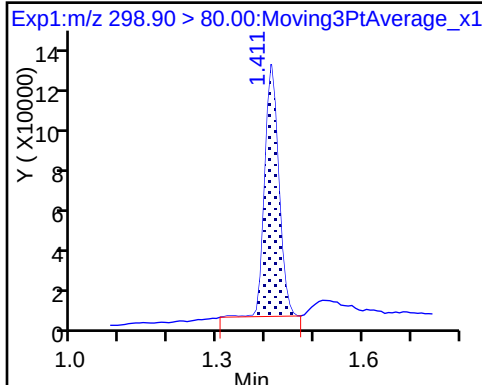
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

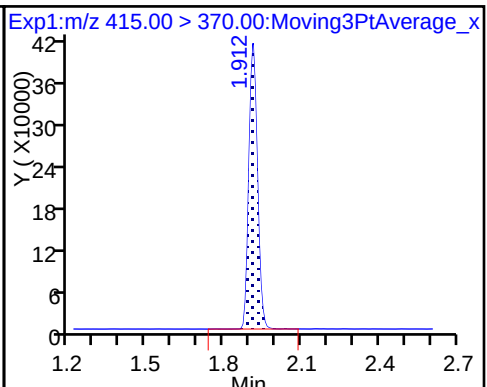
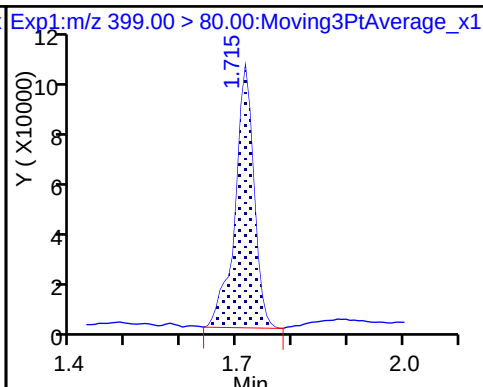
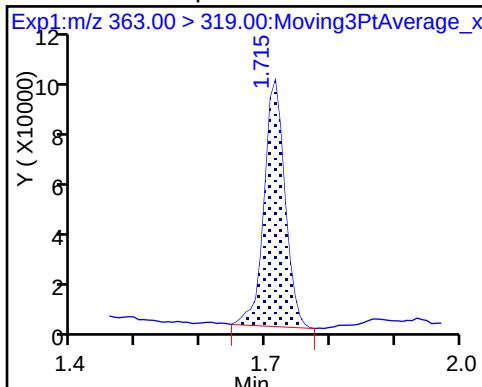
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

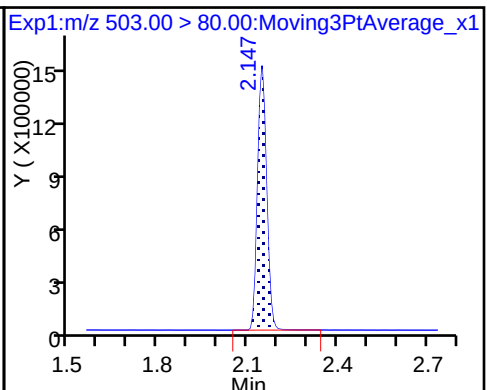
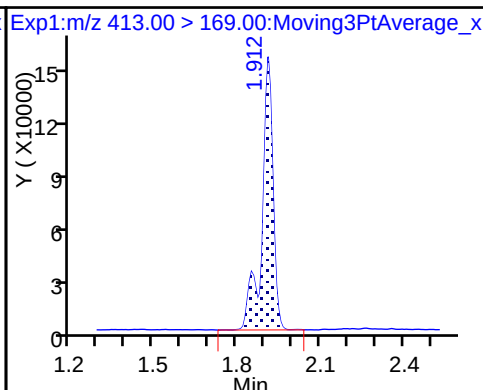
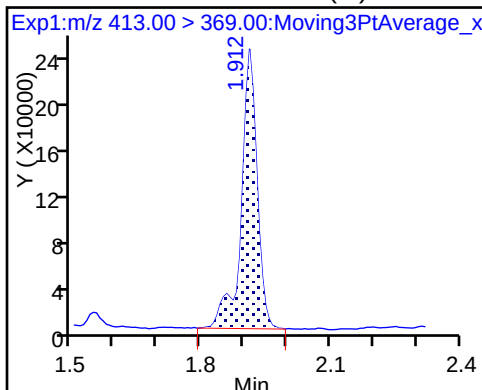
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

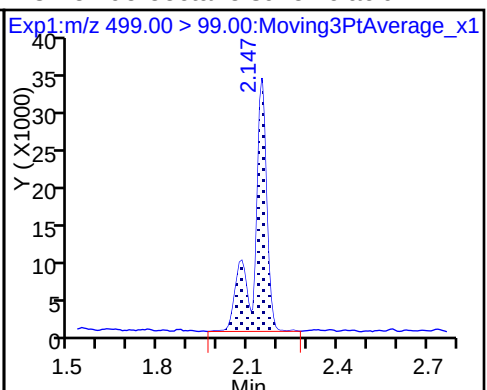
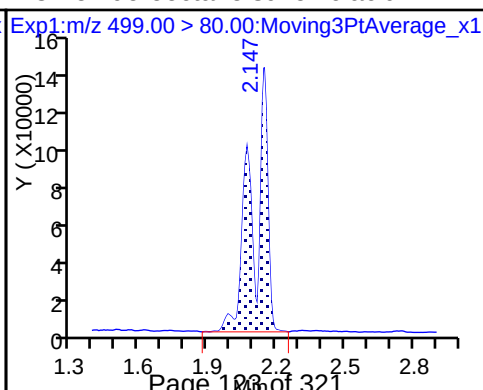
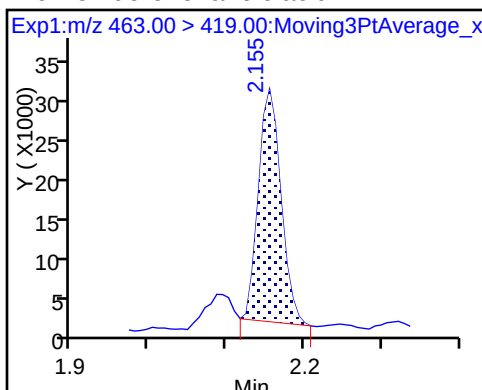
\* 7 13C4 PFOS



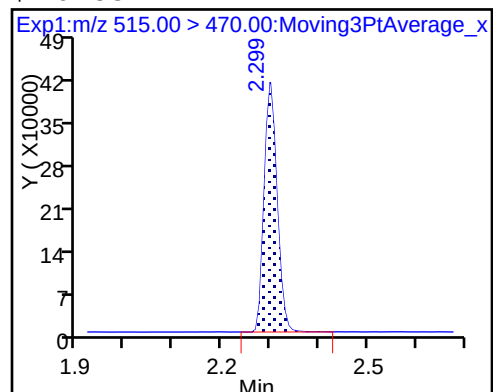
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_015.d  
Lims ID: 320-29346-B-4-A  
Client ID: WGNA-062117-FRB-0569  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:32:34 ALS Bottle#: 9 Worklist Smp#: 15  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-b-4-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:56:03

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.88             | 88.78  |
| \$ 10 13C2 PFDA | 10.0         | 9.54             | 95.36  |

## TestAmerica Sacramento

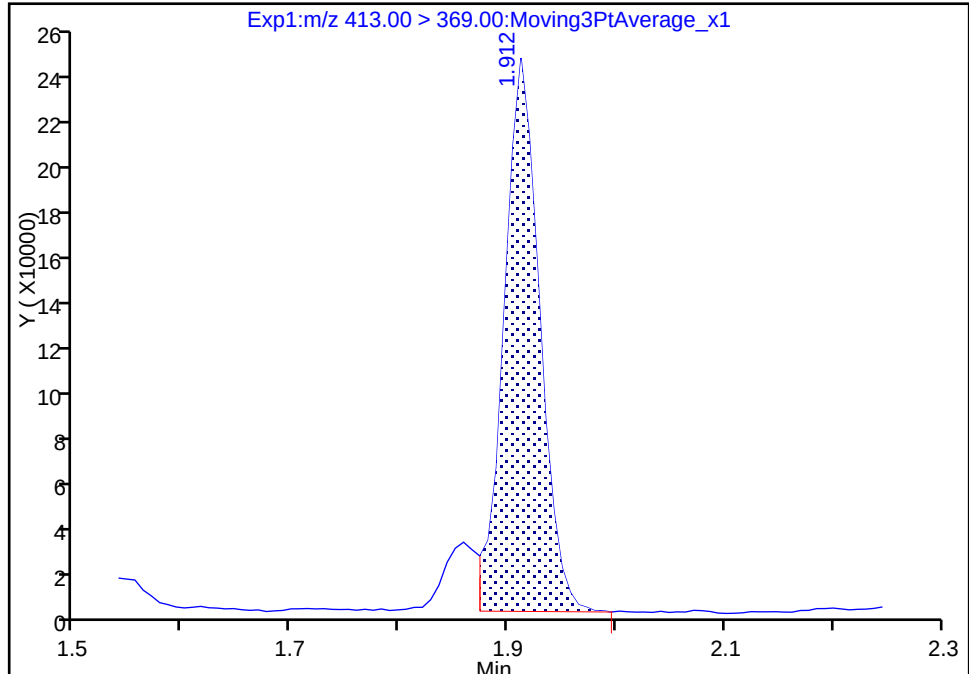
|                 |                                                                            |                |             |                |    |
|-----------------|----------------------------------------------------------------------------|----------------|-------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20170708-45208.b\2017.07.08_537A_015.d |                |             |                |    |
| Injection Date: | 08-Jul-2017 12:32:34                                                       | Instrument ID: | A8_N        |                |    |
| Lims ID:        | 320-29346-B-4-A                                                            | Lab Sample ID: | 320-29346-4 |                |    |
| Client ID:      | WGNA-062117-FRB-0569                                                       |                |             |                |    |
| Operator ID:    | SACINSTLCMS01                                                              | ALS Bottle#:   | 9           | Worklist Smp#: | 15 |
| Injection Vol:  | 2.0 ul                                                                     | Dil. Factor:   | 1.0000      |                |    |
| Method:         | 537_A8_N                                                                   | Limit Group:   | LC 537 ICAL |                |    |
| Column:         |                                                                            | Detector:      | EXP1        |                |    |

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

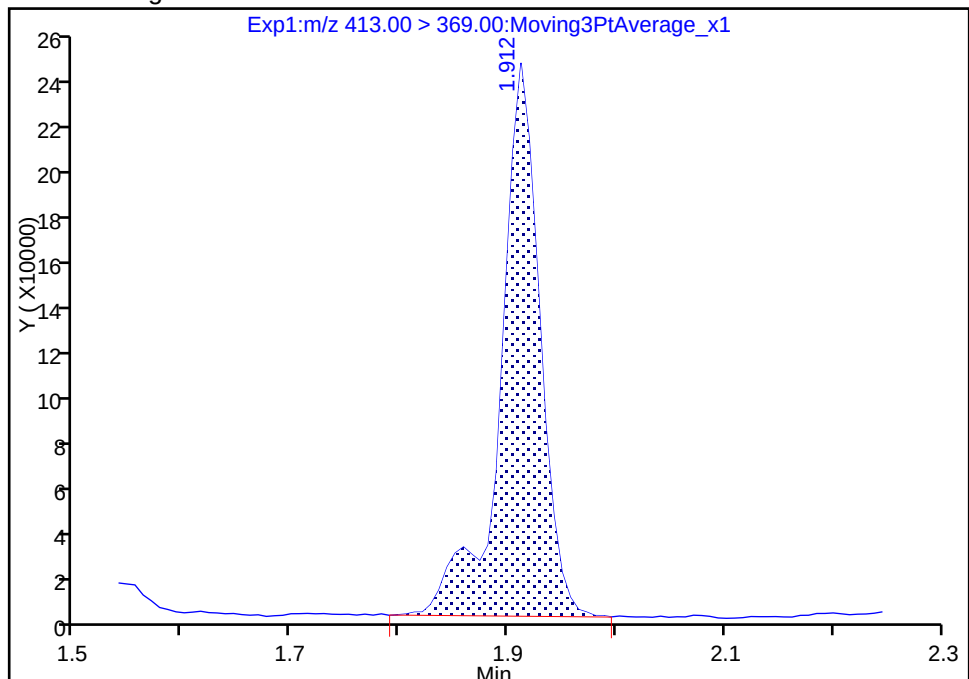
RT: 1.91  
Area: 539893  
Amount: 6.281149  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.91  
Area: 600936  
Amount: 6.991327  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 09:55:45

Audit Action: Manually Integrated

Audit Reason: Isomers



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3097</u> | Lab Sample ID: <u>320-29346-5</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_016.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 11:40</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>270.2 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:37</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173114</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | J   | 37  | 15  | 6.3 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 19     | M   | 19  | 7.4 | 2.6 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 22  | 19  | 7.4 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | U   | 28  | 11  | 5.1 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 5.1    | J   | 9.3 | 3.7 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 33     | U   | 83  | 33  | 15  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 83   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 95   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_016.d  
 Lims ID: 320-29346-A-5-A  
 Client ID: WGNA-062117-RW-3097  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:37:18 ALS Bottle#: 10 Worklist Smp#: 16  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-5-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:56:43

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 97751    | 1.05         |                 | 25.7 |       |
| 298.90 > 99.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 72199    |              | 1.35(0.00-0.00) | 29.6 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.555 | 1.539  | 0.016  | 1.000  | 893071   | 8.28         |                 | 4165 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.715 | 1.691  | 0.024  | 1.000  | 137433   | 1.38         |                 | 14.7 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.715 | 1.692  | 0.023  | 1.000  | 148774   | 1.02         |                 | 34.2 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.912 | 1.878  | 0.034  |        | 949831   | 10.0         |                 | 3990 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.912 | 1.879  | 0.033  | 1.000  | 438574   | 5.01         |                 | 28.6 | M     |
| 413.00 > 169.00                 | 1.912 | 1.879  | 0.033  | 1.000  | 291166   |              | 1.51(0.00-0.00) | 304  | M     |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.147 | 2.117  | 0.030  |        | 3004027  | 28.7         |                 | 2406 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.155 | 2.124  | 0.031  | 1.000  | 42663    | 0.5450       |                 | 1.0  | M     |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.147 | 2.162  | -0.015 | 1.000  | 473724   | 4.42         |                 | 178  |       |
| 499.00 > 99.00                  | 2.147 | 2.162  | -0.015 | 1.000  | 76730    |              | 6.17(0.00-0.00) | 77.3 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.299 | 2.281  | 0.018  | 1.000  | 757568   | 9.50         |                 | 1625 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_016.d

Injection Date: 08-Jul-2017 12:37:18

Instrument ID: A8\_N

Lims ID: 320-29346-A-5-A

Lab Sample ID: 320-29346-5

Client ID: WGNA-062117-RW-3097

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

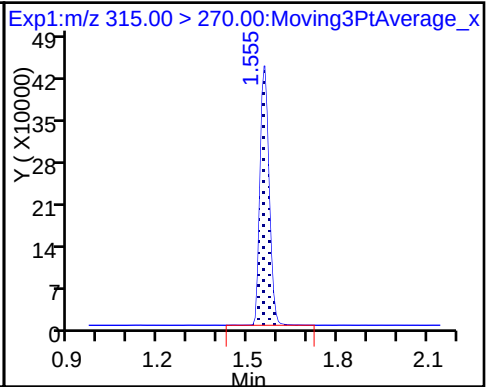
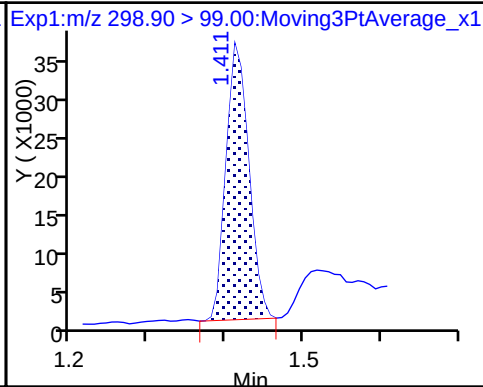
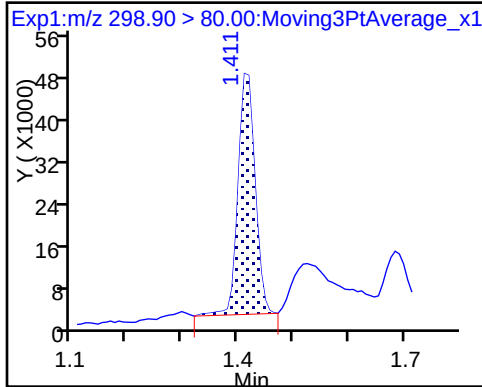
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

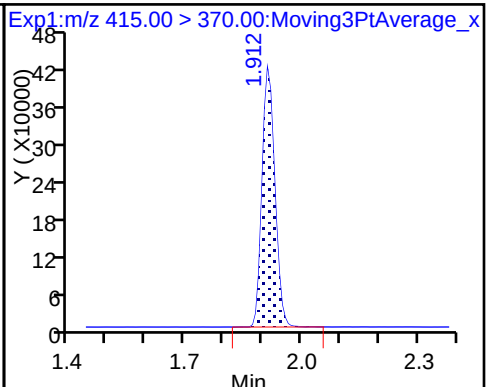
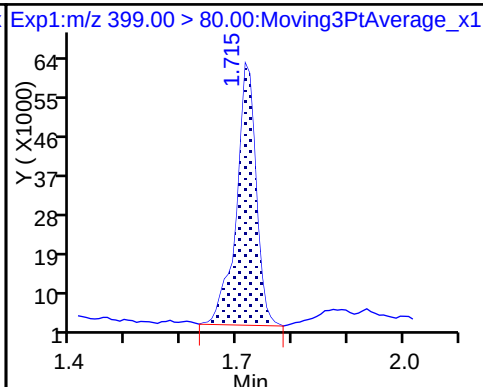
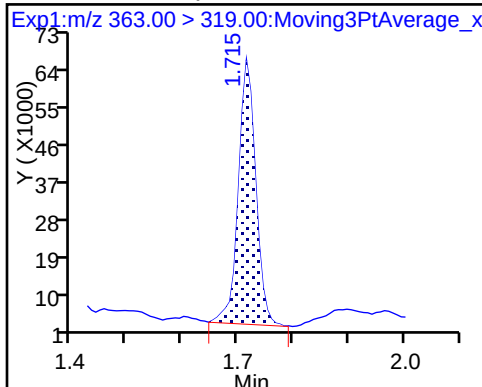
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

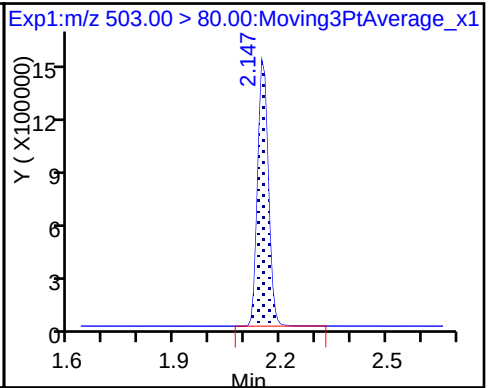
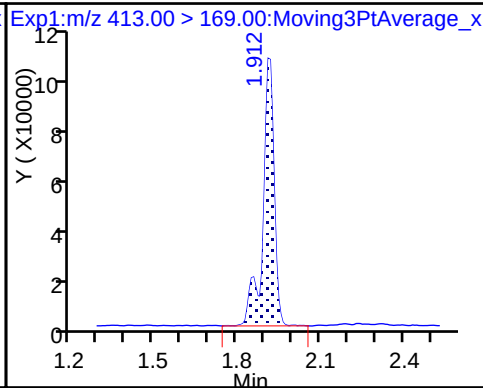
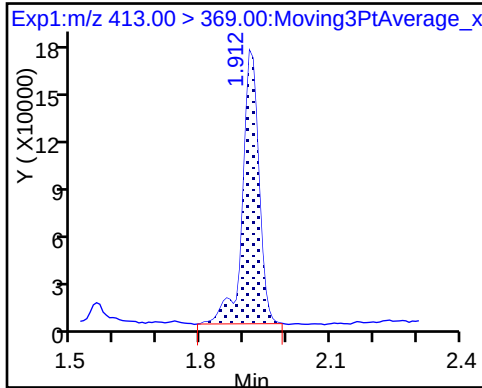
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

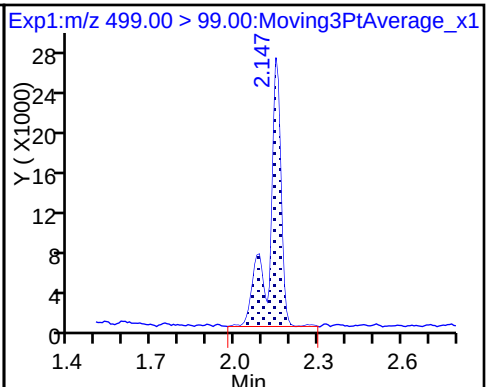
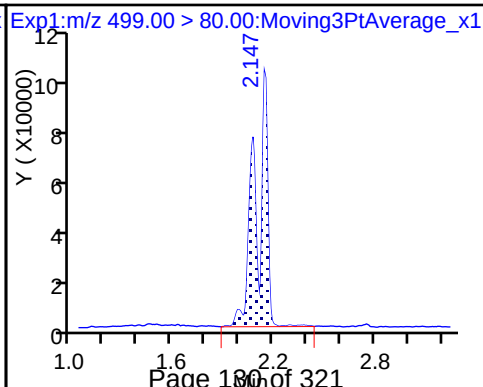
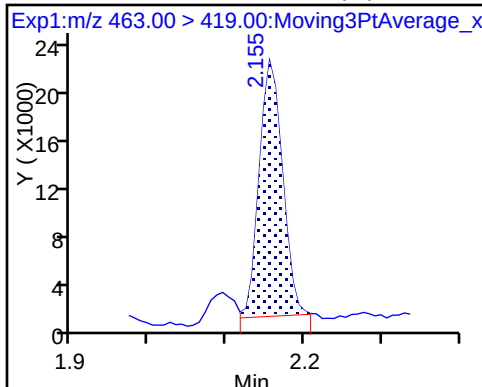
\* 7 13C4 PFOS



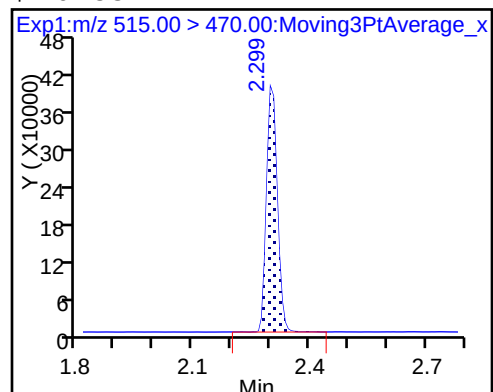
9 Perfluorononanoic acid (M)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_016.d  
Lims ID: 320-29346-A-5-A  
Client ID: WGNA-062117-RW-3097  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:37:18 ALS Bottle#: 10 Worklist Smp#: 16  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-5-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:56:43

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.28             | 82.76  |
| \$ 10 13C2 PFDA | 10.0         | 9.50             | 95.00  |

## TestAmerica Sacramento

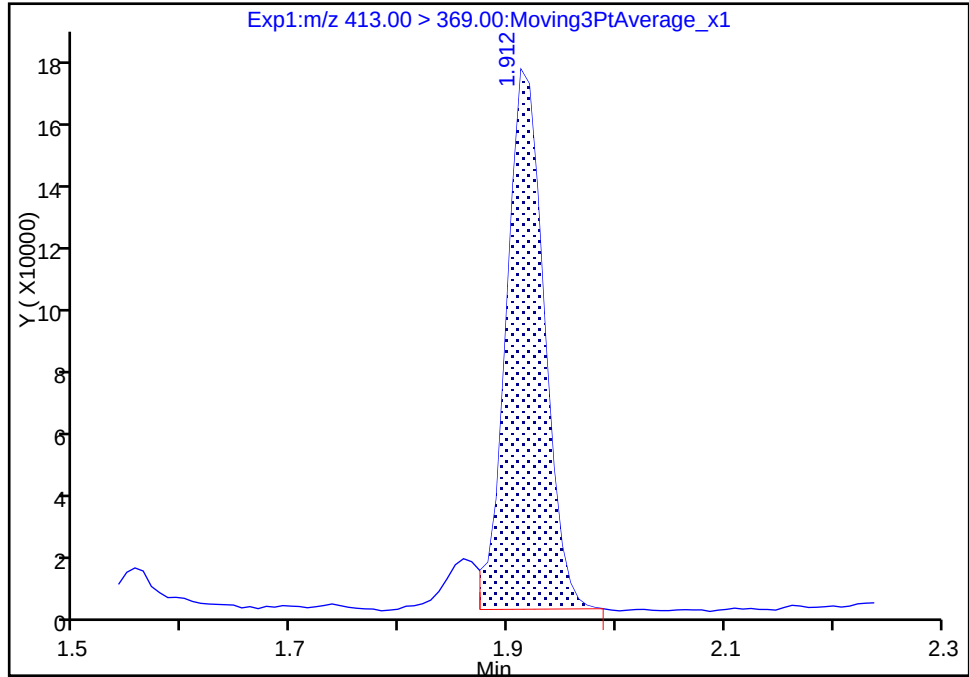
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_016.d  
Injection Date: 08-Jul-2017 12:37:18 Instrument ID: A8\_N  
Lims ID: 320-29346-A-5-A Lab Sample ID: 320-29346-5  
Client ID: WGNA-062117-RW-3097  
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 16  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

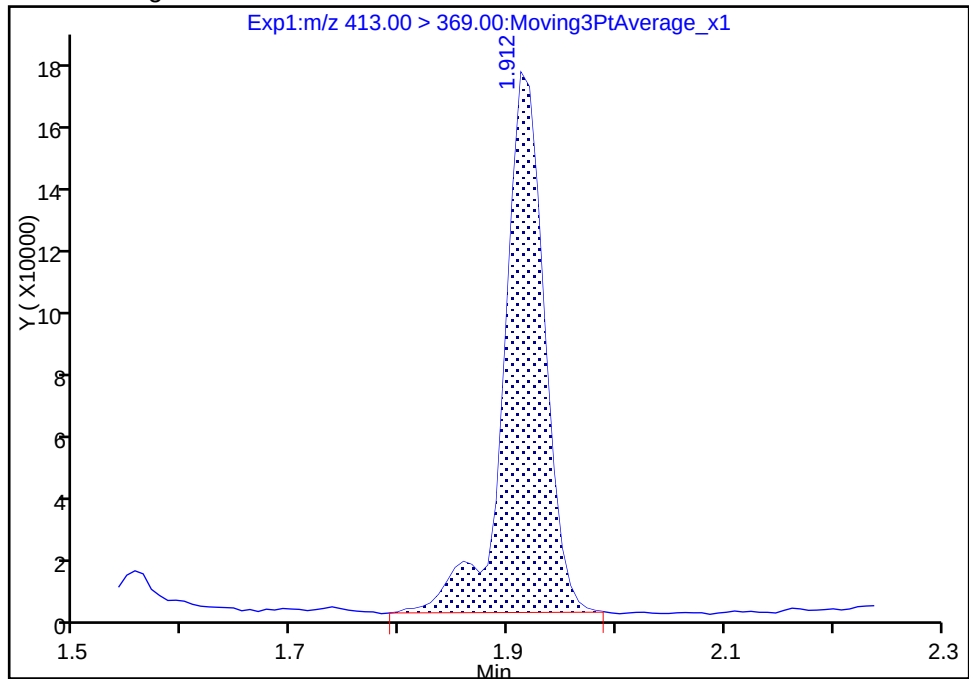
RT: 1.91  
Area: 404045  
Amount: 4.615290  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.91  
Area: 438574  
Amount: 5.009705  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 09:56:30  
Audit Action: Manually Integrated

Audit Reason: Isomers  
Page 133 of 321

## TestAmerica Sacramento

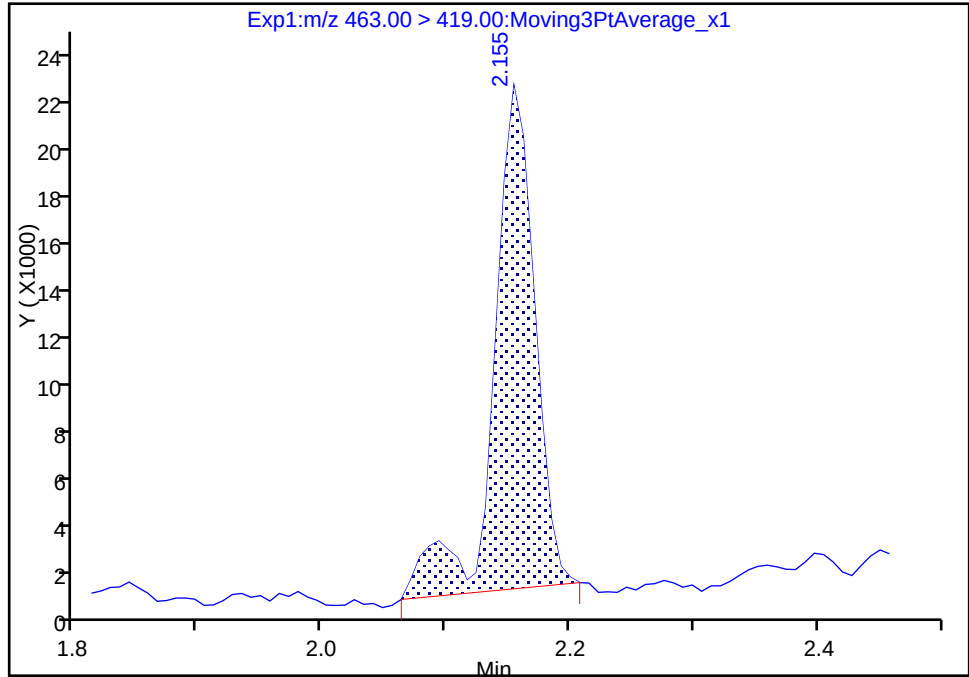
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_016.d  
Injection Date: 08-Jul-2017 12:37:18 Instrument ID: A8\_N  
Lims ID: 320-29346-A-5-A Lab Sample ID: 320-29346-5  
Client ID: WGNA-062117-RW-3097  
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 16  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**9 Perfluorononanoic acid, CAS: 375-95-1**

Signal: 1

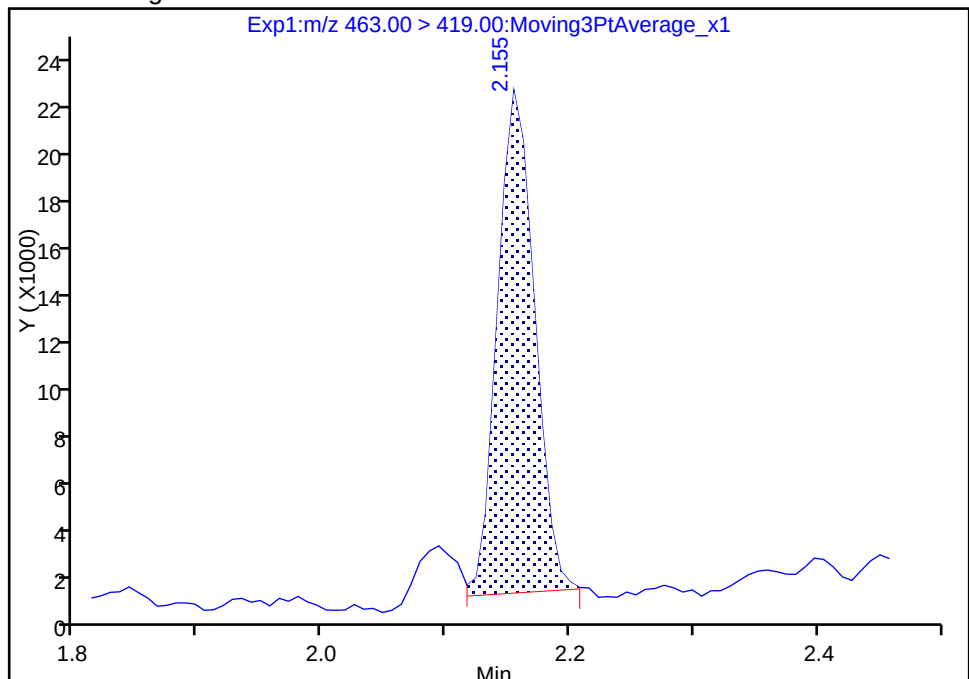
RT: 2.15  
Area: 47433  
Amount: 0.605976  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.15  
Area: 42663  
Amount: 0.545037  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:03:56

Audit Action: Manually Integrated

Audit Reason: Split Peak



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3097</u> | Lab Sample ID: <u>320-29346-6</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_019.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 09:30</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>253.9(mL)</u>               | Date Analyzed: <u>07/08/2017 12:51</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | U | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.9    | U | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.8 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 89  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 90   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_019.d  
 Lims ID: 320-29346-A-6-A  
 Client ID: WGNA-062117-FRB-3097  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:51:33 ALS Bottle#: 11 Worklist Smp#: 19  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-6-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:57:06

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|

\$ 2 13C2 PFHxA

315.00 &gt; 270.00 1.563 1.539 0.024 1.000 1025872 9.65 5514

\* 6 13C2-PFOA

415.00 &gt; 370.00 1.920 1.878 0.042 935887 10.0 3720

\* 7 13C4 PFOS

503.00 &gt; 80.00 2.155 2.117 0.038 2954087 28.7 4528

\$ 10 13C2 PFDA

515.00 &gt; 470.00 2.306 2.281 0.025 1.000 706509 8.99 1380

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_019.d

Injection Date: 08-Jul-2017 12:51:33

Instrument ID: A8\_N

Lims ID: 320-29346-A-6-A

Lab Sample ID: 320-29346-6

Client ID: WGNA-062117-FRB-3097

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 19

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

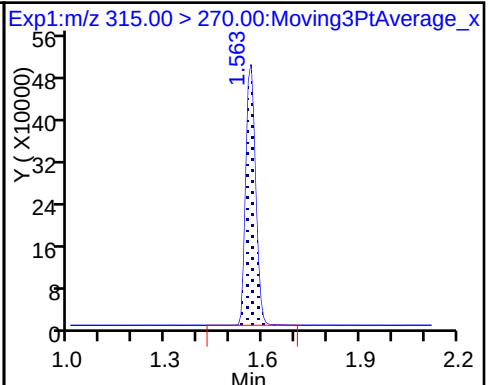
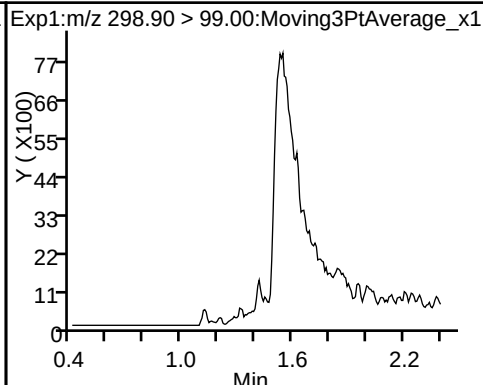
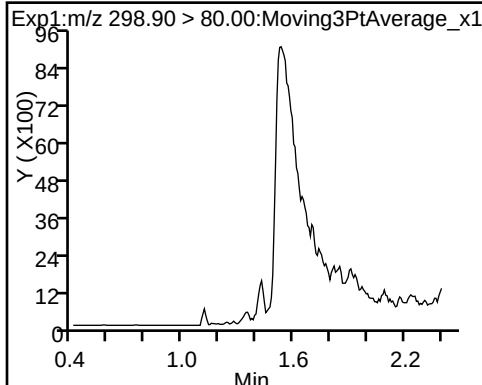
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

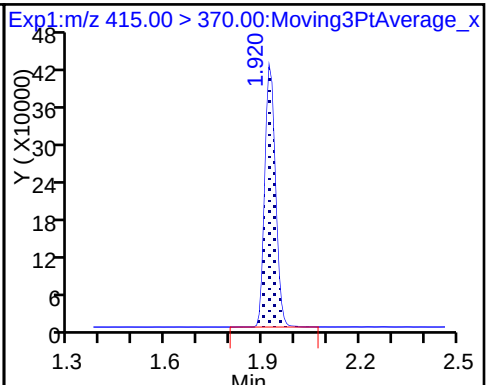
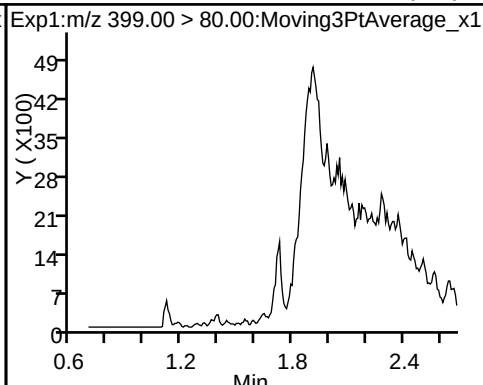
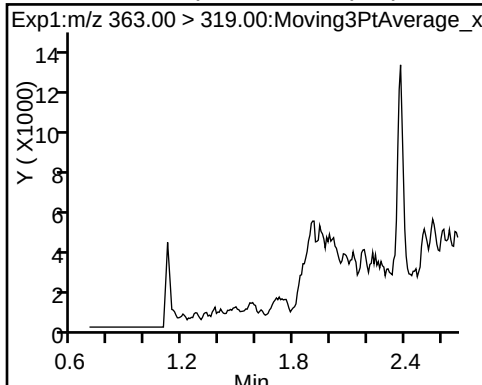
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

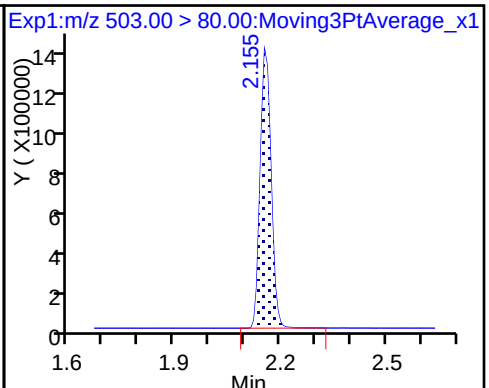
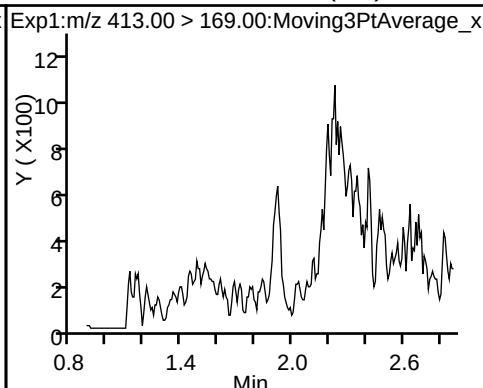
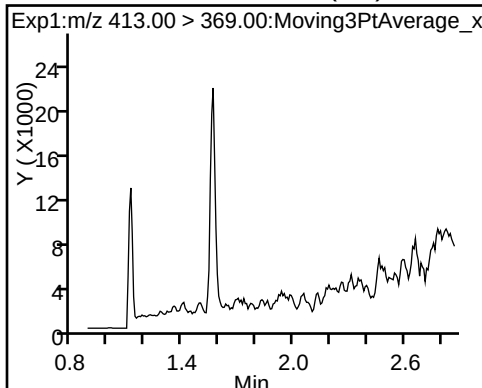
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

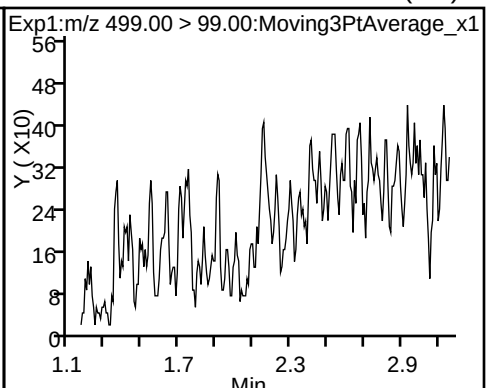
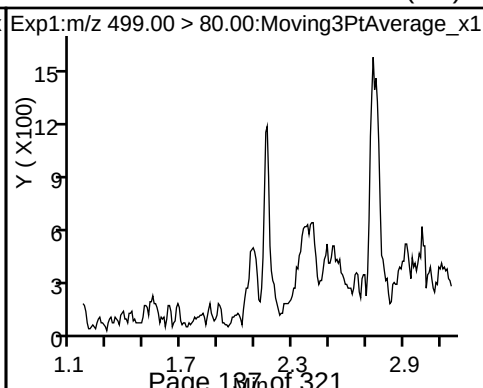
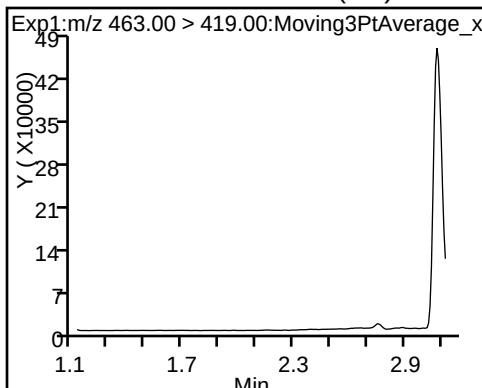
\* 7 13C4 PFOS



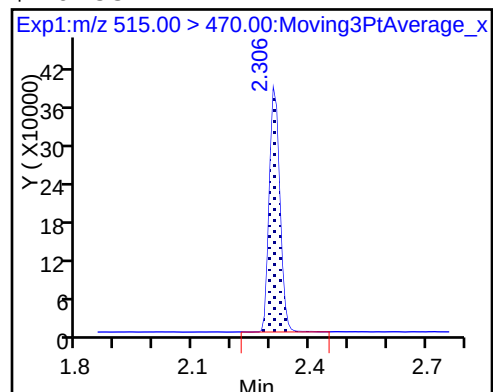
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_019.d  
Lims ID: 320-29346-A-6-A  
Client ID: WGNA-062117-FRB-3097  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:51:33 ALS Bottle#: 11 Worklist Smp#: 19  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-6-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:57:06

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.65             | 96.48  |
| \$ 10 13C2 PFDA | 10.0         | 8.99             | 89.92  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-0461</u> | Lab Sample ID: <u>320-29346-7</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_020.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 15:20</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>256.2 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:56</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | U | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.8    | U | 20  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 23  | 20  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.8 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 88  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 91   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_020.d  
 Lims ID: 320-29346-A-7-A  
 Client ID: WGNA-062117-RW-0461  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 12:56:17 ALS Bottle#: 12 Worklist Smp#: 20  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-7-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

| Signal          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N  | Flags |
|-----------------|-------|-----------|-----------|-----------|----------|-----------------|---------------|------|-------|
| \$ 2 13C2 PFHxA |       |           |           |           |          |                 |               |      |       |
| 315.00 > 270.00 | 1.563 | 1.539     | 0.024     | 1.000     | 1034008  | 9.64            |               | 5761 |       |
| * 6 13C2-PFOA   |       |           |           |           |          |                 |               |      |       |
| 415.00 > 370.00 | 1.920 | 1.878     | 0.042     |           | 944306   | 10.0            |               | 3692 |       |
| * 7 13C4 PFOS   |       |           |           |           |          |                 |               |      |       |
| 503.00 > 80.00  | 2.155 | 2.117     | 0.038     |           | 3038844  | 28.7            |               | 4514 |       |
| \$ 10 13C2 PFDA |       |           |           |           |          |                 |               |      |       |
| 515.00 > 470.00 | 2.306 | 2.281     | 0.025     | 1.000     | 718413   | 9.06            |               | 1431 |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_020.d

Injection Date: 08-Jul-2017 12:56:17

Instrument ID: A8\_N

Lims ID: 320-29346-A-7-A

Lab Sample ID: 320-29346-7

Client ID: WGNA-062117-RW-0461

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

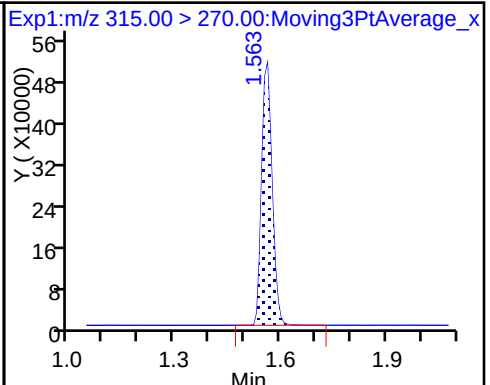
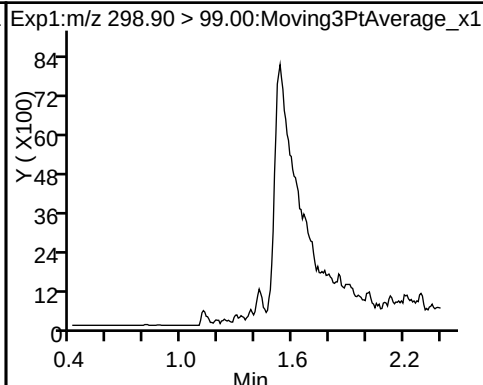
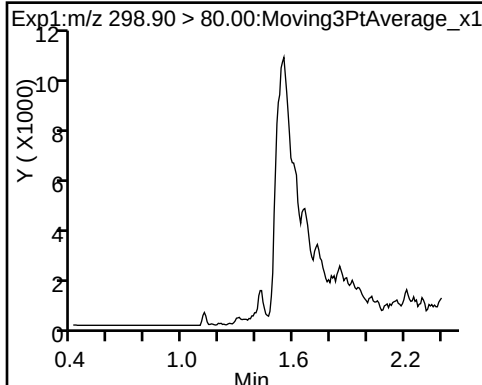
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

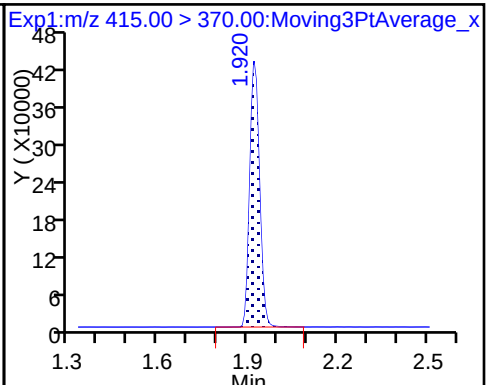
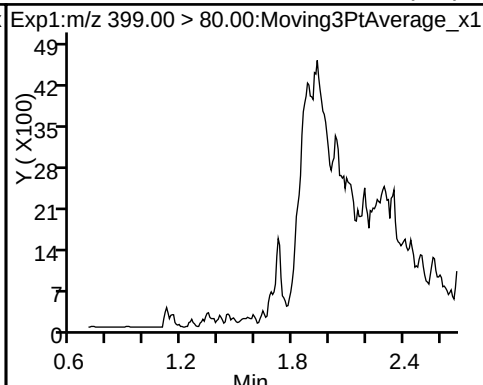
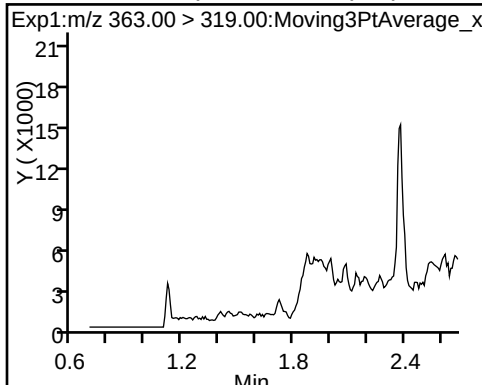
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

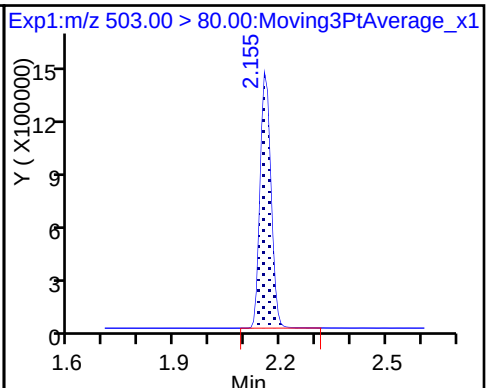
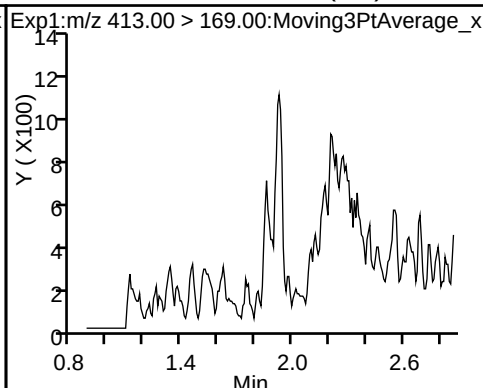
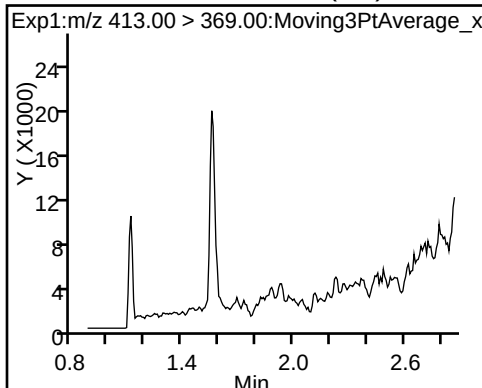
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

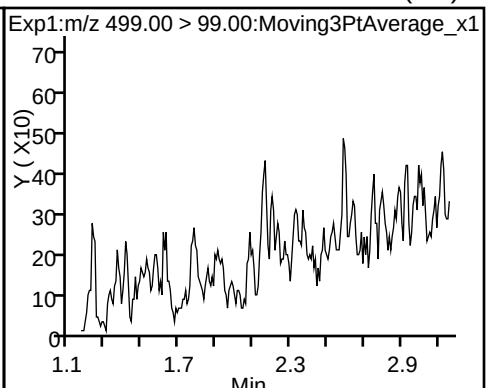
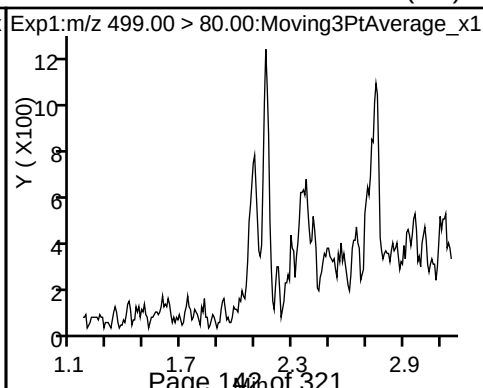
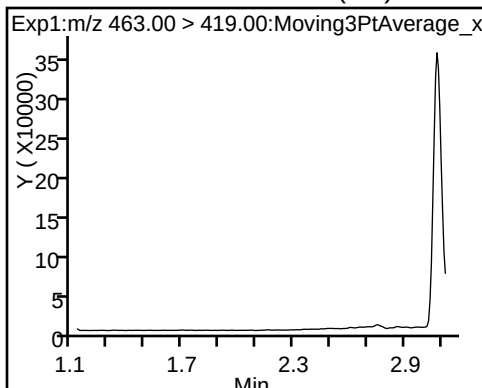
\* 7 13C4 PFOS



9 Perfluorononanoic acid (ND)

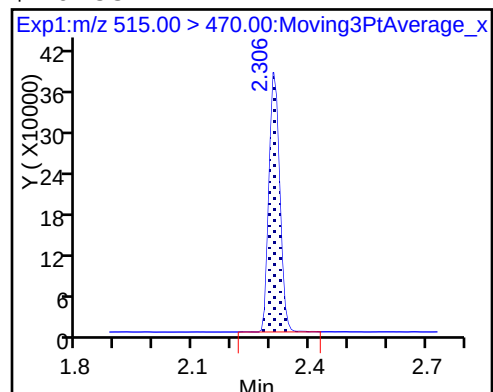
8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)





\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_020.d  
Lims ID: 320-29346-A-7-A  
Client ID: WGNA-062117-RW-0461  
Sample Type: Client  
Inject. Date: 08-Jul-2017 12:56:17 ALS Bottle#: 12 Worklist Smp#: 20  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-7-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.64             | 96.38  |
| \$ 10 13C2 PFDA | 10.0         | 9.06             | 90.62  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-0461</u> | Lab Sample ID: <u>320-29346-8</u>            |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_021.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 15:15</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>266.8 (mL)</u>              | Date Analyzed: <u>07/08/2017 13:01</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 89   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_021.d  
 Lims ID: 320-29346-B-8-A  
 Client ID: WGNA-062117-FRB-0461  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:01:03 ALS Bottle#: 13 Worklist Smp#: 21  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-b-8-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

| Signal          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N  | Flags |
|-----------------|-------|-----------|-----------|-----------|----------|-----------------|---------------|------|-------|
| \$ 2 13C2 PFHxA |       |           |           |           |          |                 |               |      |       |
| 315.00 > 270.00 | 1.563 | 1.539     | 0.024     | 1.000     | 1063141  | 9.68            |               | 5972 |       |
| * 6 13C2-PFOA   |       |           |           |           |          |                 |               |      |       |
| 415.00 > 370.00 | 1.920 | 1.878     | 0.042     |           | 966603   | 10.0            |               | 3840 |       |
| * 7 13C4 PFOS   |       |           |           |           |          |                 |               |      |       |
| 503.00 > 80.00  | 2.155 | 2.117     | 0.038     |           | 3126086  | 28.7            |               | 4926 |       |
| \$ 10 13C2 PFDA |       |           |           |           |          |                 |               |      |       |
| 515.00 > 470.00 | 2.306 | 2.281     | 0.025     | 1.000     | 725703   | 8.94            |               | 1408 |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_021.d

Injection Date: 08-Jul-2017 13:01:03

Instrument ID: A8\_N

Lims ID: 320-29346-B-8-A

Lab Sample ID: 320-29346-8

Client ID: WGNA-062117-FRB-0461

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

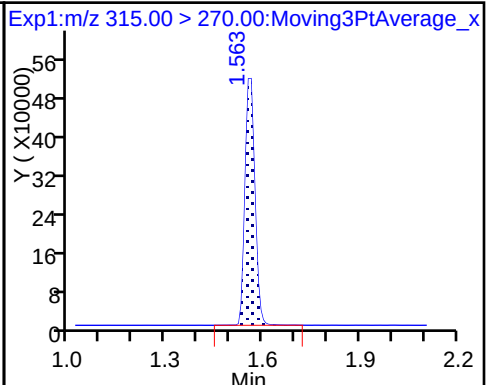
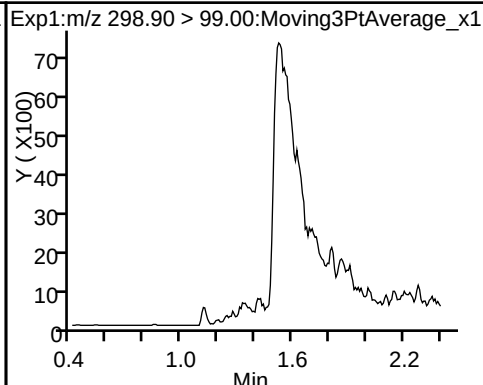
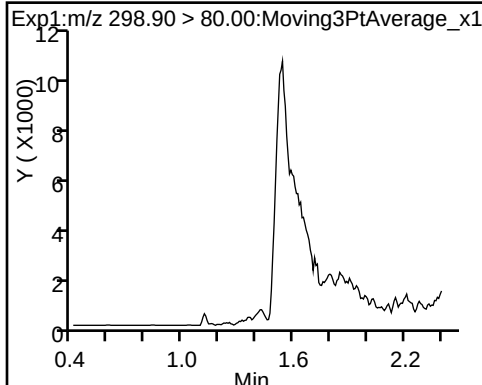
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

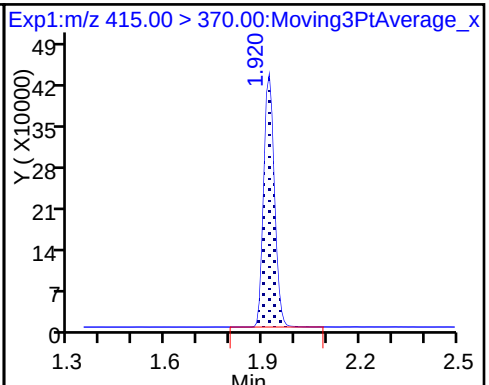
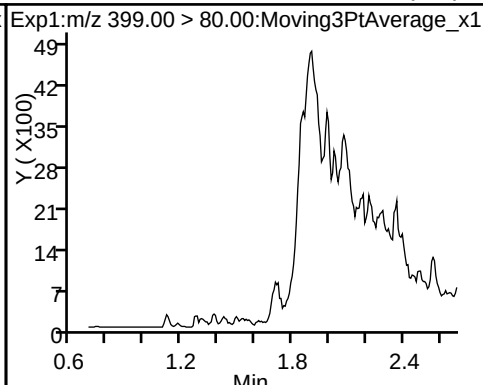
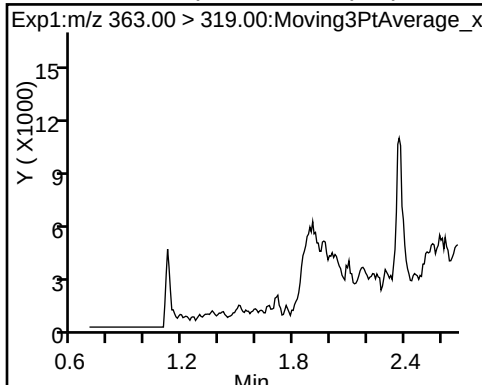
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

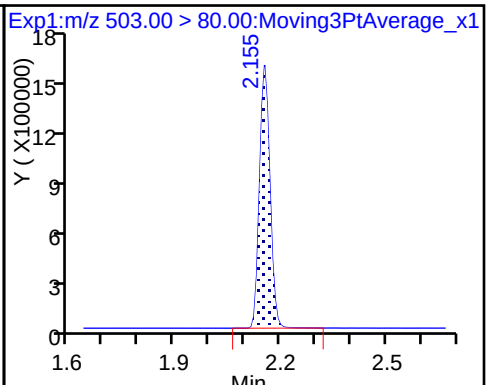
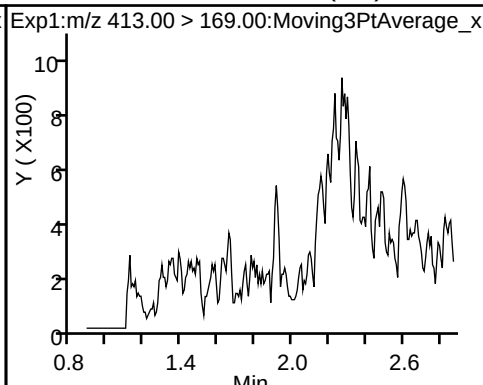
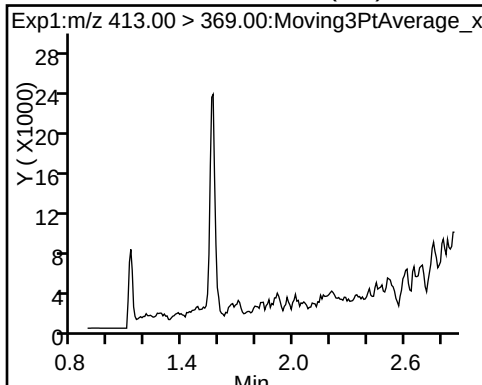
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

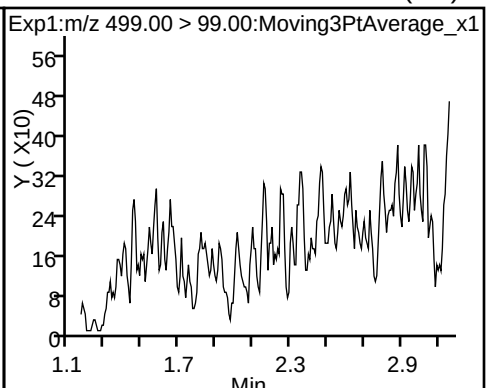
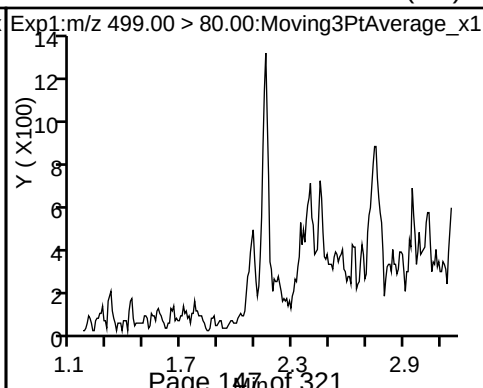
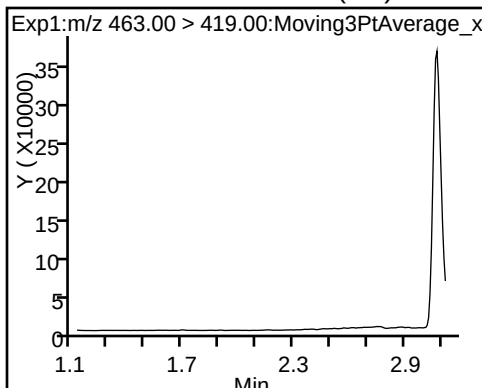
\* 7 13C4 PFOS



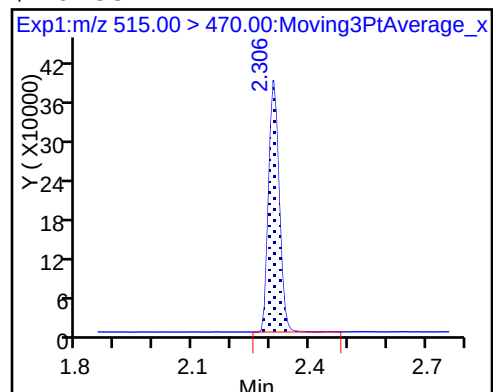
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_021.d  
Lims ID: 320-29346-B-8-A  
Client ID: WGNA-062117-FRB-0461  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:01:03 ALS Bottle#: 13 Worklist Smp#: 21  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-b-8-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 :

Det: EXP1

Process Host: XAWRK015

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.68             | 96.81  |
| \$ 10 13C2 PFDA | 10.0         | 8.94             | 89.43  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-DUP02 Lab Sample ID: 320-29346-9  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_022.d  
 Analysis Method: 537 Date Collected: 06/21/2017 07:00  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 264.3 (mL) Date Analyzed: 07/08/2017 13:05  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173116 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 17     | J   | 38  | 15  | 6.4 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 14     | J M | 19  | 7.6 | 2.6 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U   | 23  | 19  | 7.6 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | U   | 28  | 11  | 5.2 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 14     |     | 9.5 | 3.8 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 34     | U   | 85  | 34  | 15  |

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



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_022.d  
 Lims ID: 320-29346-A-9-A  
 Client ID: WGNA-062117-DUP02  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:05:48 ALS Bottle#: 14 Worklist Smp#: 22  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-9-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:58:14

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 85688    | 0.8972          |                 | 25.6 |       |
| 298.90 > 99.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 61987    |                 | 1.38(0.00-0.00) | 28.6 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.571 | 1.539     | 0.031     | 1.000     | 907665   | 8.62            |                 | 4866 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.737 | 1.691     | 0.046     | 1.000     | 363864   | 3.75            |                 | 46.6 |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.737 | 1.692     | 0.045     | 1.000     | 194933   | 1.31            |                 | 48.9 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.935 | 1.878     | 0.057     |           | 926788   | 10.0            |                 | 3666 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.935 | 1.879     | 0.056     | 1.000     | 327323   | 3.83            |                 | 26.4 | M     |
| 413.00 > 169.00                 | 1.935 | 1.879     | 0.056     | 1.000     | 221266   |                 | 1.48(0.00-0.00) | 286  | M     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.170 | 2.117     | 0.053     |           | 3073775  | 28.7            |                 | 2523 |       |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.170 | 2.162     | 0.008     | 1.000     | 499193   | 4.55            |                 | 228  |       |
| 499.00 > 99.00                  | 2.170 | 2.162     | 0.008     | 1.000     | 91150    |                 | 5.48(0.00-0.00) | 118  |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.322 | 2.281     | 0.041     | 1.000     | 744983   | 9.57            |                 | 1576 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_022.d

Injection Date: 08-Jul-2017 13:05:48

Instrument ID: A8\_N

Lims ID: 320-29346-A-9-A

Lab Sample ID: 320-29346-9

Client ID: WGNA-062117-DUP02

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

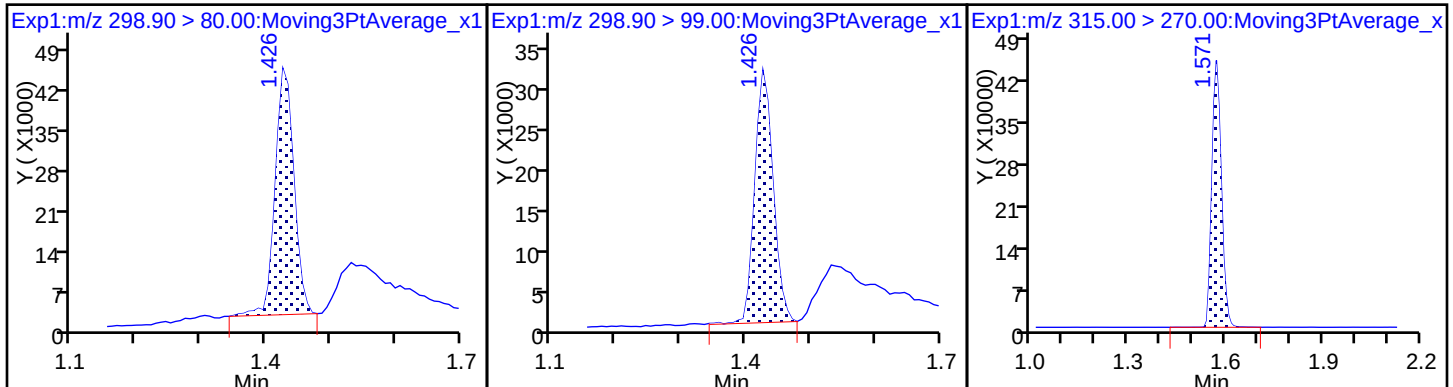
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

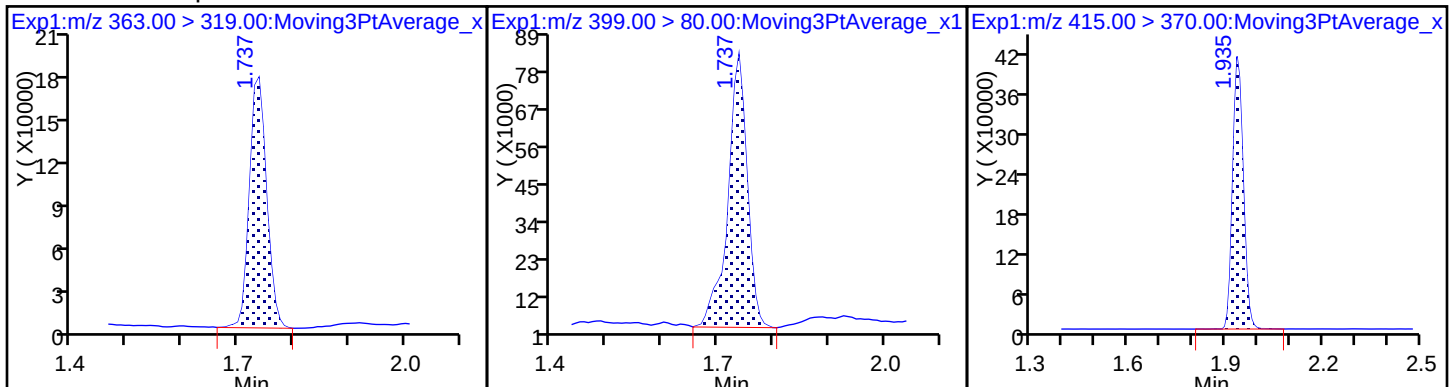
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

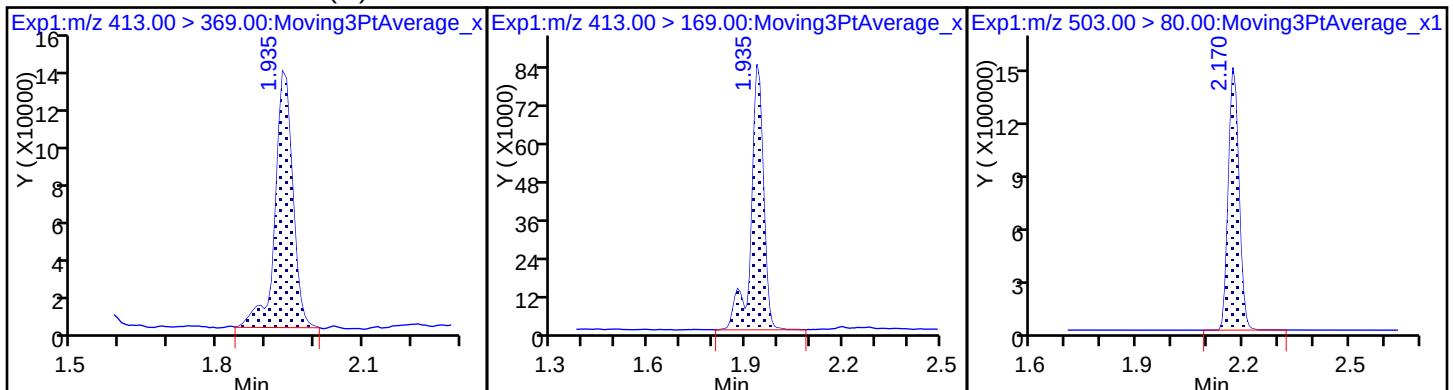
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

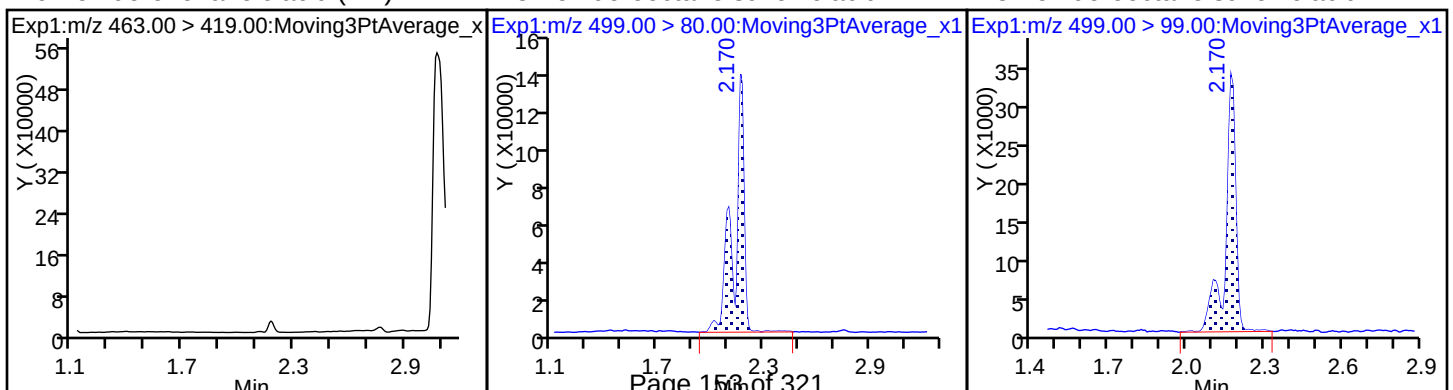
\* 7 13C4 PFOS



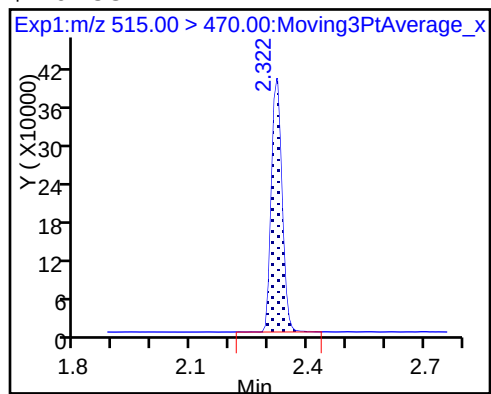
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_022.d  
Lims ID: 320-29346-A-9-A  
Client ID: WGNA-062117-DUP02  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:05:48 ALS Bottle#: 14 Worklist Smp#: 22  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-9-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:58:14

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.62             | 86.20  |
| \$ 10 13C2 PFDA | 10.0         | 9.57             | 95.75  |

## TestAmerica Sacramento

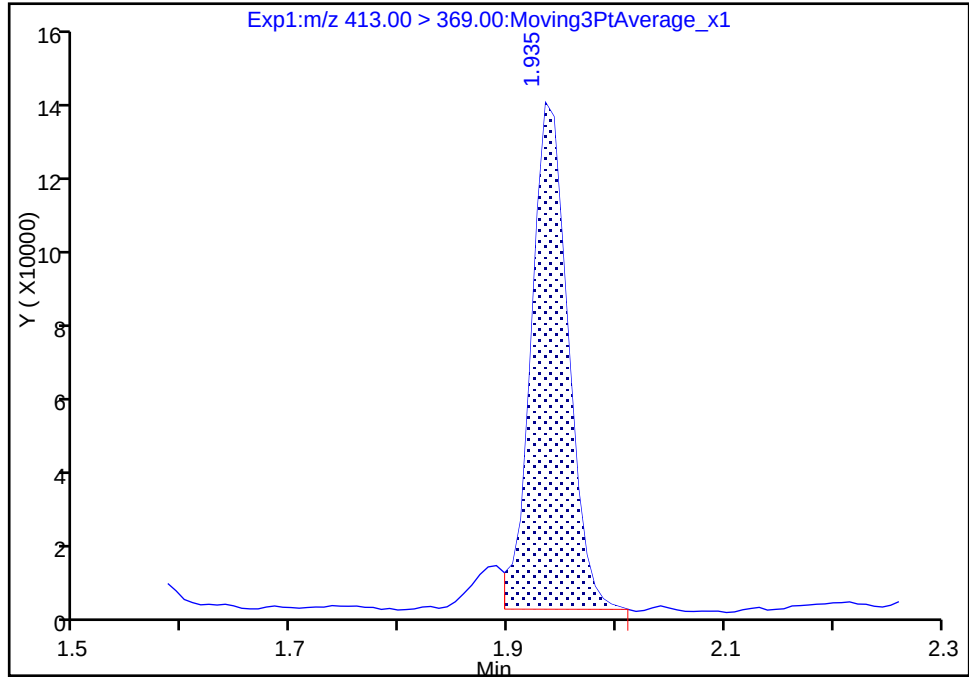
|                 |                                                                            |                |             |                |    |
|-----------------|----------------------------------------------------------------------------|----------------|-------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20170708-45208.b\2017.07.08_537A_022.d |                |             |                |    |
| Injection Date: | 08-Jul-2017 13:05:48                                                       | Instrument ID: | A8_N        |                |    |
| Lims ID:        | 320-29346-A-9-A                                                            | Lab Sample ID: | 320-29346-9 |                |    |
| Client ID:      | WGNA-062117-DUP02                                                          |                |             |                |    |
| Operator ID:    | SACINSTLCMS01                                                              | ALS Bottle#:   | 14          | Worklist Smp#: | 22 |
| Injection Vol:  | 2.0 ul                                                                     | Dil. Factor:   | 1.0000      |                |    |
| Method:         | 537_A8_N                                                                   | Limit Group:   | LC 537 ICAL |                |    |
| Column:         |                                                                            | Detector       | EXP1        |                |    |

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

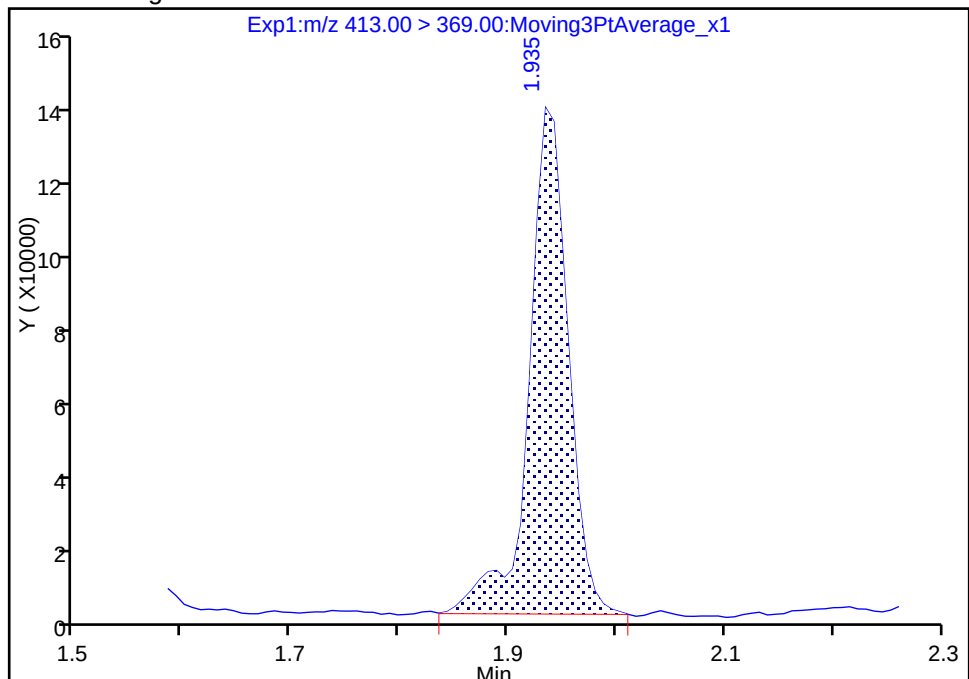
RT: 1.93  
Area: 305493  
Amount: 3.576321  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.93  
Area: 327323  
Amount: 3.831878  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 09:58:06  
Audit Action: Manually Integrated

Audit Reason: Isomers  
Page 156 of 321

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                                     |
|----------------------------------------------|-----------------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                         |
| SDG No.: _____                               |                                                     |
| Client Sample ID: <u>WGNA-062117-RW-0500</u> | Lab Sample ID: <u>320-29346-10</u>                  |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_023.d</u>           |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 15:40</u>             |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>             |
| Sample wt/vol: <u>257.2 (mL)</u>             | Date Analyzed: <u>07/08/2017 13:10</u>              |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                           |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                         |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                                  |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 23     | J   | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 27     | M   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 8.1    | J   | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 7.3    | J   | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 87  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 89   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 90   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_023.d  
 Lims ID: 320-29346-A-10-A  
 Client ID: WGNA-062117-RW-0500  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:10:32 ALS Bottle#: 15 Worklist Smp#: 23  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-10-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:59:28

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.419 | 1.404  | 0.015  | 1.000  | 260440   | 2.61         |                 | 81.9 |       |
| 298.90 > 99.00                  | 1.419 | 1.404  | 0.015  | 1.000  | 206793   |              | 1.26(0.00-0.00) | 92.2 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.563 | 1.539  | 0.024  | 1.000  | 1003120  | 8.88         |                 | 5524 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691  | 0.039  | 1.000  | 195262   | 1.88         |                 | 23.4 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.730 | 1.692  | 0.038  | 1.000  | 325506   | 2.09         |                 | 82.7 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878  | 0.049  |        | 994119   | 10.0         |                 | 3604 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 625932   | 6.83         |                 | 46.5 | M     |
| 413.00 > 169.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 442206   |              | 1.42(0.00-0.00) | 516  | M     |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117  | 0.045  |        | 3208745  | 28.7         |                 | 2727 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124  | 0.046  | 1.000  | 63137    | 0.7707       |                 | 1.2  | M     |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 691153   | 6.03         |                 | 319  |       |
| 499.00 > 99.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 113945   |              | 6.07(0.00-0.00) | 153  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281  | 0.033  | 1.000  | 753821   | 9.03         |                 | 1620 |       |



## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_023.d

Injection Date: 08-Jul-2017 13:10:32

Instrument ID: A8\_N

Lims ID: 320-29346-A-10-A

Lab Sample ID: 320-29346-10

Client ID: WGNA-062117-RW-0500

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

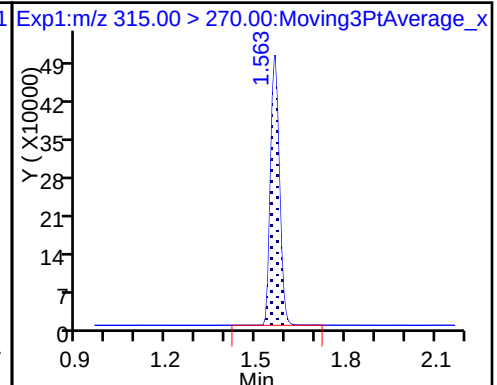
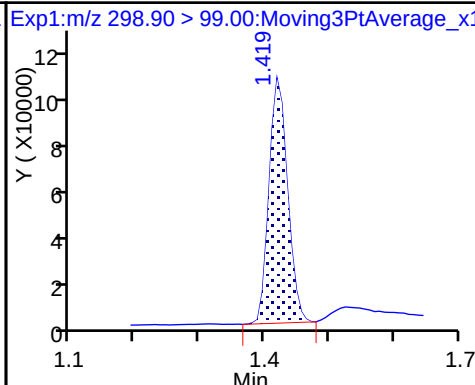
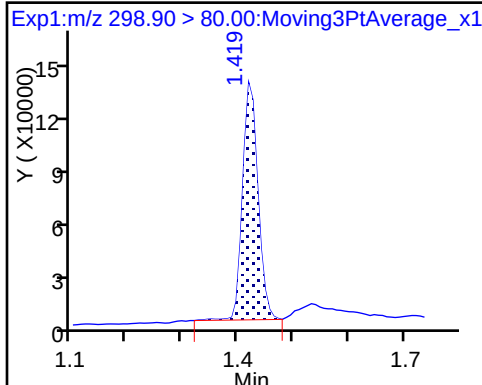
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

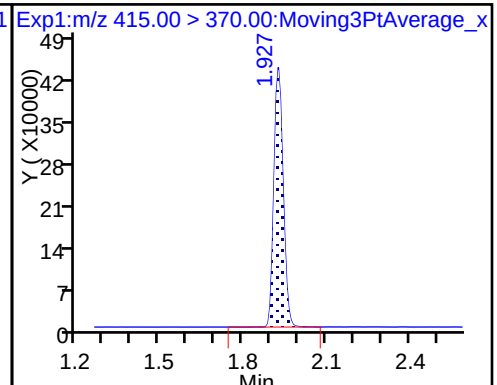
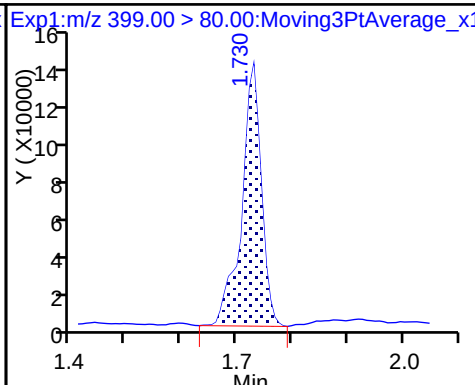
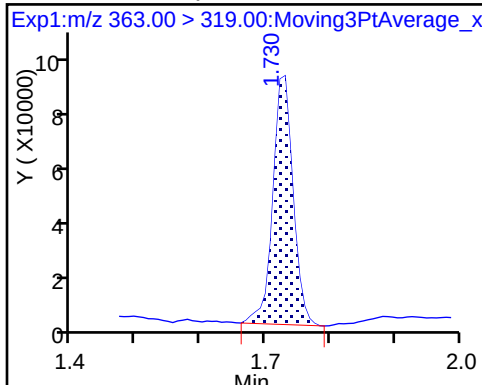
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

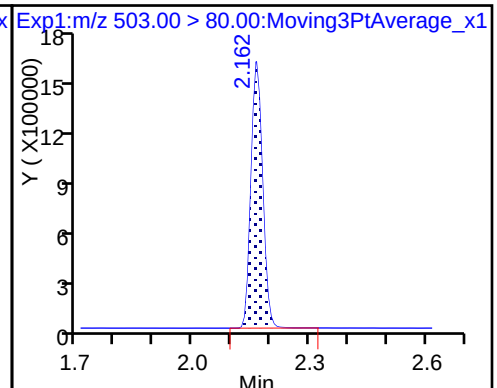
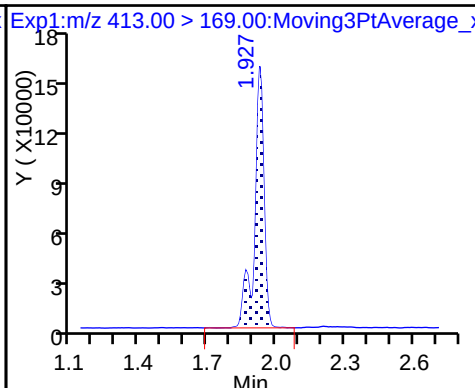
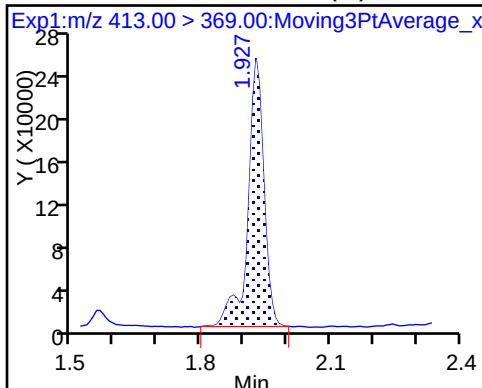
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

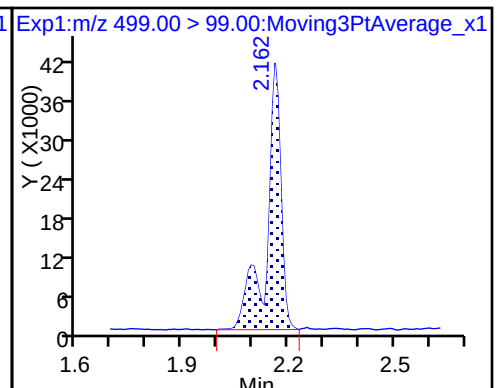
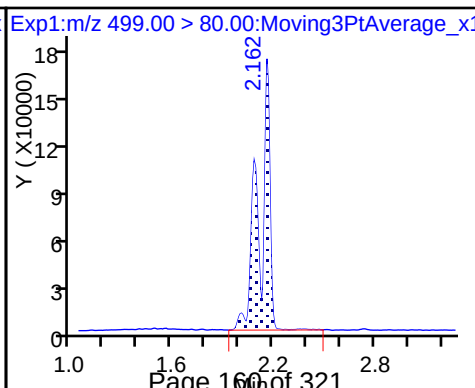
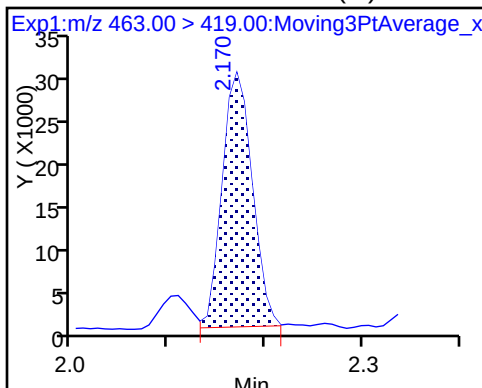
\* 7 13C4 PFOS



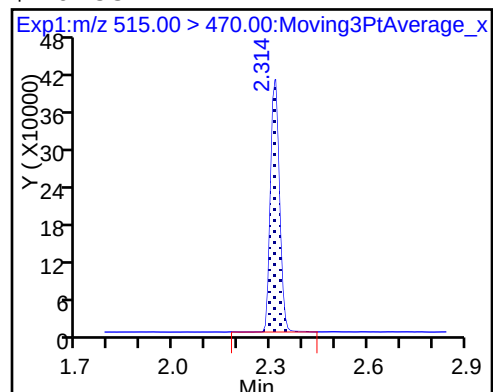
9 Perfluorononanoic acid (M)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_023.d  
Lims ID: 320-29346-A-10-A  
Client ID: WGNA-062117-RW-0500  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:10:32 ALS Bottle#: 15 Worklist Smp#: 23  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-10-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:59:28

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.88             | 88.81  |
| \$ 10 13C2 PFDA | 10.0         | 9.03             | 90.32  |

## TestAmerica Sacramento

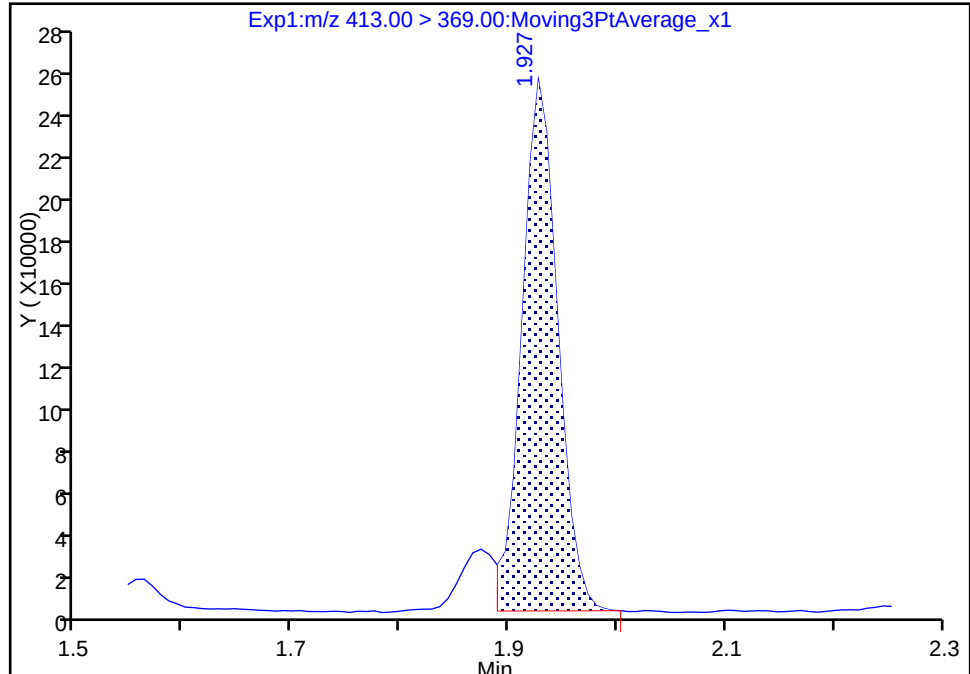
|                 |                                                                            |                |              |                |    |
|-----------------|----------------------------------------------------------------------------|----------------|--------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20170708-45208.b\2017.07.08_537A_023.d |                |              |                |    |
| Injection Date: | 08-Jul-2017 13:10:32                                                       | Instrument ID: | A8_N         |                |    |
| Lims ID:        | 320-29346-A-10-A                                                           | Lab Sample ID: | 320-29346-10 |                |    |
| Client ID:      | WGNA-062117-RW-0500                                                        |                |              |                |    |
| Operator ID:    | SACINSTLCMS01                                                              | ALS Bottle#:   | 15           | Worklist Smp#: | 23 |
| Injection Vol:  | 2.0 ul                                                                     | Dil. Factor:   | 1.0000       |                |    |
| Method:         | 537_A8_N                                                                   | Limit Group:   | LC 537 ICAL  |                |    |
| Column:         |                                                                            | Detector:      | EXP1         |                |    |

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

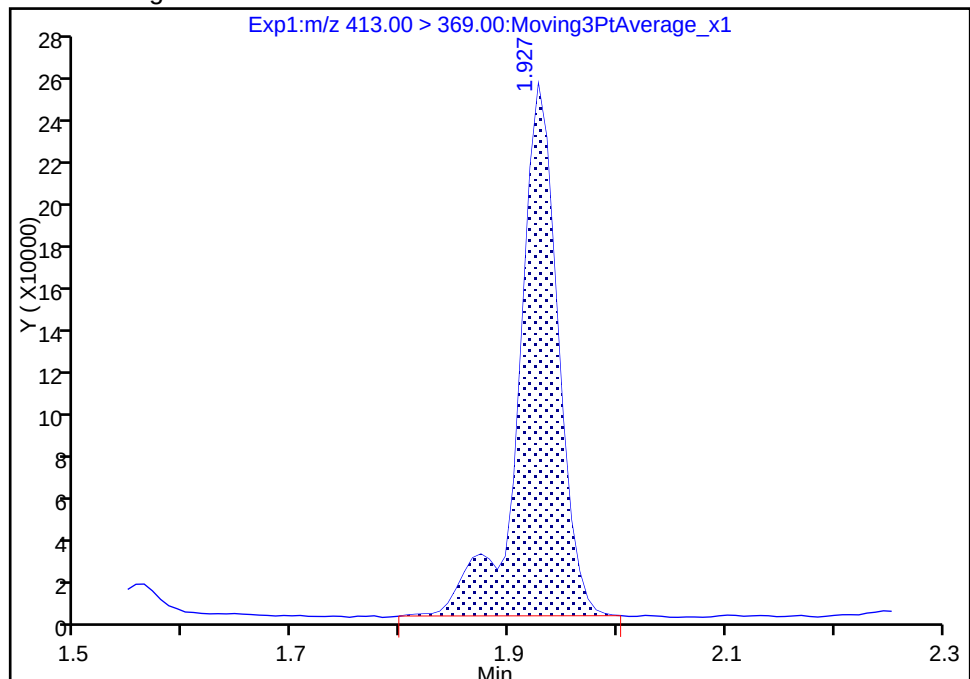
RT: 1.93  
Area: 563749  
Amount: 6.152661  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.93  
Area: 625932  
Amount: 6.831316  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 09:58:45  
Audit Action: Manually Integrated

Audit Reason: Isomers  
Page 163 of 321

## TestAmerica Sacramento

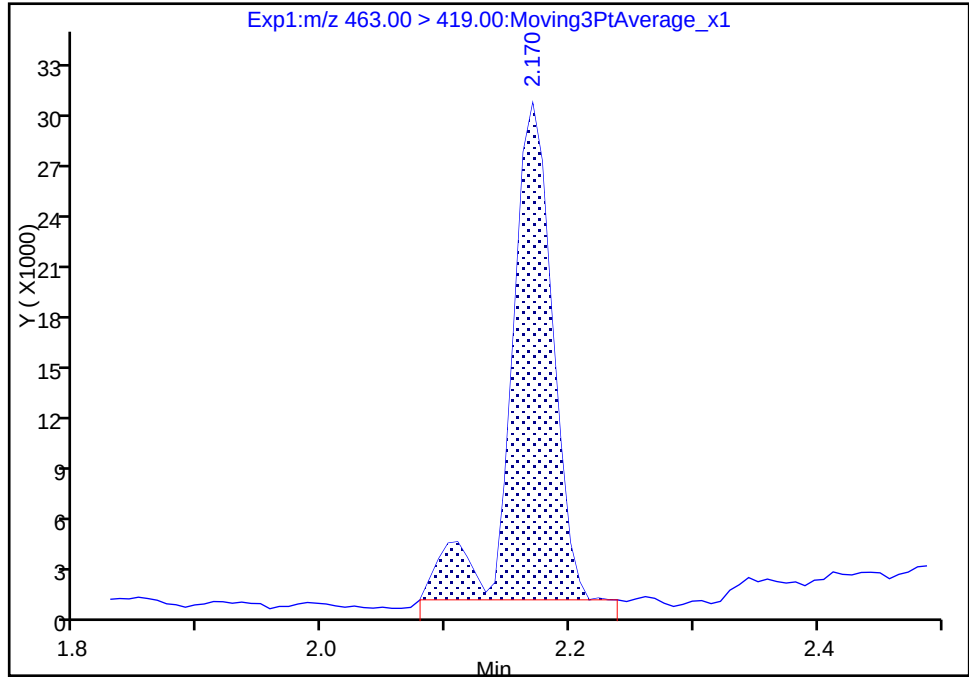
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_023.d  
Injection Date: 08-Jul-2017 13:10:32 Instrument ID: A8\_N  
Lims ID: 320-29346-A-10-A Lab Sample ID: 320-29346-10  
Client ID: WGNA-062117-RW-0500  
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 23  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**9 Perfluorononanoic acid, CAS: 375-95-1**

Signal: 1

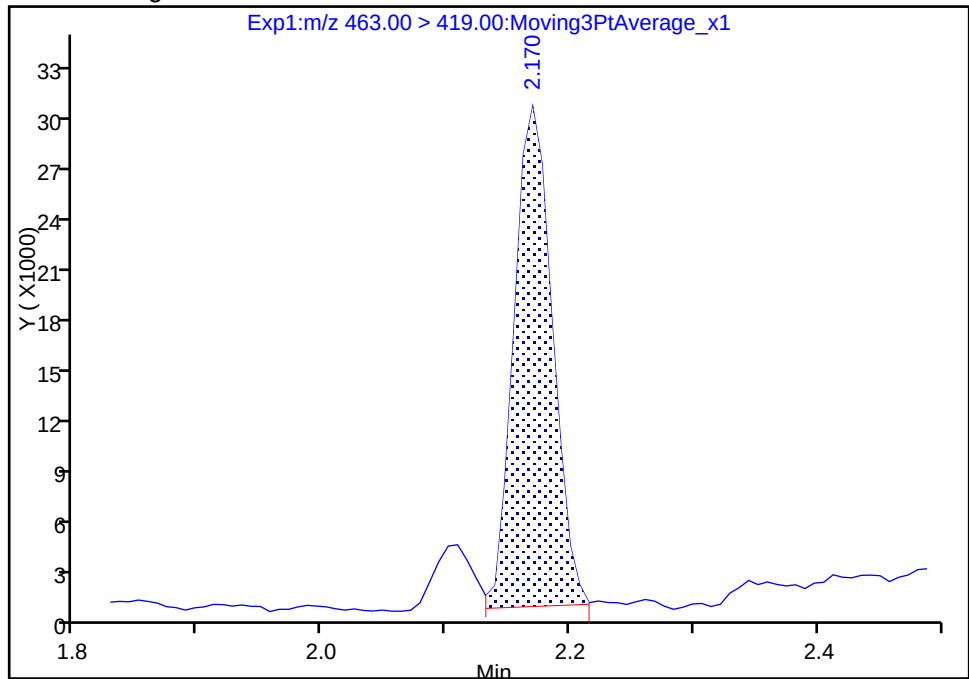
RT: 2.17  
Area: 68725  
Amount: 0.838876  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.17  
Area: 63137  
Amount: 0.770667  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 09:59:20

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-0500</u> | Lab Sample ID: <u>320-29346-11</u>          |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_024.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 15:35</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>270.7(mL)</u>               | Date Analyzed: <u>07/08/2017 13:15</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 104  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 97   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_024.d  
 Lims ID: 320-29346-A-11-A  
 Client ID: WGNA-062117-FRB-0500  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:15:17 ALS Bottle#: 16 Worklist Smp#: 24  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-11-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:59:40

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|

\$ 2 13C2 PFHxA

315.00 &gt; 270.00 1.563 1.539 0.024 1.000 1067652 10.4 5444

\* 6 13C2-PFOA

415.00 &gt; 370.00 1.927 1.878 0.049 906406 10.0 3511

\* 7 13C4 PFOS

503.00 &gt; 80.00 2.162 2.117 0.045 3056099 28.7 4581

\$ 10 13C2 PFDA

515.00 &gt; 470.00 2.314 2.281 0.033 1.000 737086 9.69 1499



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_024.d

Injection Date: 08-Jul-2017 13:15:17

Instrument ID: A8\_N

Lims ID: 320-29346-A-11-A

Lab Sample ID: 320-29346-11

Client ID: WGNA-062117-FRB-0500

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

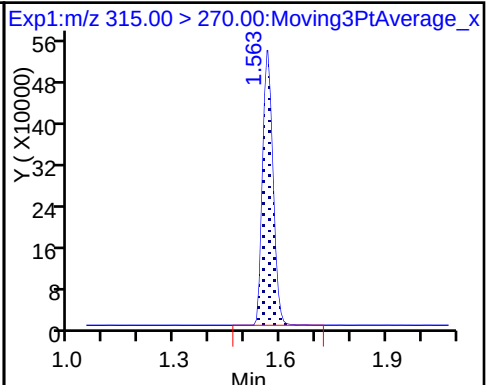
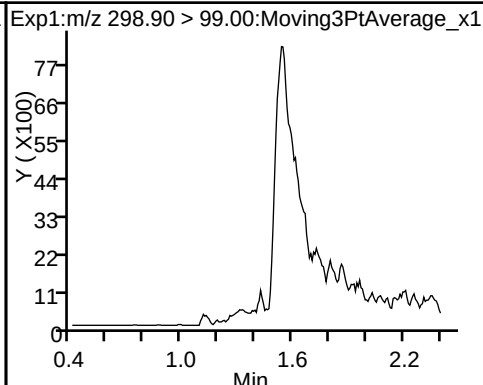
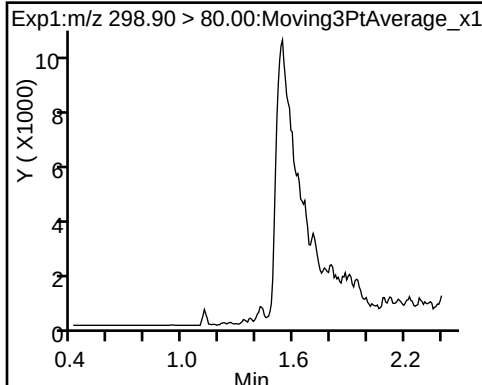
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

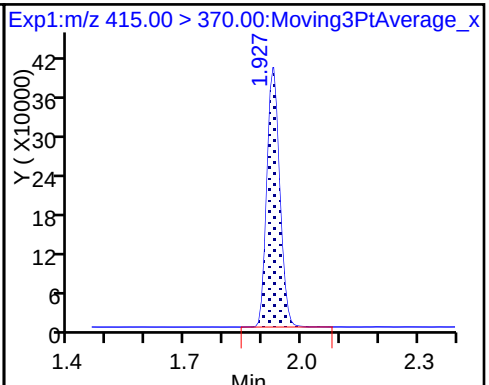
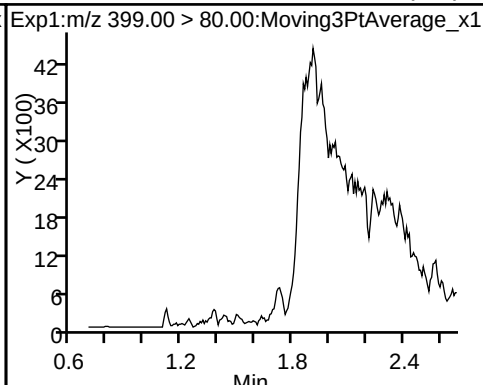
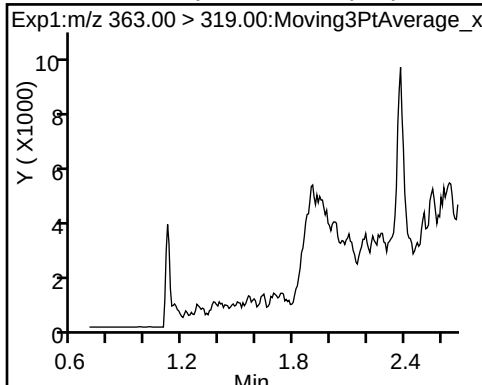
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

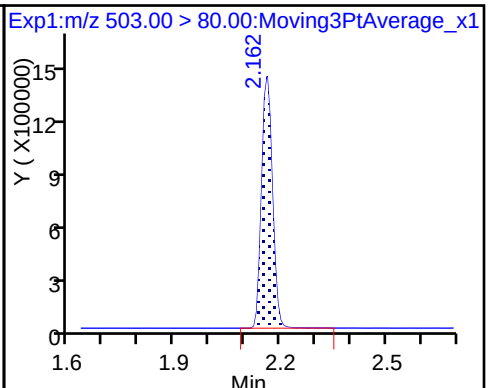
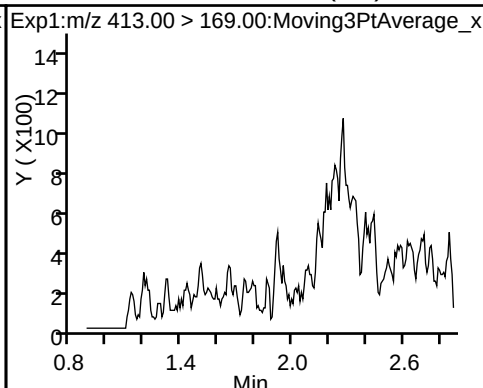
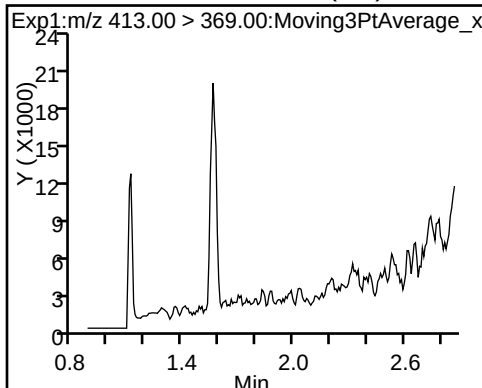
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

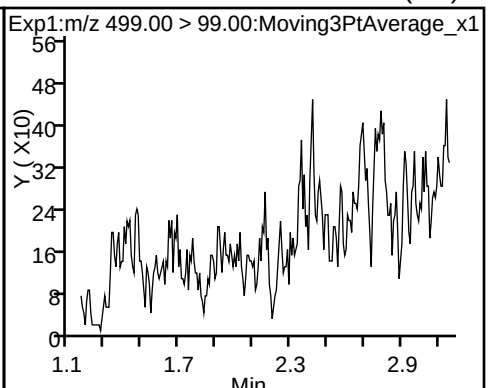
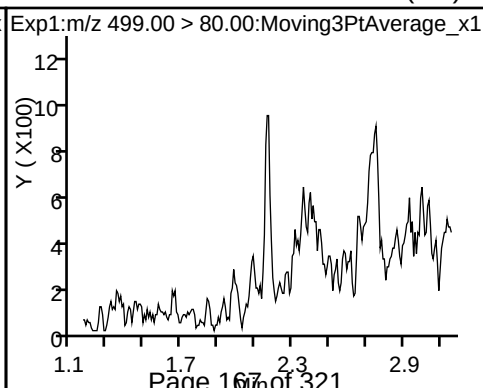
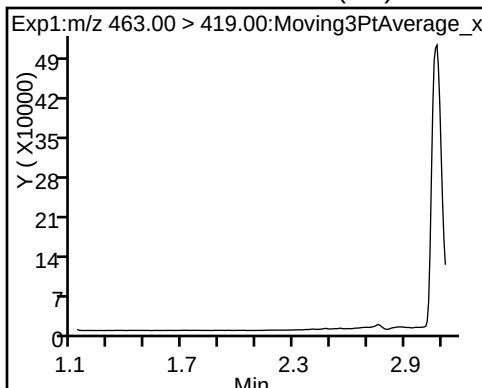
\* 7 13C4 PFOS



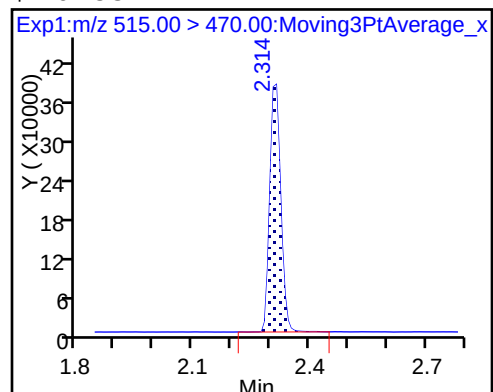
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_024.d  
Lims ID: 320-29346-A-11-A  
Client ID: WGNA-062117-FRB-0500  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:15:17 ALS Bottle#: 16 Worklist Smp#: 24  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-11-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:59:40

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 10.4             | 103.67 |
| \$ 10 13C2 PFDA | 10.0         | 9.69             | 96.86  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3933</u> | Lab Sample ID: <u>320-29346-12</u>           |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_025.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 10:55</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>253.4 (mL)</u>             | Date Analyzed: <u>07/08/2017 13:20</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 17     | J   | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 18     | J M | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U   | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | J   | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 6.6    | J   | 9.9 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 36     | U   | 89  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 98   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_025.d  
 Lims ID: 320-29346-A-12-A  
 Client ID: WGNA-062117-RW-3933  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:20:02 ALS Bottle#: 17 Worklist Smp#: 25  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-12-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:00:26

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 153144   | 1.64            |                 | 40.3 |       |
| 298.90 > 99.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 126444   |                 | 1.21(0.00-0.00) | 56.4 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.571 | 1.539     | 0.031     | 1.000     | 897008   | 8.75            |                 | 4793 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691     | 0.039     | 1.000     | 156823   | 1.66            |                 | 17.2 |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.730 | 1.692     | 0.038     | 1.000     | 407486   | 2.79            |                 | 83.4 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.935 | 1.878     | 0.057     |           | 902311   | 10.0            |                 | 3338 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.935 | 1.879     | 0.056     | 1.000     | 384914   | 4.63            |                 | 25.8 | M     |
| 413.00 > 169.00                 | 1.935 | 1.879     | 0.056     | 1.000     | 266060   |                 | 1.45(0.00-0.00) | 282  | M     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.170 | 2.117     | 0.053     |           | 3000823  | 28.7            |                 | 1909 |       |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.170 | 2.162     | 0.008     | 1.000     | 453213   | 4.23            |                 | 172  |       |
| 499.00 > 99.00                  | 2.170 | 2.162     | 0.008     | 1.000     | 77897    |                 | 5.82(0.00-0.00) | 89.3 |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281     | 0.033     | 1.000     | 740908   | 9.78            |                 | 1450 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_025.d

Injection Date: 08-Jul-2017 13:20:02

Instrument ID: A8\_N

Lims ID: 320-29346-A-12-A

Lab Sample ID: 320-29346-12

Client ID: WGNA-062117-RW-3933

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

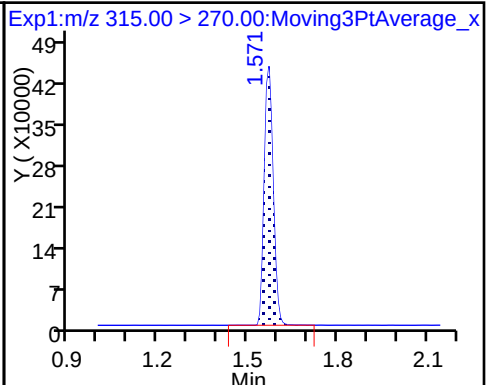
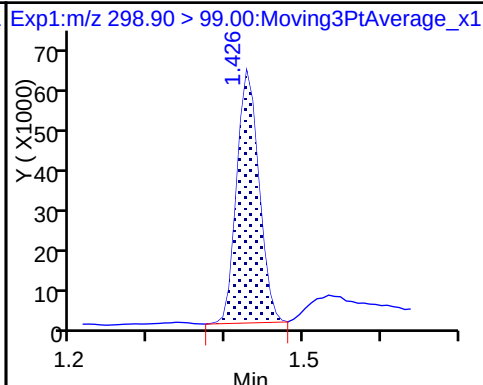
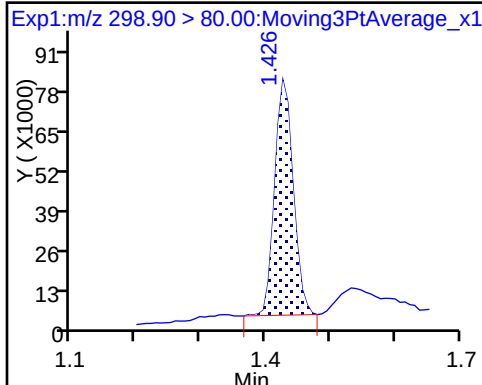
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

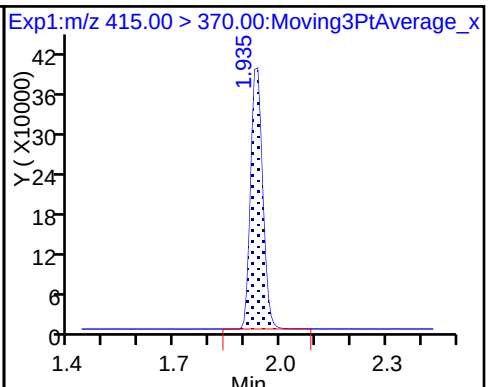
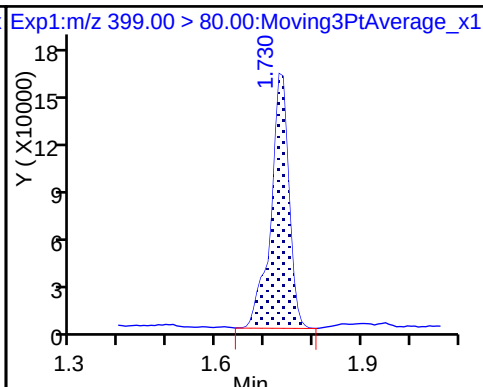
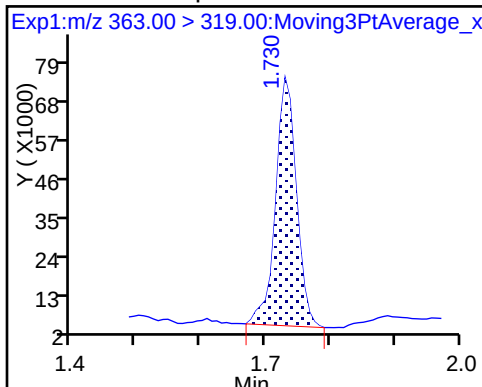
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

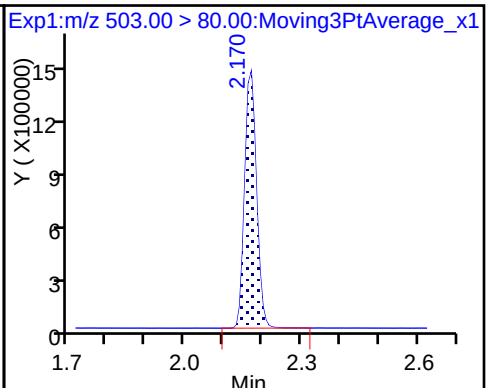
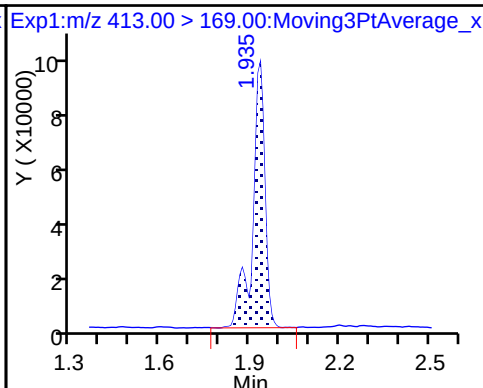
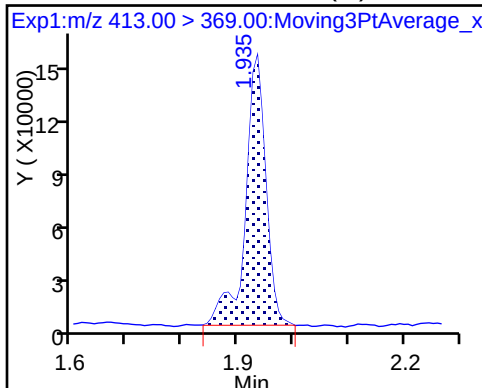
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

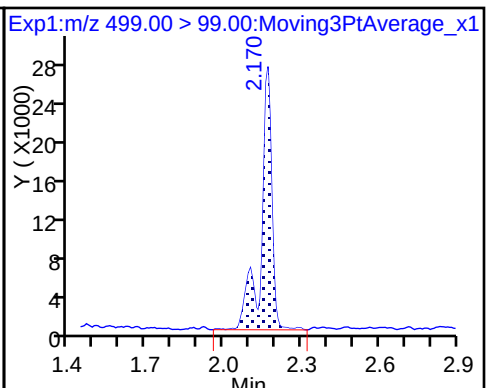
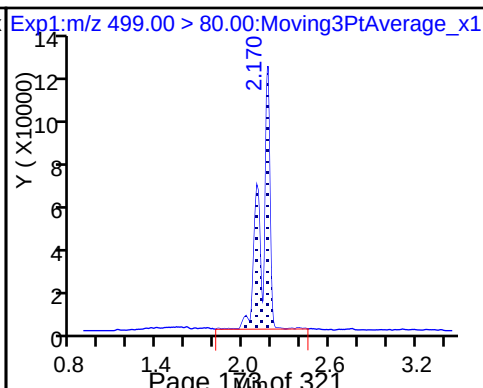
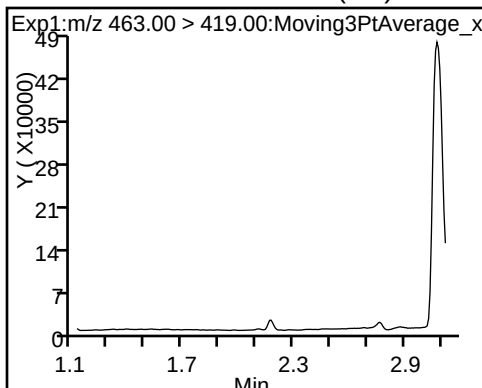
\* 7 13C4 PFOS



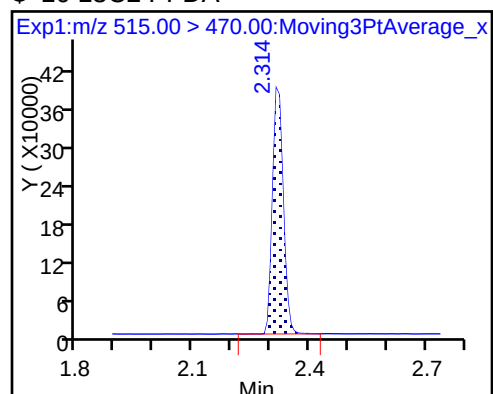
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA





TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_025.d  
Lims ID: 320-29346-A-12-A  
Client ID: WGNA-062117-RW-3933  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:20:02 ALS Bottle#: 17 Worklist Smp#: 25  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-12-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:00:26

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.75             | 87.50  |
| \$ 10 13C2 PFDA | 10.0         | 9.78             | 97.81  |

## TestAmerica Sacramento

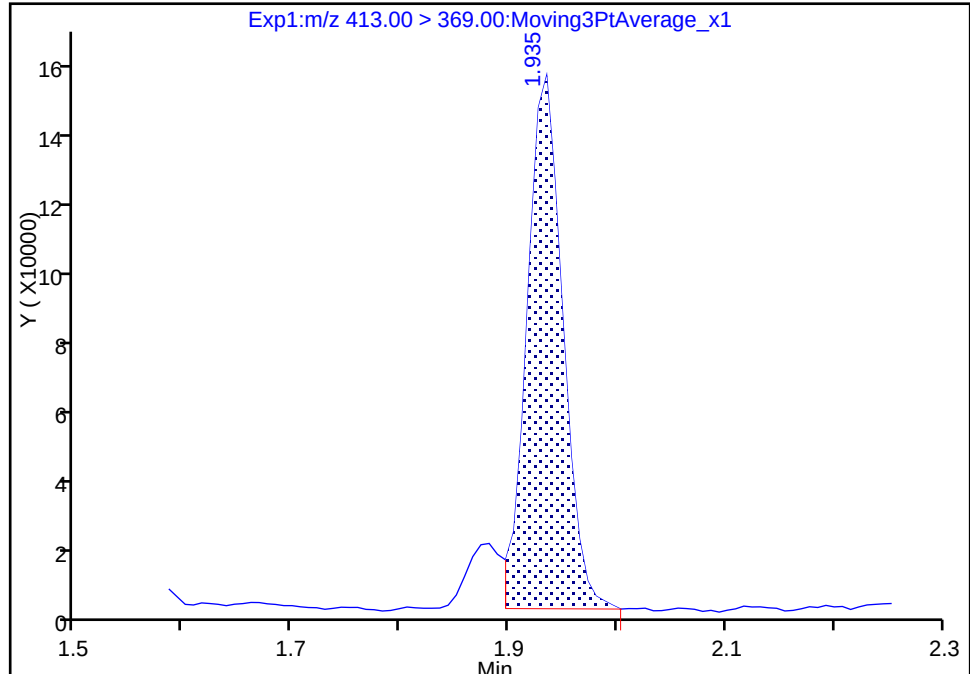
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Injection Date: 08-Jul-2017 13:20:02 Instrument ID: A8\_N  
Lims ID: 320-29346-A-12-A Lab Sample ID: 320-29346-12  
Client ID: WGNA-062117-RW-3933  
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 25  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

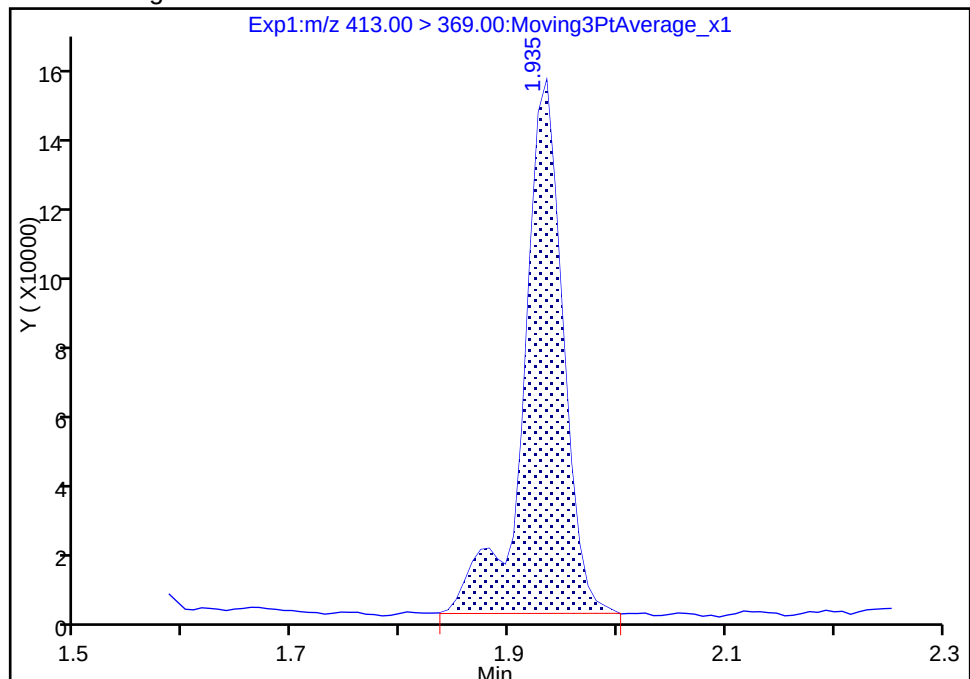
RT: 1.93  
Area: 345495  
Amount: 4.154331  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.93  
Area: 384914  
Amount: 4.628317  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:00:11  
Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3933</u> | Lab Sample ID: <u>320-29346-13</u>          |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_026.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 10:50</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>258.3(mL)</u>               | Date Analyzed: <u>07/08/2017 13:24</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 15     | U | 39  | 15  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.7    | U | 19  | 7.7 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U | 23  | 19  | 7.7 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 87  | 35  | 16  |

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

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_026.d  
 Lims ID: 320-29346-B-13-A  
 Client ID: WGNA-062117-FRB-3933  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:24:46 ALS Bottle#: 18 Worklist Smp#: 26  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-b-13-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:01:15

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|

\$ 2 13C2 PFHxA

315.00 &gt; 270.00 1.571 1.539 0.031 1.000 1044741 9.86 4834

\* 6 13C2-PFOA

415.00 &gt; 370.00 1.935 1.878 0.057 932828 10.0 3603

\* 7 13C4 PFOS

503.00 &gt; 80.00 2.170 2.117 0.053 3012668 28.7 4366

\$ 10 13C2 PFDA

515.00 &gt; 470.00 2.314 2.281 0.033 1.000 720998 9.21 1335

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_026.d

Injection Date: 08-Jul-2017 13:24:46

Instrument ID: A8\_N

Lims ID: 320-29346-B-13-A

Lab Sample ID: 320-29346-13

Client ID: WGNA-062117-FRB-3933

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

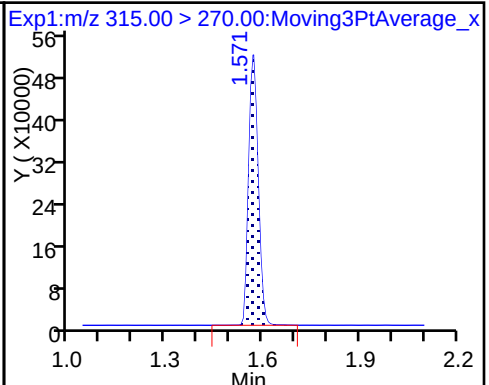
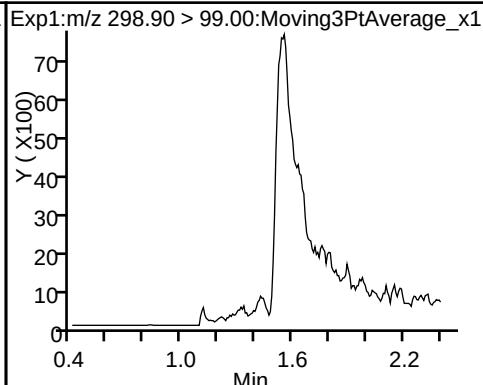
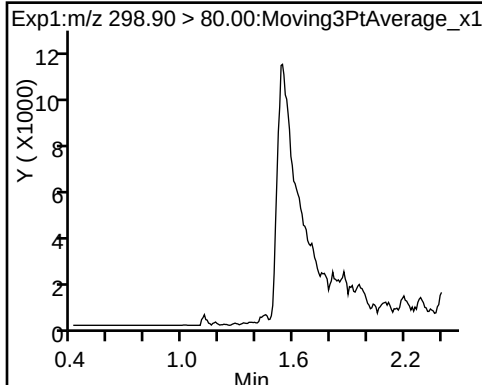
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

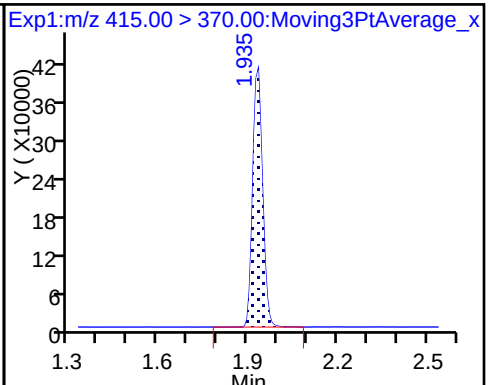
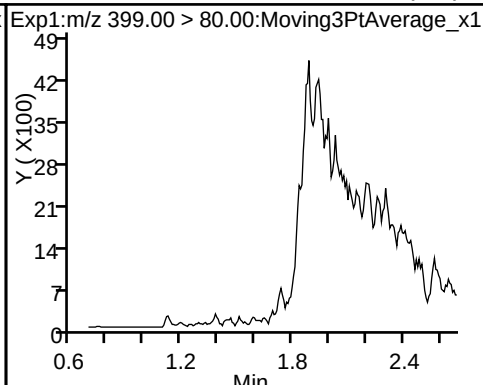
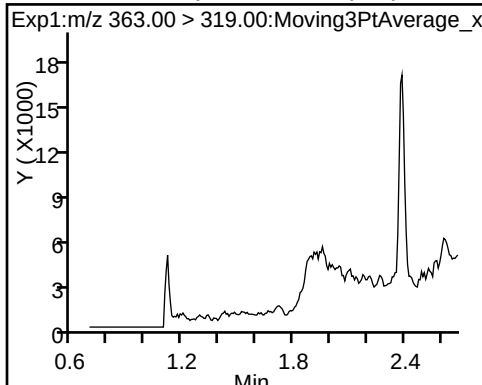
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

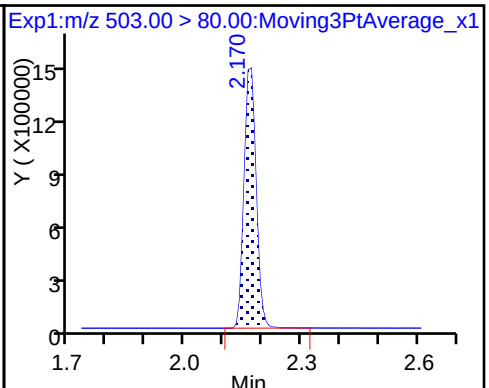
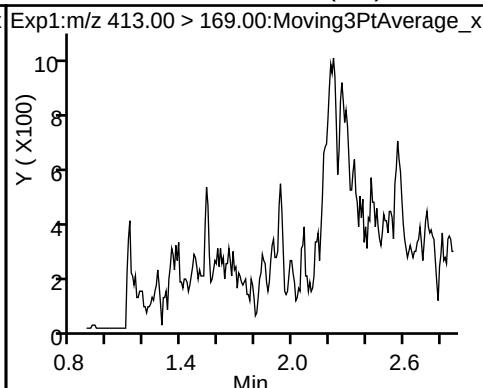
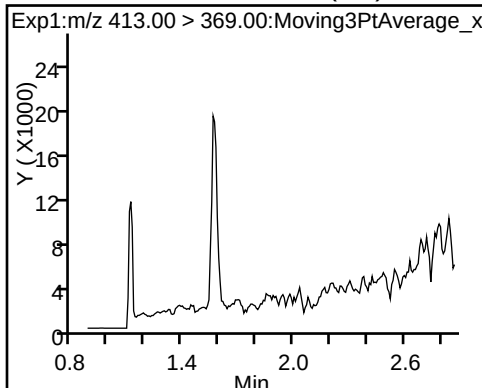
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

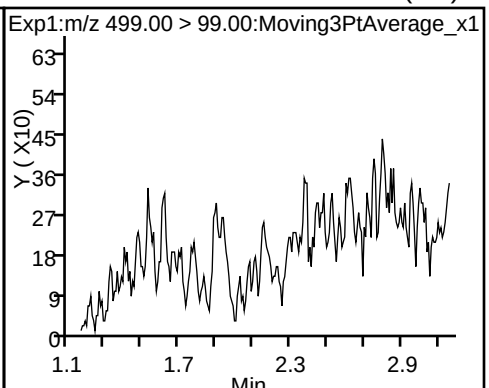
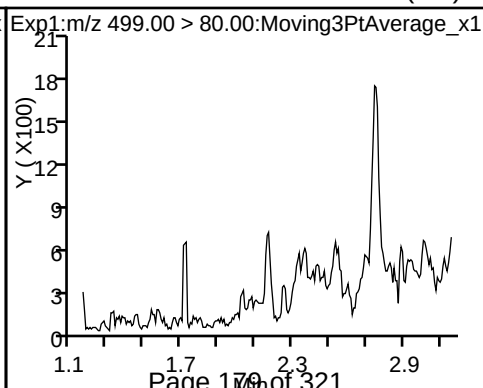
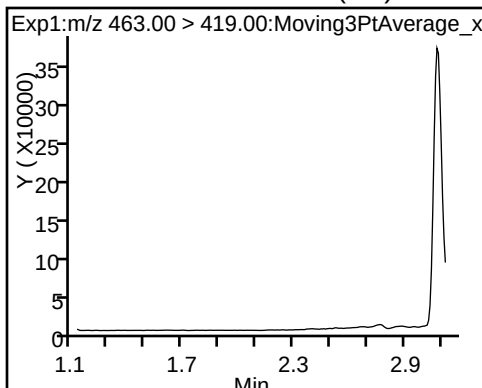
\* 7 13C4 PFOS



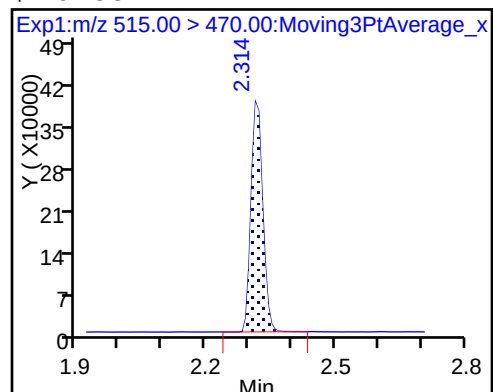
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_026.d  
Lims ID: 320-29346-B-13-A  
Client ID: WGNA-062117-FRB-3933  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:24:46 ALS Bottle#: 18 Worklist Smp#: 26  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-b-13-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:01:15

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.86             | 98.57  |
| \$ 10 13C2 PFDA | 10.0         | 9.21             | 92.06  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                               |                                             |
| Client Sample ID: <u>WGNA-062117-RW-0404</u> | Lab Sample ID: <u>320-29346-14</u>          |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_027.d</u>   |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 10:35</u>     |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>256.9(mL)</u>              | Date Analyzed: <u>07/08/2017 13:29</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>           | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 21     | J   | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 23     | M   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 7.4    | J   | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 6.3    | J   | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 88  | 35  | 16  |

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



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_027.d  
 Lims ID: 320-29346-A-14-A  
 Client ID: WGNA-062117-RW-0404  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:29:30 ALS Bottle#: 19 Worklist Smp#: 27  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-14-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:02:36

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 160554   | 1.47            |                 | 35.5 |       |
| 298.90 > 99.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 128036   |                 | 1.25(0.00-0.00) | 55.8 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.571 | 1.539     | 0.031     | 1.000     | 1074328  | 8.76            |                 | 4709 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691     | 0.039     | 1.000     | 181880   | 1.61            |                 | 20.5 |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.737 | 1.692     | 0.045     | 1.000     | 323520   | 1.90            |                 | 60.8 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.935 | 1.878     | 0.057     |           | 1079406  | 10.0            |                 | 3684 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.935 | 1.879     | 0.056     | 1.000     | 575808   | 5.79            |                 | 37.5 | M     |
| 413.00 > 169.00                 | 1.935 | 1.879     | 0.056     | 1.000     | 396012   |                 | 1.45(0.00-0.00) | 419  | M     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117     | 0.045     |           | 3512651  | 28.7            |                 | 2107 |       |
| 9 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 463.00 > 419.00                 | 2.177 | 2.124     | 0.053     | 1.000     | 53045    | 0.5963          |                 | 1.3  | M     |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.170 | 2.162     | 0.008     | 1.000     | 680758   | 5.43            |                 | 216  |       |
| 499.00 > 99.00                  | 2.162 | 2.162     | 0.0       | 0.996     | 114318   |                 | 5.95(0.00-0.00) | 128  |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281     | 0.033     | 1.000     | 829247   | 9.15            |                 | 1902 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_027.d

Injection Date: 08-Jul-2017 13:29:30

Instrument ID: A8\_N

Lims ID: 320-29346-A-14-A

Lab Sample ID: 320-29346-14

Client ID: WGNA-062117-RW-0404

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

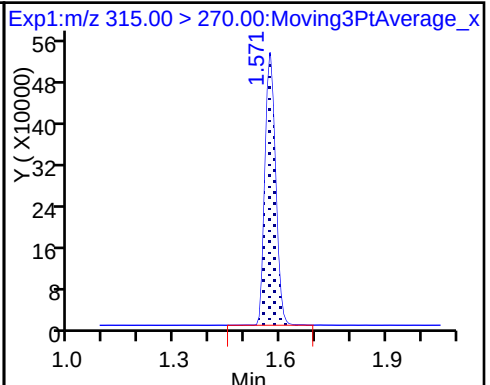
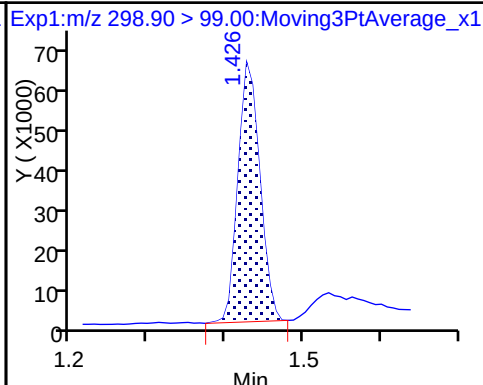
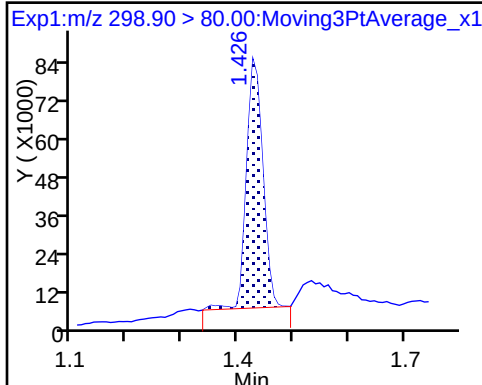
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

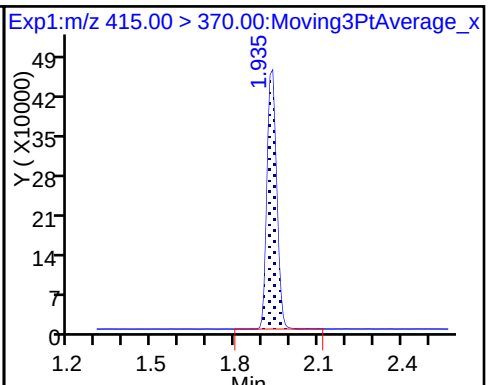
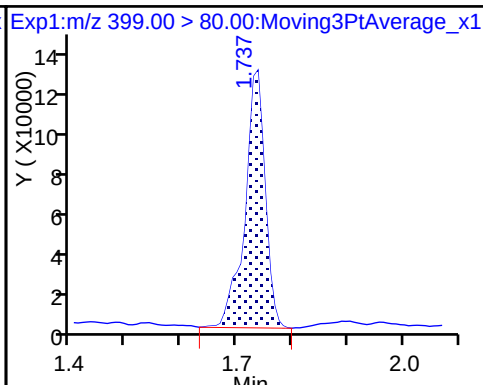
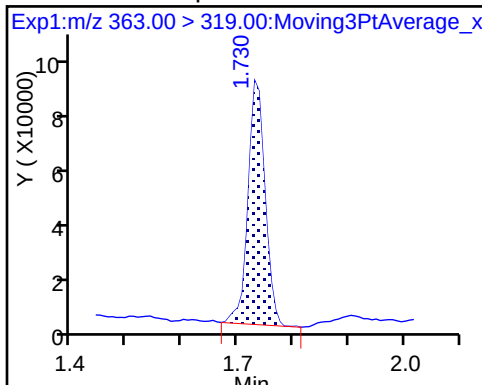
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

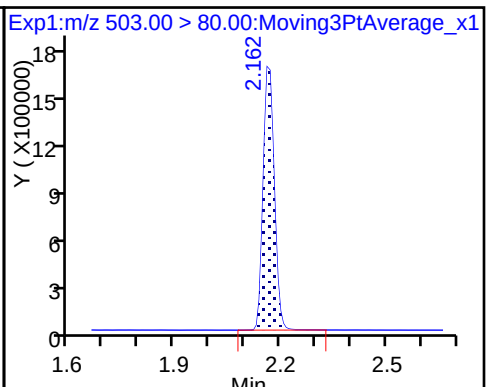
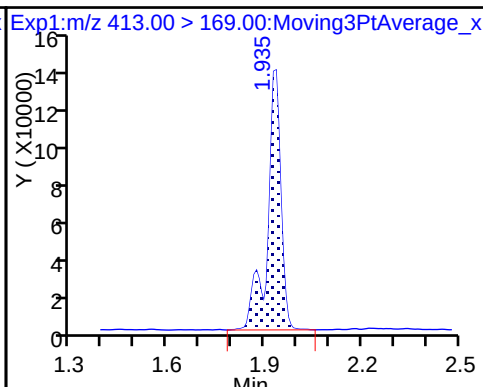
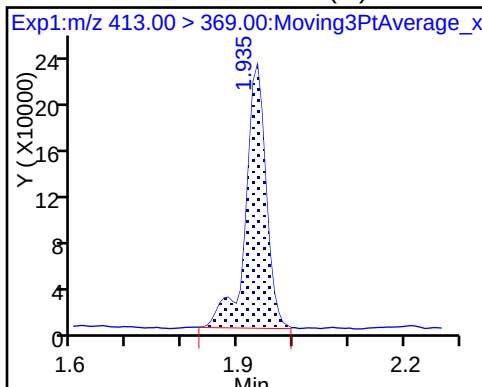
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

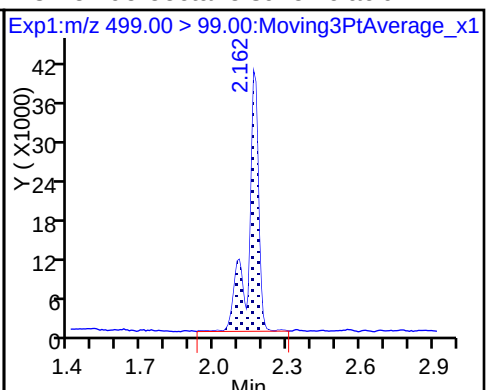
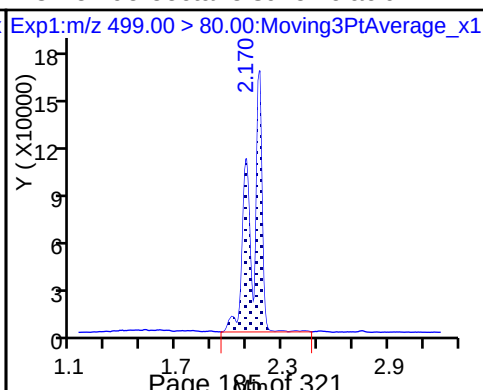
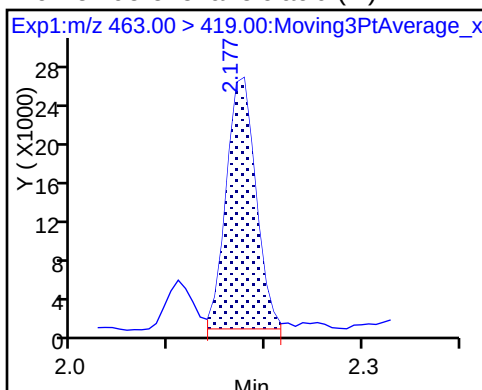
\* 7 13C4 PFOS



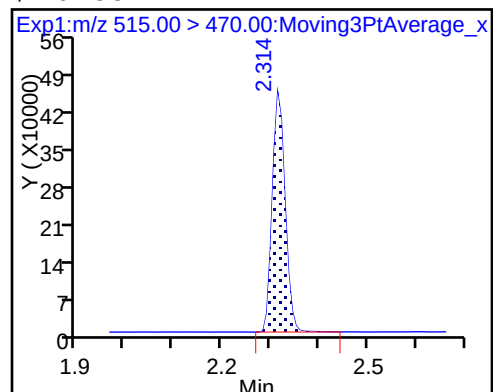
9 Perfluorononanoic acid (M)

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_027.d  
Lims ID: 320-29346-A-14-A  
Client ID: WGNA-062117-RW-0404  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:29:30 ALS Bottle#: 19 Worklist Smp#: 27  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-14-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:02:36

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.76             | 87.60  |
| \$ 10 13C2 PFDA | 10.0         | 9.15             | 91.51  |

## TestAmerica Sacramento

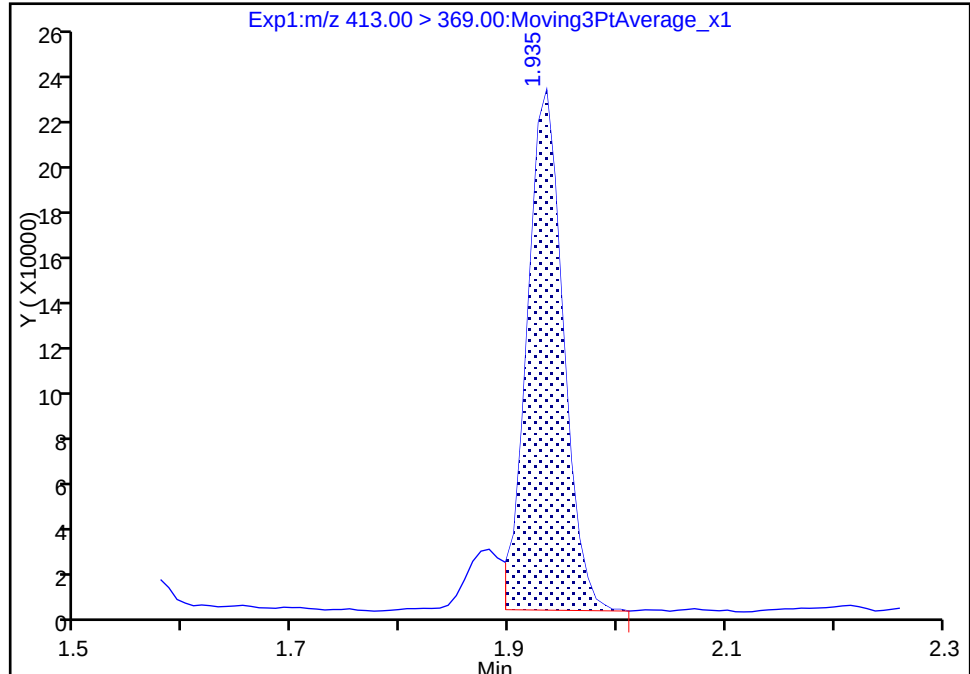
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Injection Date: 08-Jul-2017 13:29:30 Instrument ID: A8\_N  
Lims ID: 320-29346-A-14-A Lab Sample ID: 320-29346-14  
Client ID: WGNA-062117-RW-0404  
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 27  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

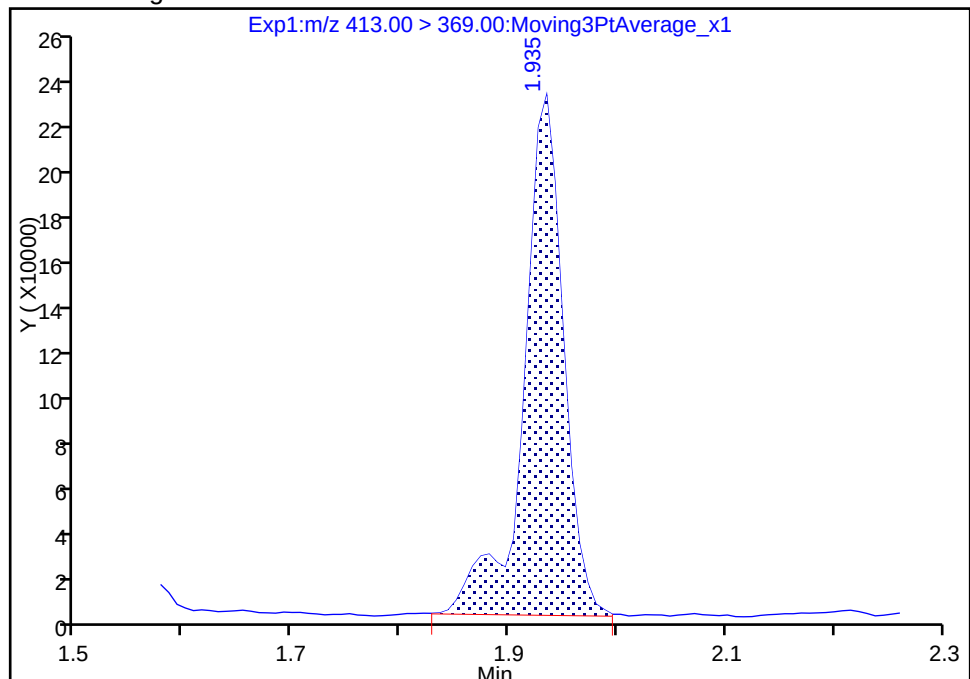
RT: 1.93  
Area: 517867  
Amount: 5.205339  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.93  
Area: 575808  
Amount: 5.787733  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:02:22

Audit Action: Manually Integrated

Audit Reason: Isomers

## TestAmerica Sacramento

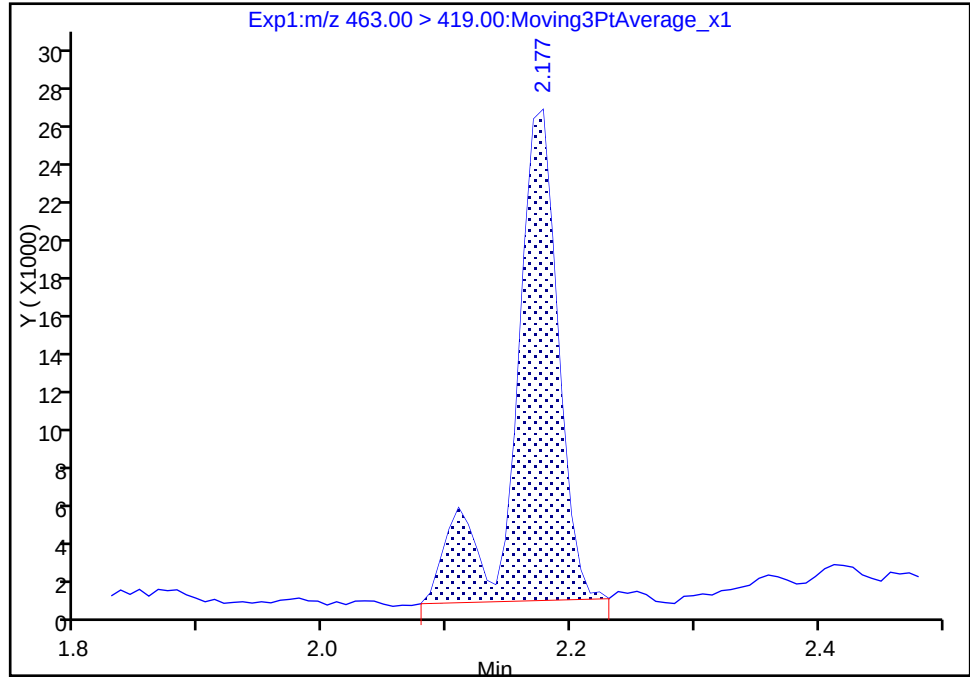
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_027.d  
Injection Date: 08-Jul-2017 13:29:30 Instrument ID: A8\_N  
Lims ID: 320-29346-A-14-A Lab Sample ID: 320-29346-14  
Client ID: WGNA-062117-RW-0404  
Operator ID: SACINSTLCMS01 ALS Bottle#: 19 Worklist Smp#: 27  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**9 Perfluorononanoic acid, CAS: 375-95-1**

Signal: 1

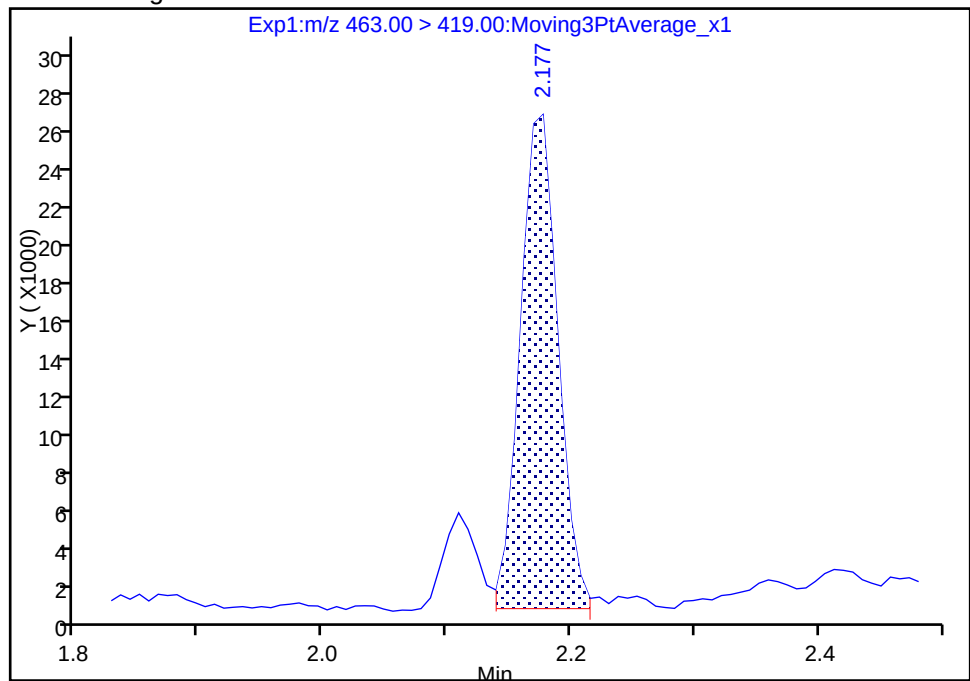
RT: 2.18  
Area: 61338  
Amount: 0.689550  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.18  
Area: 53045  
Amount: 0.596322  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:01:52

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-0404</u> | Lab Sample ID: <u>320-29346-15</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_028.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 10:30</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>262 (mL)</u>                | Date Analyzed: <u>07/08/2017 13:34</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 93   |   | 70-130 |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_028.d  
 Lims ID: 320-29346-A-15-A  
 Client ID: WGNA-062117-FRB-0404  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:34:15 ALS Bottle#: 20 Worklist Smp#: 28  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-15-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

| Signal          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N  | Flags |
|-----------------|-------|-----------|-----------|-----------|----------|-----------------|---------------|------|-------|
| \$ 2 13C2 PFHxA |       |           |           |           |          |                 |               |      |       |
| 315.00 > 270.00 | 1.571 | 1.539     | 0.031     | 1.000     | 1031742  | 9.99            |               | 5437 |       |
| * 6 13C2-PFOA   |       |           |           |           |          |                 |               |      |       |
| 415.00 > 370.00 | 1.935 | 1.878     | 0.057     |           | 909149   | 10.0            |               | 3833 |       |
| * 7 13C4 PFOS   |       |           |           |           |          |                 |               |      |       |
| 503.00 > 80.00  | 2.170 | 2.117     | 0.053     |           | 2916020  | 28.7            |               | 4077 |       |
| \$ 10 13C2 PFDA |       |           |           |           |          |                 |               |      |       |
| 515.00 > 470.00 | 2.314 | 2.281     | 0.033     | 1.000     | 711631   | 9.32            |               | 1336 |       |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_028.d

Injection Date: 08-Jul-2017 13:34:15

Instrument ID: A8\_N

Lims ID: 320-29346-A-15-A

Lab Sample ID: 320-29346-15

Client ID: WGNA-062117-FRB-0404

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

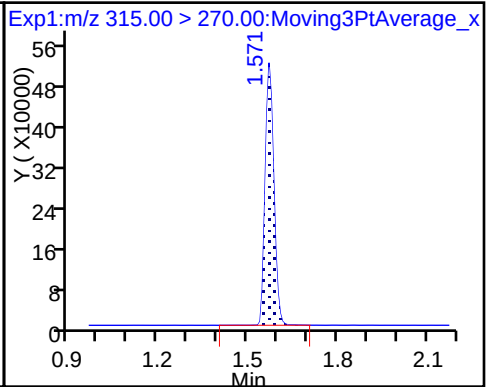
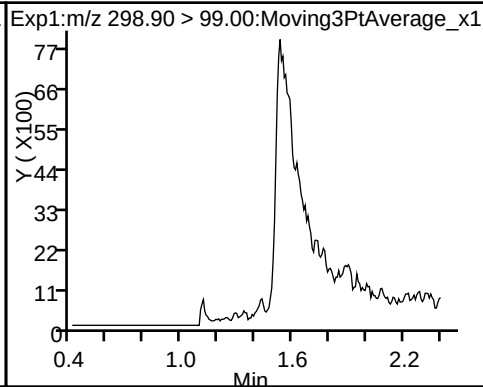
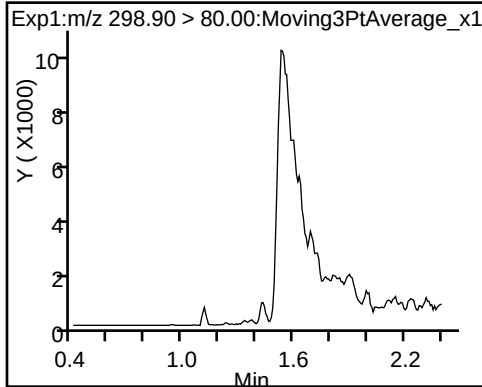
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

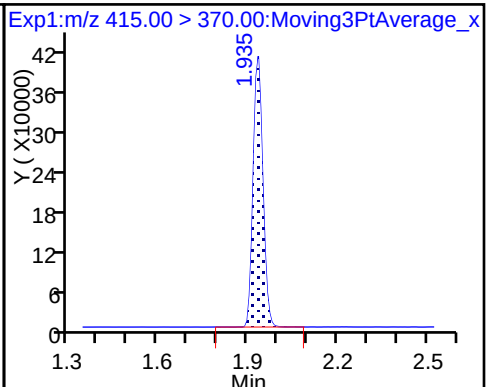
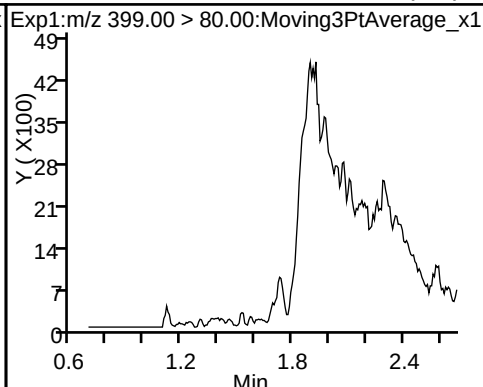
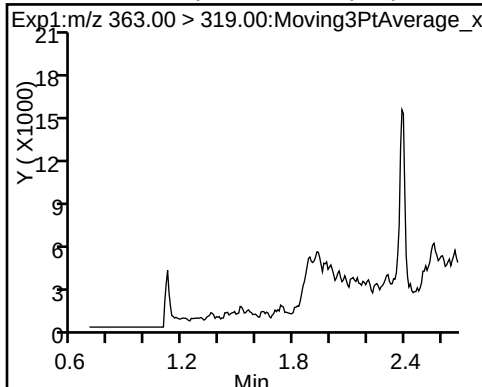
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

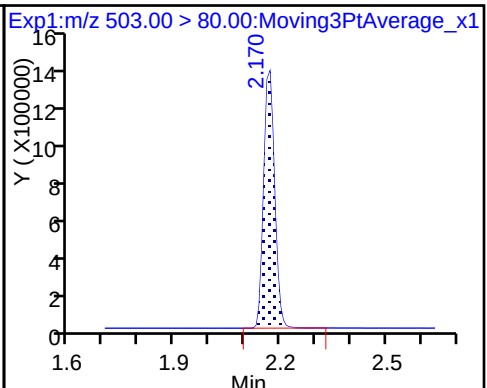
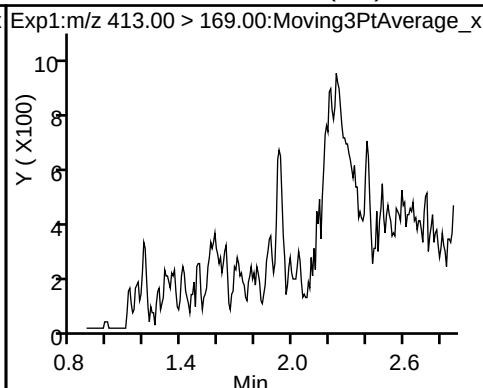
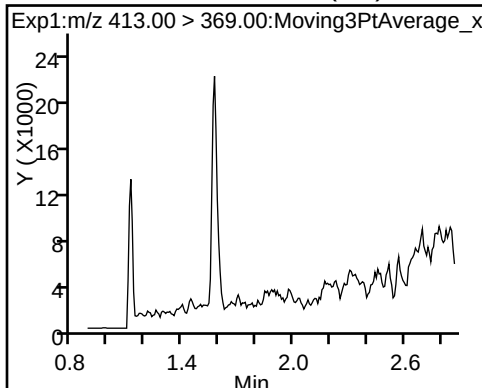
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

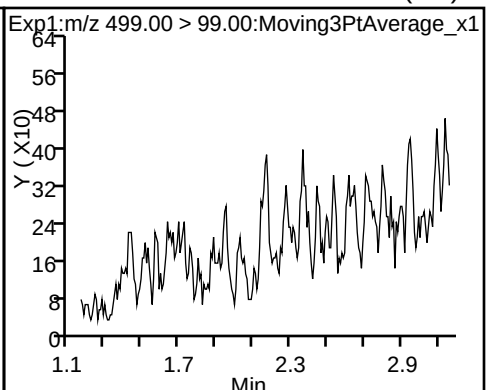
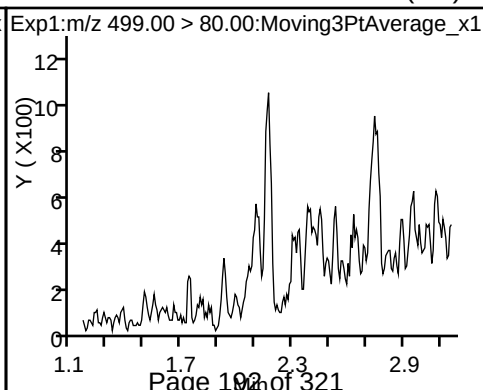
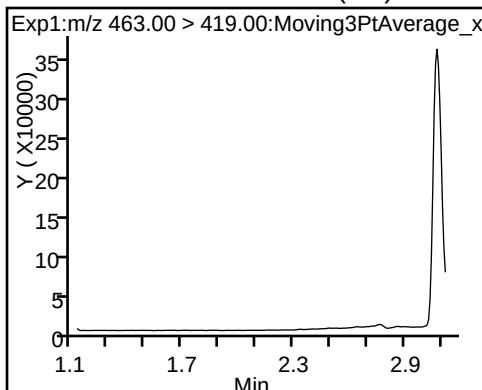
\* 7 13C4 PFOS



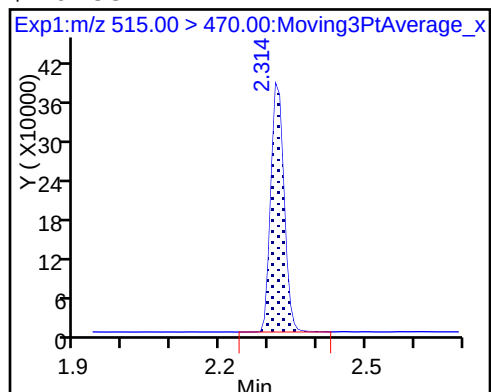
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_028.d  
Lims ID: 320-29346-A-15-A  
Client ID: WGNA-062117-FRB-0404  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:34:15 ALS Bottle#: 20 Worklist Smp#: 28  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-15-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.99             | 99.88  |
| \$ 10 13C2 PFDA | 10.0         | 9.32             | 93.24  |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                               |                                             |
| Client Sample ID: <u>WGNA-062117-RW-2426</u> | Lab Sample ID: <u>320-29346-16</u>          |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_031.d</u>   |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 08:35</u>     |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>253.6(mL)</u>              | Date Analyzed: <u>07/08/2017 13:48</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>           | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173117</u>            | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 18     | J   | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 14     | J M | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U M | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U   | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 14     |     | 9.9 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 89  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 86   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 93   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_031.d  
 Lims ID: 320-29346-A-16-A  
 Client ID: WGNA-062117-RW-2426  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:48:31 ALS Bottle#: 21 Worklist Smp#: 31  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-16-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:39 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:11:20

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 82689    | 0.9105          |                 | 26.8 |       |
| 298.90 > 99.00                  | 1.426 | 1.404     | 0.022     | 1.000     | 60143    |                 | 1.37(0.00-0.00) | 27.1 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.571 | 1.539     | 0.031     | 1.000     | 884684   | 8.61            |                 | 4136 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691     | 0.039     | 1.000     | 332524   | 3.52            |                 | 35.0 |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.737 | 1.692     | 0.045     | 1.000     | 186036   | 1.31            |                 | 45.4 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878     | 0.049     |           | 903934   | 10.0            |                 | 3505 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879     | 0.048     | 1.000     | 294644   | 3.54            |                 | 20.8 | M     |
| 413.00 > 169.00                 | 1.927 | 1.879     | 0.048     | 1.000     | 204989   |                 | 1.44(0.00-0.00) | 237  | M     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117     | 0.045     |           | 2923055  | 28.7            |                 | 2473 |       |
| 9 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124     | 0.046     | 1.000     | 46673    | 0.6265          |                 | 1.2  | M     |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162     | 0.0       | 1.000     | 473025   | 4.53            |                 | 183  |       |
| 499.00 > 99.00                  | 2.162 | 2.162     | 0.0       | 1.000     | 80774    |                 | 5.86(0.00-0.00) | 96.5 |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281     | 0.033     | 1.000     | 704357   | 9.28            |                 | 1330 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_031.d

Injection Date: 08-Jul-2017 13:48:31

Instrument ID: A8\_N

Lims ID: 320-29346-A-16-A

Lab Sample ID: 320-29346-16

Client ID: WGNA-062117-RW-2426

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 31

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

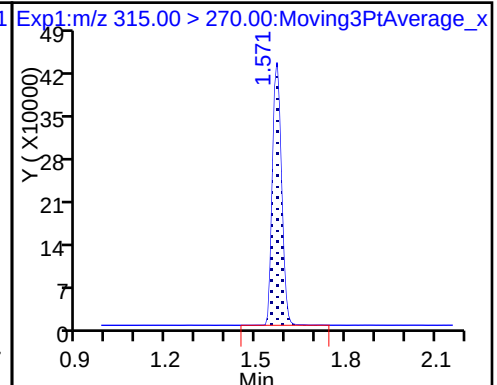
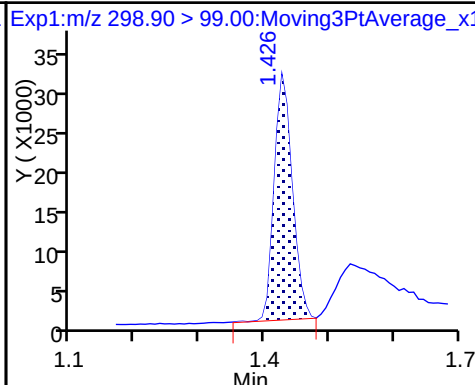
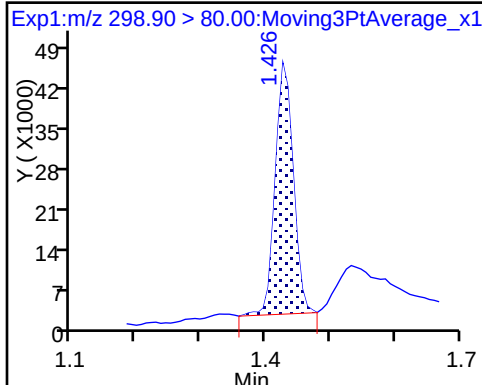
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

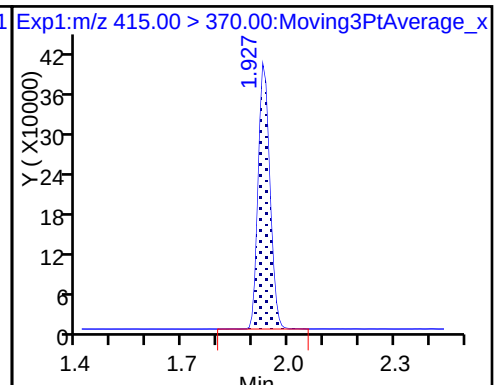
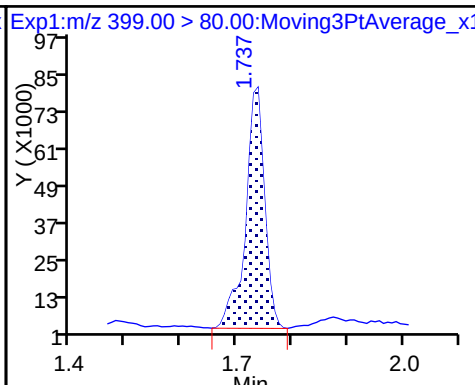
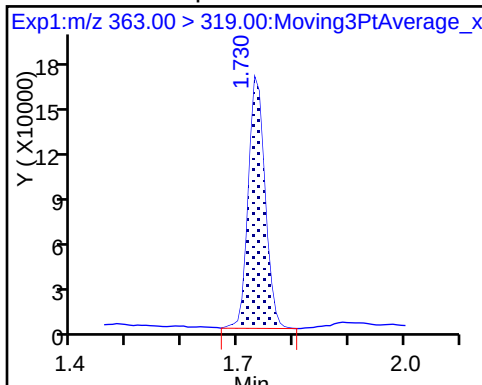
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

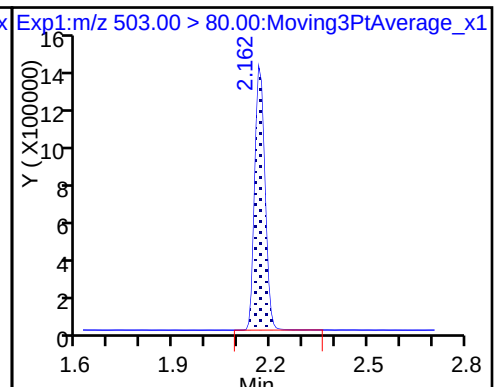
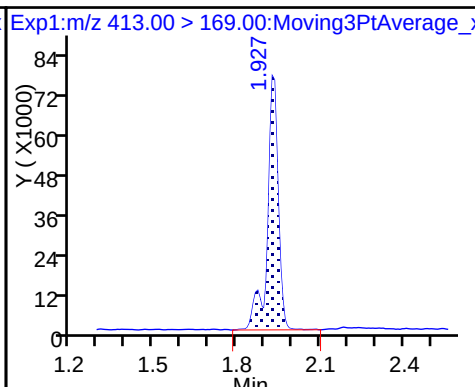
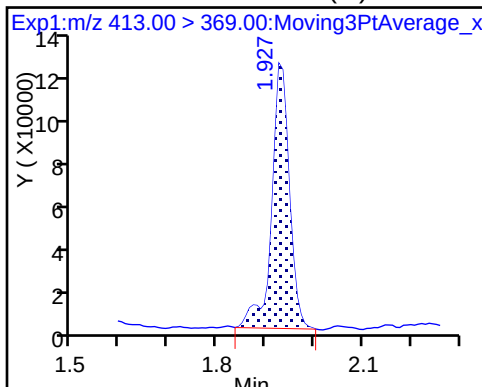
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (M)

5 Perfluorooctanoic acid

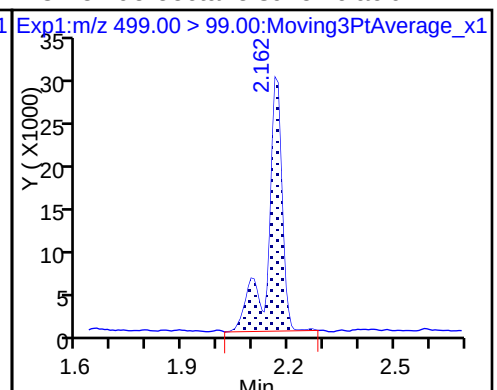
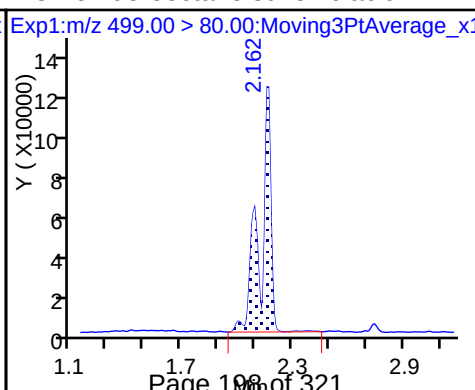
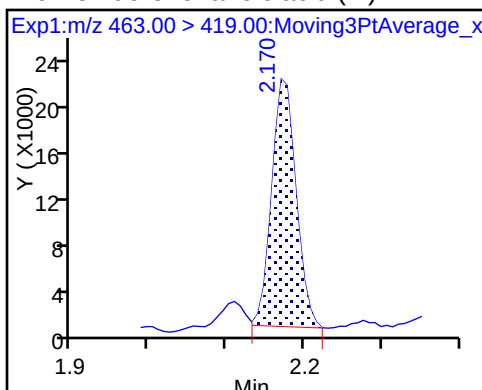
\* 7 13C4 PFOS



9 Perfluorononanoic acid (M)

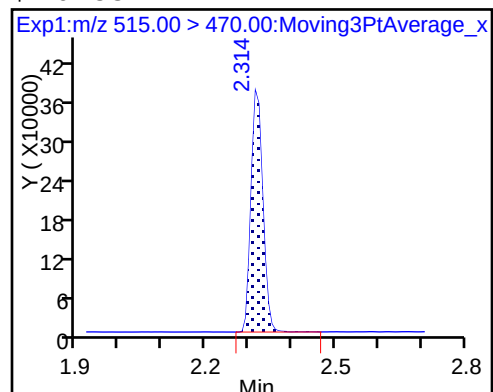
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid





\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_031.d  
Lims ID: 320-29346-A-16-A  
Client ID: WGNA-062117-RW-2426  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:48:31 ALS Bottle#: 21 Worklist Smp#: 31  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-16-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:39 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:11:20

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 8.61             | 86.14  |
| \$ 10 13C2 PFDA | 10.0         | 9.28             | 92.81  |

## TestAmerica Sacramento

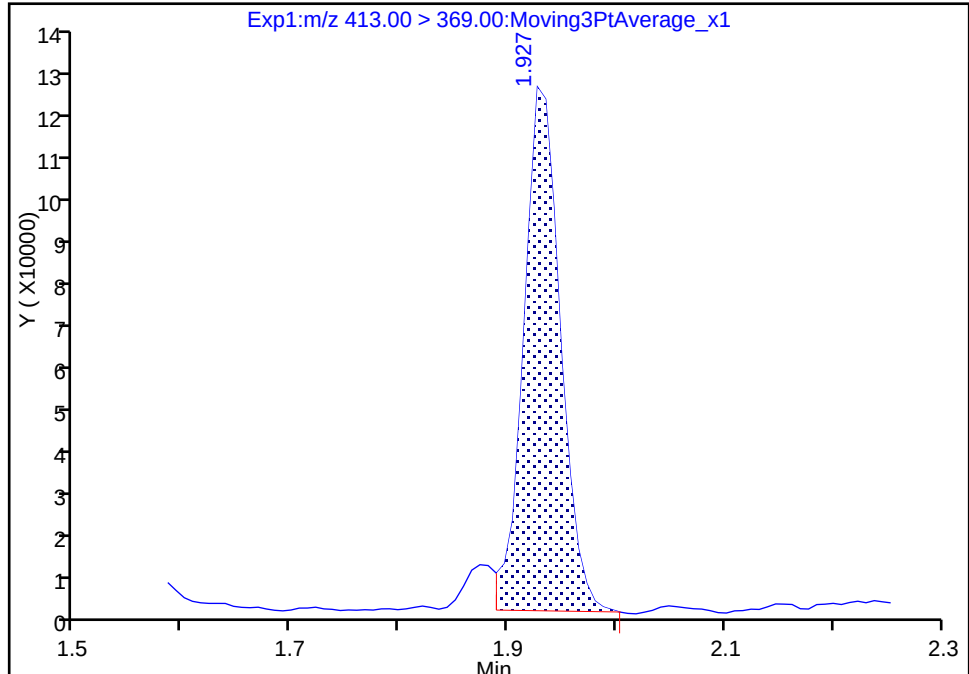
|                 |                                                                            |                |              |                |    |
|-----------------|----------------------------------------------------------------------------|----------------|--------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20170708-45208.b\2017.07.08_537A_031.d |                |              |                |    |
| Injection Date: | 08-Jul-2017 13:48:31                                                       | Instrument ID: | A8_N         |                |    |
| Lims ID:        | 320-29346-A-16-A                                                           | Lab Sample ID: | 320-29346-16 |                |    |
| Client ID:      | WGNA-062117-RW-2426                                                        |                |              |                |    |
| Operator ID:    | SACINSTLCMS01                                                              | ALS Bottle#:   | 21           | Worklist Smp#: | 31 |
| Injection Vol:  | 2.0 ul                                                                     | Dil. Factor:   | 1.0000       |                |    |
| Method:         | 537_A8_N                                                                   | Limit Group:   | LC 537 ICAL  |                |    |
| Column:         |                                                                            | Detector:      | EXP1         |                |    |

**5 Perfluorooctanoic acid, CAS: 335-67-1**

Signal: 1

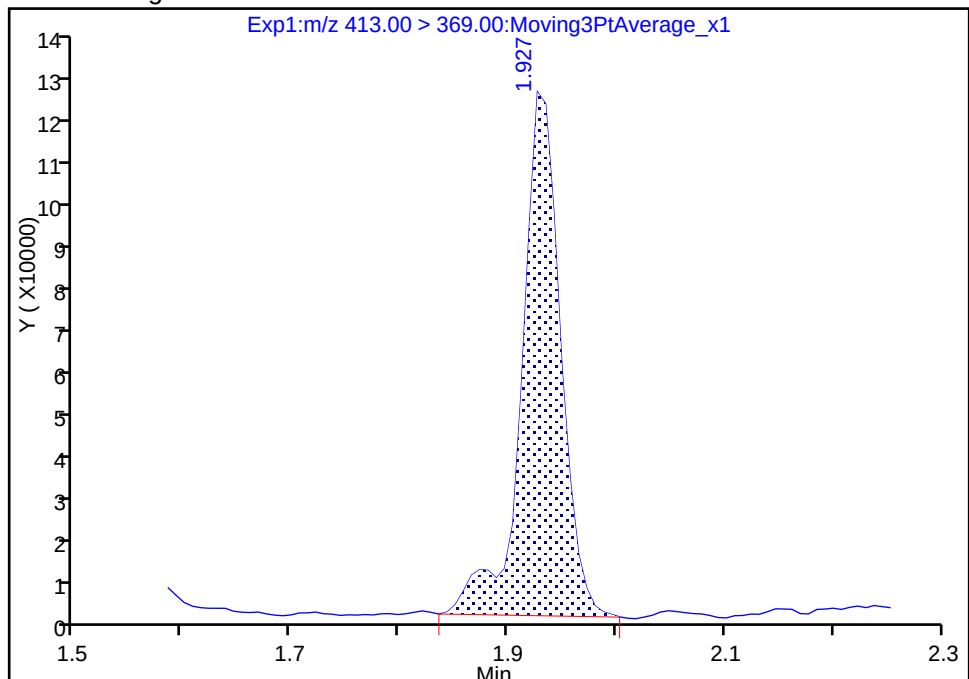
RT: 1.93  
Area: 275762  
Amount: 3.309888  
Amount Units: ng/ml

## Processing Integration Results



RT: 1.93  
Area: 294644  
Amount: 3.536523  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:10:48  
Audit Action: Manually Integrated

Audit Reason: Isomers  
Page 201 of 321

## TestAmerica Sacramento

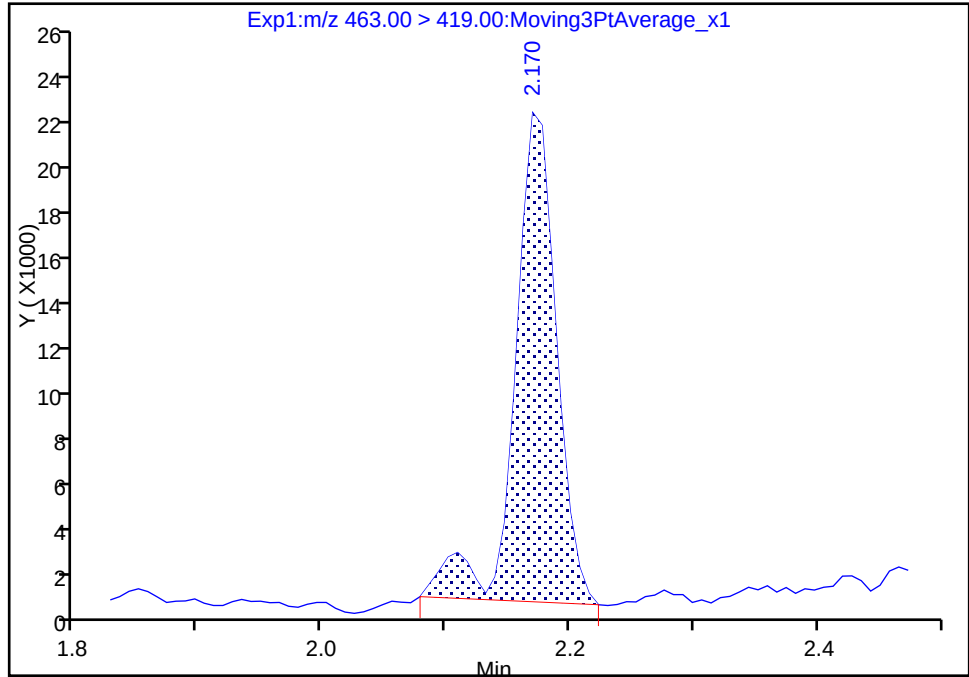
|                 |                                                                            |                |              |                |    |
|-----------------|----------------------------------------------------------------------------|----------------|--------------|----------------|----|
| Data File:      | \\ChromNa\Sacramento\ChromData\A8_N\20170708-45208.b\2017.07.08_537A_031.d |                |              |                |    |
| Injection Date: | 08-Jul-2017 13:48:31                                                       | Instrument ID: | A8_N         |                |    |
| Lims ID:        | 320-29346-A-16-A                                                           | Lab Sample ID: | 320-29346-16 |                |    |
| Client ID:      | WGNA-062117-RW-2426                                                        |                |              |                |    |
| Operator ID:    | SACINSTLCMS01                                                              | ALS Bottle#:   | 21           | Worklist Smp#: | 31 |
| Injection Vol:  | 2.0 ul                                                                     | Dil. Factor:   | 1.0000       |                |    |
| Method:         | 537_A8_N                                                                   | Limit Group:   | LC 537 ICAL  |                |    |
| Column:         |                                                                            | Detector       | EXP1         |                |    |

**9 Perfluorononanoic acid, CAS: 375-95-1**

Signal: 1

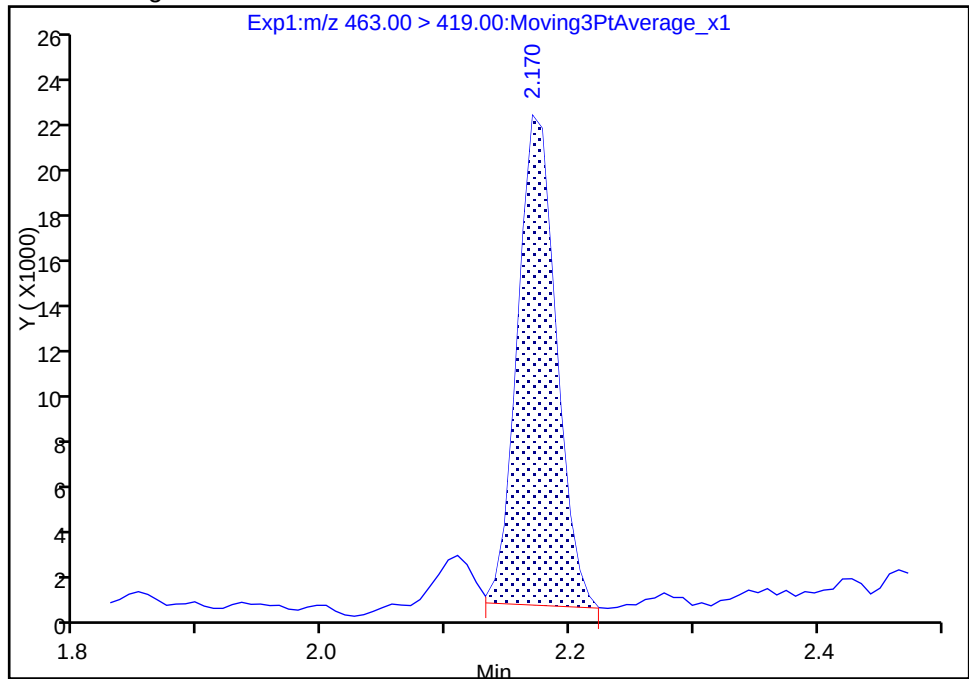
RT: 2.17  
Area: 50256  
Amount: 0.674641  
Amount Units: ng/ml

## Processing Integration Results



RT: 2.17  
Area: 46673  
Amount: 0.626542  
Amount Units: ng/ml

## Manual Integration Results



Reviewer: barnettj, 10-Jul-2017 10:11:14

Audit Action: Manually Integrated

Audit Reason: Split Peak

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-2426</u> | Lab Sample ID: <u>320-29346-17</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_032.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 08:30</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>265.8 (mL)</u>              | Date Analyzed: <u>07/08/2017 13:53</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173117</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 94   |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_032.d  
 Lims ID: 320-29346-A-17-A  
 Client ID: WGNA-062117-FRB-2426  
 Sample Type: Client  
 Inject. Date: 08-Jul-2017 13:53:16 ALS Bottle#: 22 Worklist Smp#: 32  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: 320-29346-a-17-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:39 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:11:31

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|

\$ 2 13C2 PFHxA

315.00 &gt; 270.00 1.563 1.539 0.024 1.000 1035611 9.73 5447

\* 6 13C2-PFOA

415.00 &gt; 370.00 1.927 1.878 0.049 936994 10.0 3752

\* 7 13C4 PFOS

503.00 &gt; 80.00 2.162 2.117 0.045 2958006 28.7 4301

\$ 10 13C2 PFDA

515.00 &gt; 470.00 2.314 2.281 0.033 1.000 740182 9.41 1603

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_032.d

Injection Date: 08-Jul-2017 13:53:16

Instrument ID: A8\_N

Lims ID: 320-29346-A-17-A

Lab Sample ID: 320-29346-17

Client ID: WGNA-062117-FRB-2426

Operator ID: SACINSTLCMS01

ALS Bottle#: 22

Worklist Smp#: 32

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

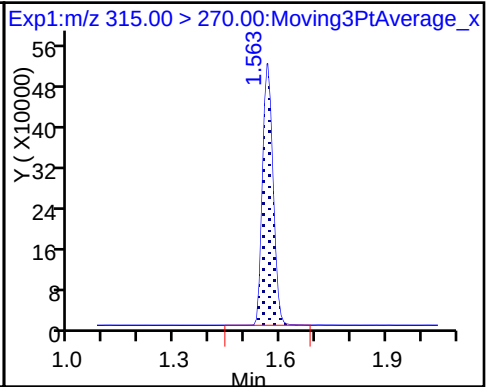
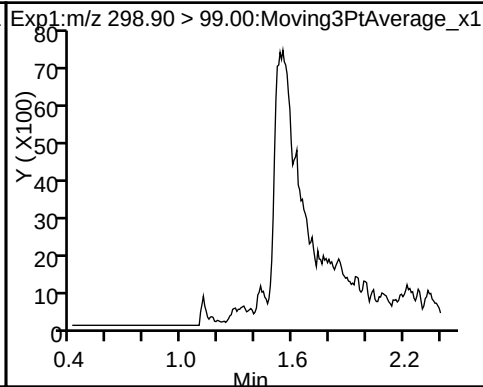
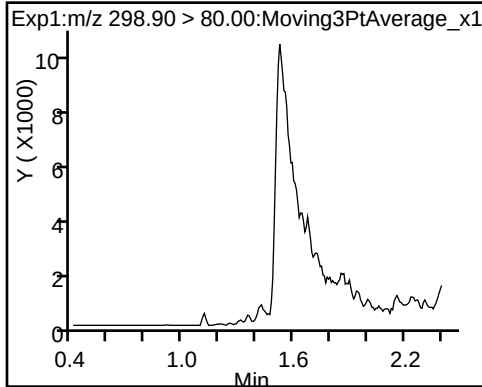
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

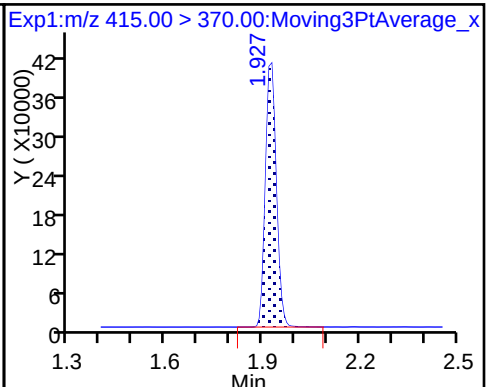
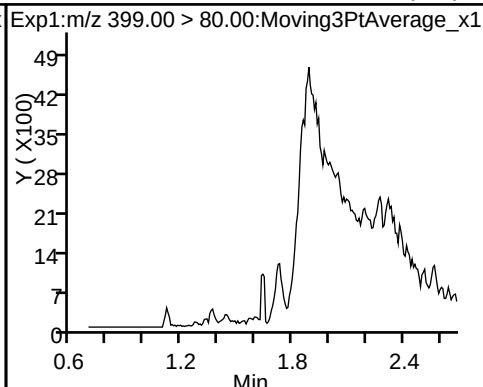
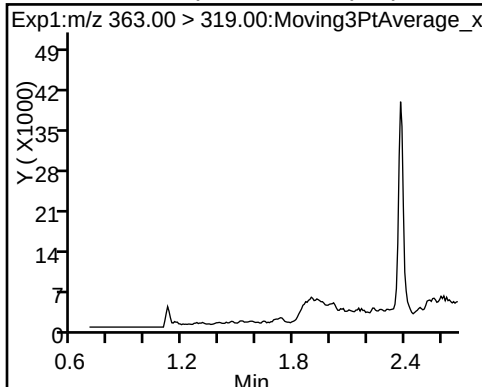
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

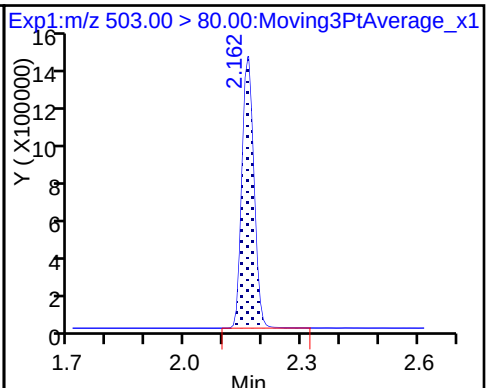
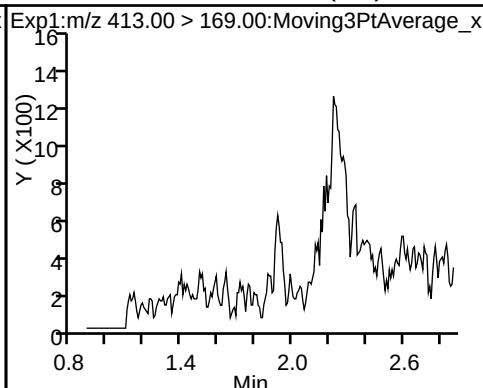
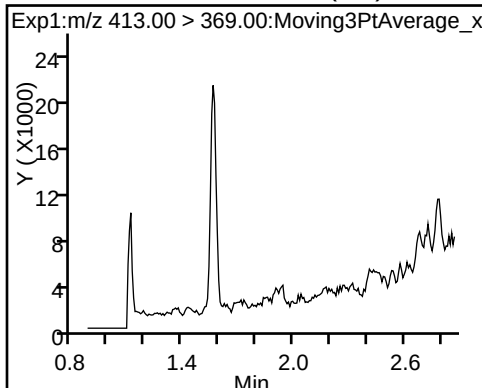
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

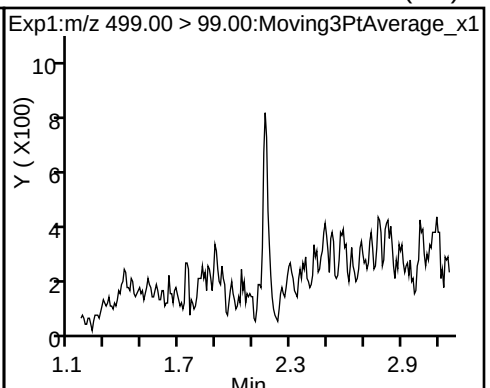
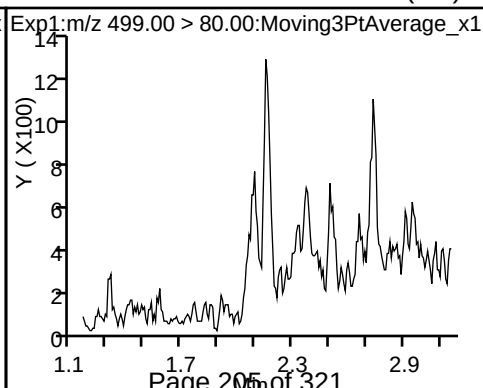
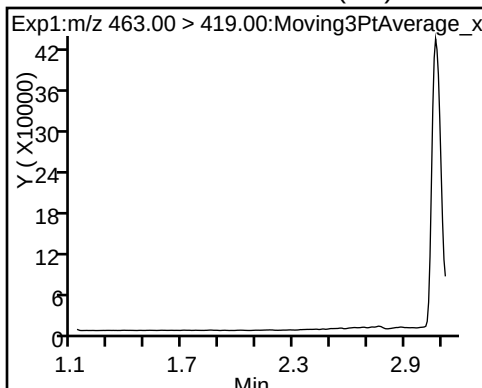
\* 7 13C4 PFOS



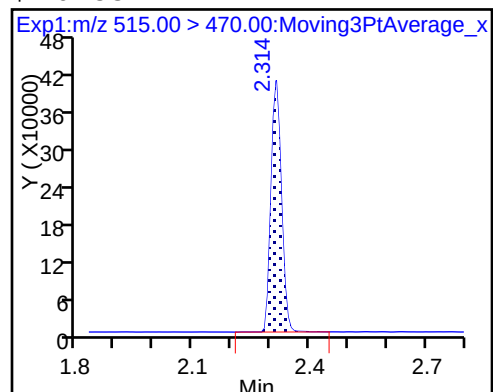
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA





TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_032.d  
Lims ID: 320-29346-A-17-A  
Client ID: WGNA-062117-FRB-2426  
Sample Type: Client  
Inject. Date: 08-Jul-2017 13:53:16 ALS Bottle#: 22 Worklist Smp#: 32  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: 320-29346-a-17-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:14:39 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:11:31

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.73             | 97.28  |
| \$ 10 13C2 PFDA | 10.0         | 9.41             | 94.09  |

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

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1 Analy Batch No.: 172646

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

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2017 19:50 Calibration End Date: 07/05/2017 20:13 Calibration ID: 32198

Calibration Files:

|         |                 |                           |
|---------|-----------------|---------------------------|
| LEVEL:  | LAB SAMPLE ID:  | LAB FILE ID:              |
| Level 1 | IC 320-172646/4 | 2017.07.05_537CURVE_004.d |
| Level 2 | IC 320-172646/5 | 2017.07.05_537CURVE_005.d |
| Level 3 | IC 320-172646/6 | 2017.07.05_537CURVE_006.d |
| Level 4 | IC 320-172646/7 | 2017.07.05_537CURVE_007.d |
| Level 5 | IC 320-172646/8 | 2017.07.05_537CURVE_008.d |
| Level 6 | IC 320-172646/9 | 2017.07.05_537CURVE_009.d |

| ANALYTE                              | RRF              |        |        |        |        | CURVE<br>TYPE | COEFFICIENT |        |    | # | MIN RRF | %RSD | # | MAX<br>%RSD | R^2<br>OR COD | # | MIN R^2<br>OR COD |
|--------------------------------------|------------------|--------|--------|--------|--------|---------------|-------------|--------|----|---|---------|------|---|-------------|---------------|---|-------------------|
|                                      | LVL 1<br>LVL 6   | LVL 2  | LVL 3  | LVL 4  | LVL 5  |               | B           | M1     | M2 |   |         |      |   |             |               |   |                   |
| Perfluorobutanesulfonic acid (PFBS)  | 0.9481<br>0.7897 | 0.9454 | 0.9006 | 0.8560 | 0.9067 | Ave           |             | 0.8911 |    |   |         | 6.7  |   | 30.0        |               |   |                   |
| Perfluoroheptanoic acid (PFHpA)      | 1.0233<br>1.0518 | 1.1219 | 1.0105 | 1.0079 | 1.0586 | Ave           |             | 1.0457 |    |   |         | 4.1  |   | 30.0        |               |   |                   |
| Perfluorohexanesulfonic acid (PFHxS) | 1.4151<br>1.3485 | 1.4140 | 1.3485 | 1.3337 | 1.5012 | Ave           |             | 1.3935 |    |   |         | 4.6  |   | 30.0        |               |   |                   |
| Perfluorooctanoic acid (PFOA)        | 0.8653<br>0.9458 | 0.9483 | 0.8907 | 0.9155 | 0.9646 | Ave           |             | 0.9217 |    |   |         | 4.1  |   | 30.0        |               |   |                   |
| Perfluorooctanesulfonic acid (PFOS)  | 1.0233<br>0.9990 | 1.0180 | 1.0066 | 1.0023 | 1.0955 | Ave           |             | 1.0241 |    |   |         | 3.5  |   | 30.0        |               |   |                   |
| Perfluorononanoic acid (PFNA)        | 0.8166<br>0.8011 | 0.8671 | 0.8018 | 0.8165 | 0.8416 | Ave           |             | 0.8241 |    |   |         | 3.1  |   | 30.0        |               |   |                   |
| 13C2 PFHxA                           | 1.0491<br>1.1558 | 1.1981 | 1.1291 | 1.1054 | 1.1794 | Ave           |             | 1.1362 |    |   |         | 4.8  |   | 30.0        |               |   |                   |
| 13C2 PFDA                            | 0.8223<br>0.8325 | 0.8717 | 0.8508 | 0.8171 | 0.8428 | Ave           |             | 0.8395 |    |   |         | 2.4  |   | 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.: 320-29346-1 Analy Batch No.: 172646

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

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2017 19:50 Calibration End Date: 07/05/2017 20:13 Calibration ID: 32198

Calibration Files:

|         |                 |                           |
|---------|-----------------|---------------------------|
| LEVEL:  | LAB SAMPLE ID:  | LAB FILE ID:              |
| Level 1 | IC 320-172646/4 | 2017.07.05_537CURVE_004.d |
| Level 2 | IC 320-172646/5 | 2017.07.05_537CURVE_005.d |
| Level 3 | IC 320-172646/6 | 2017.07.05_537CURVE_006.d |
| Level 4 | IC 320-172646/7 | 2017.07.05_537CURVE_007.d |
| Level 5 | IC 320-172646/8 | 2017.07.05_537CURVE_008.d |
| Level 6 | IC 320-172646/9 | 2017.07.05_537CURVE_009.d |

| ANALYTE                                 | IS<br>REF  | CURVE<br>TYPE | RESPONSE           |         |         |         |          | CONCENTRATION (NG/ML) |       |       |       |       |
|-----------------------------------------|------------|---------------|--------------------|---------|---------|---------|----------|-----------------------|-------|-------|-------|-------|
|                                         |            |               | LVL 1<br>LVL 6     | LVL 2   | LVL 3   | LVL 4   | LVL 5    | LVL 1<br>LVL 6        | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| Perfluorobutanesulfonic acid (PFBS)     | PFOS       | Ave           | 803806<br>14234634 | 1925519 | 3823269 | 7725129 | 11133396 | 8.83<br>176           | 21.2  | 44.4  | 89.4  | 133   |
| Perfluoroheptanoic acid (PFHpA)         | 13PF<br>OA | Ave           | 101135<br>1993330  | 250235  | 490415  | 984967  | 1494114  | 0.990<br>19.7         | 2.38  | 4.97  | 10.0  | 14.9  |
| Perfluorohexanesulfonic acid<br>(PFHxS) | PFOS       | Ave           | 408251<br>8271288  | 980019  | 1948018 | 4095579 | 6272381  | 3.01<br>59.7          | 7.21  | 15.1  | 30.4  | 45.1  |
| Perfluorooctanoic acid (PFOA)           | 13PF<br>OA | Ave           | 172606<br>3617366  | 426873  | 872357  | 1805622 | 2747595  | 2.00<br>39.7          | 4.80  | 10.0  | 20.2  | 30.0  |
| Perfluorooctanesulfonic acid (PFOS)     | PFOS       | Ave           | 393122<br>8159668  | 939618  | 1936577 | 4098834 | 6095701  | 4.00<br>79.6          | 9.61  | 20.1  | 40.5  | 60.0  |
| Perfluorononanoic acid (PFNA)           | 13PF<br>OA | Ave           | 157013<br>2953507  | 376270  | 756974  | 1552293 | 2310846  | 1.93<br>38.3          | 4.62  | 9.68  | 19.5  | 28.9  |
| 13C2 PFHxA                              | 13PF<br>OA | Ave           | 1047405<br>1113221 | 1124762 | 1101523 | 1077727 | 1120950  | 10.0<br>10.0          | 10.0  | 10.0  | 10.0  | 10.0  |
| 13C2 PFDA                               | 13PF<br>OA | Ave           | 820977<br>801864   | 818323  | 829957  | 796662  | 800975   | 10.0<br>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.: 320-29346-1 Analy Batch No.: 172646

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

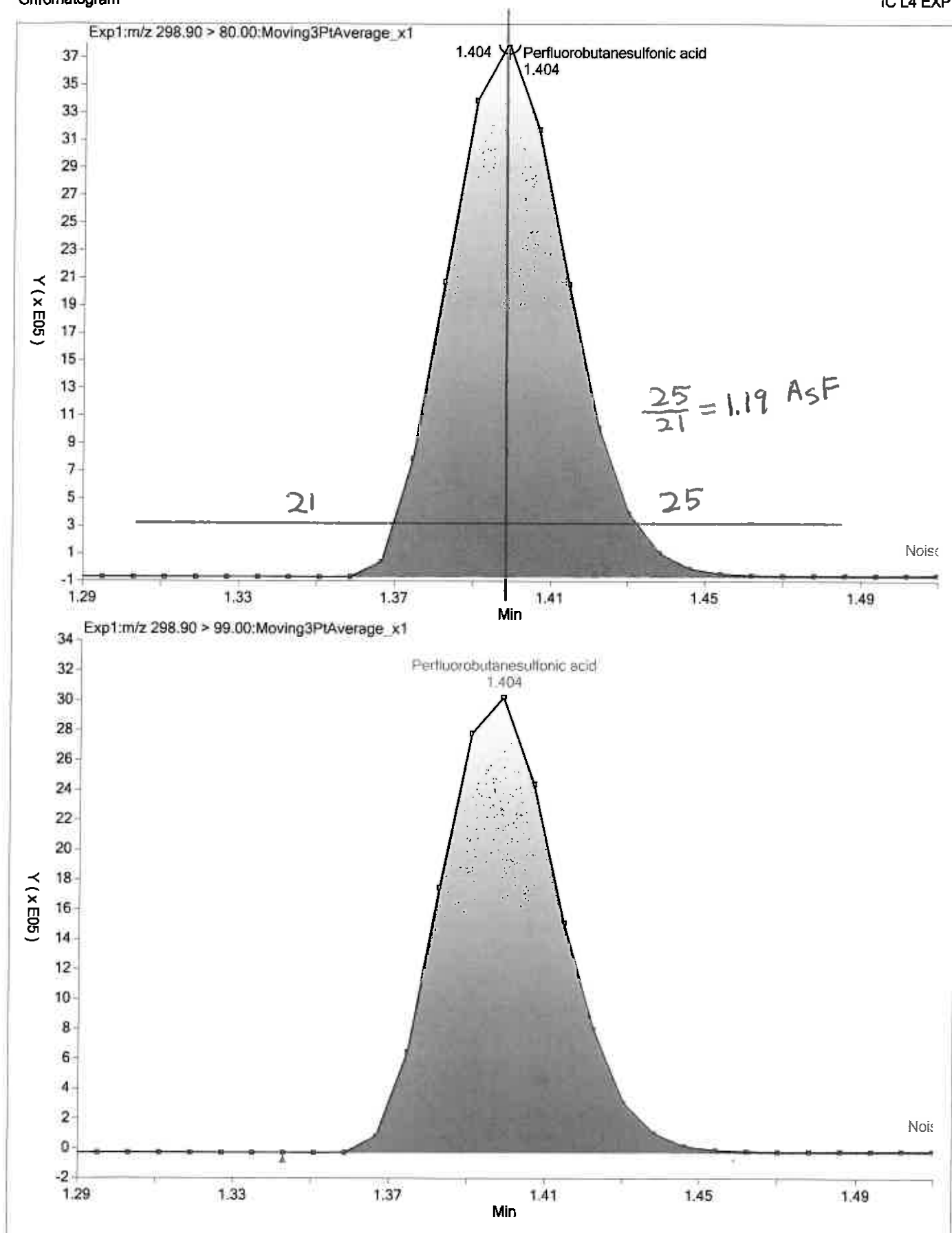
Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

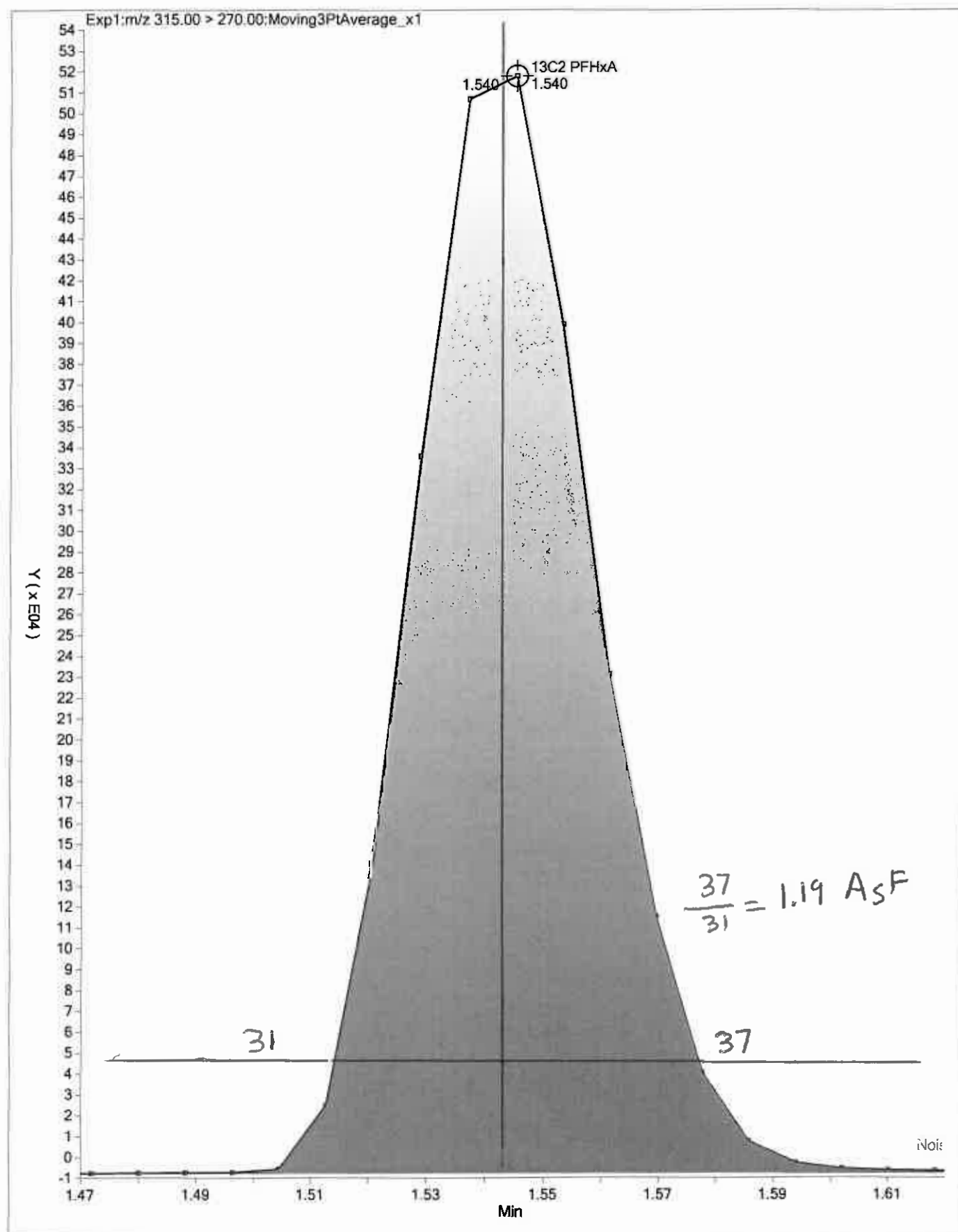
Calibration Start Date: 07/05/2017 19:50 Calibration End Date: 07/05/2017 20:13 Calibration ID: 32198

Calibration Files:

| LEVEL:  | LAB SAMPLE ID:  | LAB FILE ID:              |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-172646/4 | 2017.07.05_537CURVE_004.d |
| Level 2 | IC 320-172646/5 | 2017.07.05_537CURVE_005.d |
| Level 3 | IC 320-172646/6 | 2017.07.05_537CURVE_006.d |
| Level 4 | IC 320-172646/7 | 2017.07.05_537CURVE_007.d |
| Level 5 | IC 320-172646/8 | 2017.07.05_537CURVE_008.d |
| Level 6 | IC 320-172646/9 | 2017.07.05_537CURVE_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)  | 6.4           | 6.1     | 1.1     | -3.9    | 1.8     | -11.4   | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluoroheptanoic acid (PFHpA)      | -2.1          | 7.3     | -3.4    | -3.6    | 1.2     | 0.6     | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorohexanesulfonic acid (PFHxS) | 1.6           | 1.5     | -3.2    | -4.3    | 7.7     | -3.2    | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorooctanoic acid (PFOA)        | -6.1          | 2.9     | -3.4    | -0.7    | 4.7     | 2.6     | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorooctanesulfonic acid (PFOS)  | -0.1          | -0.6    | -1.7    | -2.1    | 7.0     | -2.5    | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorononanoic acid (PFNA)        | -0.9          | 5.2     | -2.7    | -0.9    | 2.1     | -2.8    | 50                  | 50    | 50    | 50    | 50    | 50    |
| 13C2 PFHxA                           | -7.7          | 5.5     | -0.6    | -2.7    | 3.8     | 1.7     | 30                  | 30    | 30    | 30    | 30    | 30    |
| 13C2 PFDA                            | -2.0          | 3.8     | 1.3     | -2.7    | 0.4     | -0.8    | 30                  | 30    | 30    | 30    | 30    | 30    |





TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_004.d  
 Lims ID: IC L1  
 Client ID:  
 Sample Type: IC Calib Level: 1  
 Inject. Date: 05-Jul-2017 19:50:03 ALS Bottle#: 1 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L1\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:30 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: westendorfc

Date: 06-Jul-2017 10:59:22

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 803806   | 9.40         |                 | 272  |       |
| 298.90 > 99.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 646416   |              | 1.24(0.00-0.00) | 310  |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.540 | 1.539  | 0.001  | 1.000  | 1047405  | 9.23         |                 | 3630 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.692 | 1.691  | 0.001  | 1.000  | 101135   | 0.9688       |                 | 15.5 | M     |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.692 | 1.692  | 0.0    | 1.000  | 408251   | 3.05         |                 | 136  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.882 | 1.878  | 0.004  |        | 998347   | 10.0         |                 | 3971 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 172606   | 1.88         |                 | 20.9 |       |
| 413.00 > 169.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 106296   |              | 1.62(0.00-0.00) | 105  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.117 | 2.117  | 0.0    |        | 2752369  | 28.7         |                 | 3870 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.124 | 2.124  | 0.0    | 1.000  | 393122   | 4.00         |                 | 395  |       |
| 499.00 > 99.00                  | 2.117 | 2.124  | -0.007 | 0.996  | 88646    |              | 4.43(0.00-0.00) | 221  |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.124 | 2.124  | 0.0    | 1.000  | 157013   | 1.91         |                 | 27.9 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.284 | 2.281  | 0.003  | 1.000  | 820977   | 9.80         |                 | 2019 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## Reagents:

LC537-L1\_00019

Amount Added: 1.00

Units: mL



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_004.d

Injection Date: 05-Jul-2017 19:50:03

Instrument ID: A8\_N

Lims ID: IC L1

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

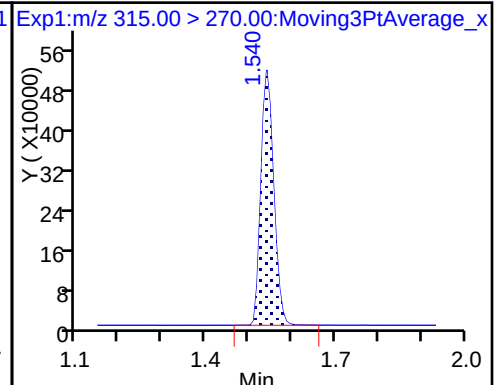
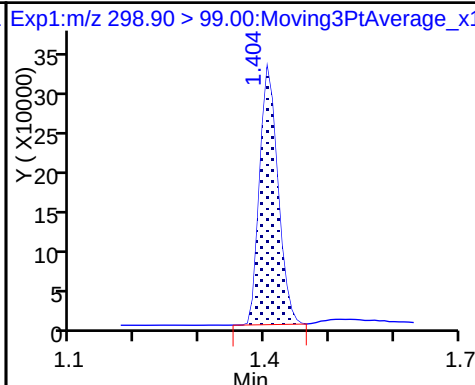
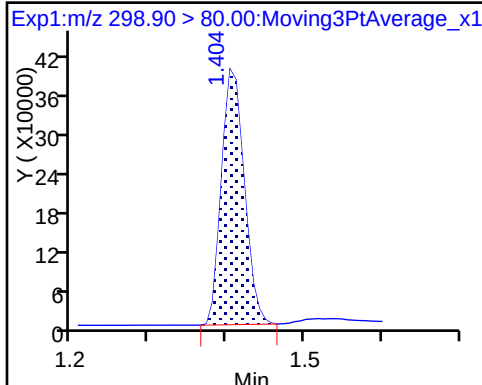
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

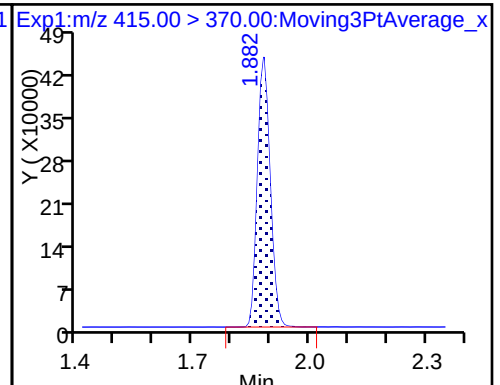
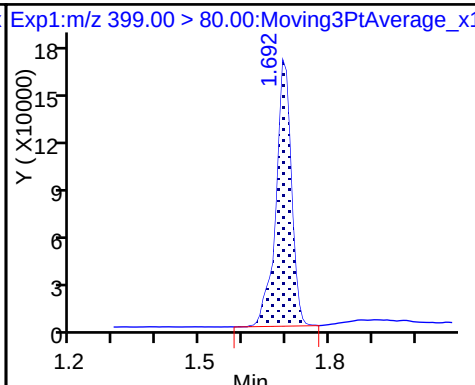
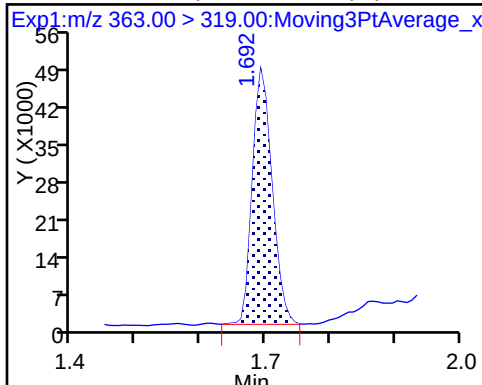
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (M)

3 Perfluorohexanesulfonic acid

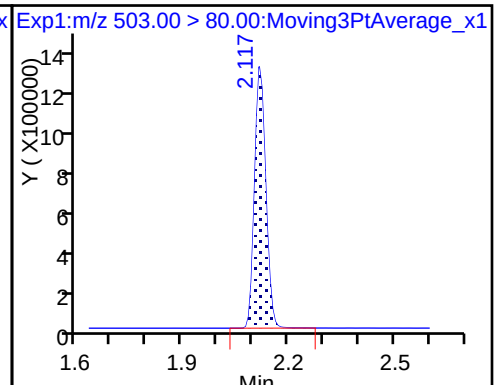
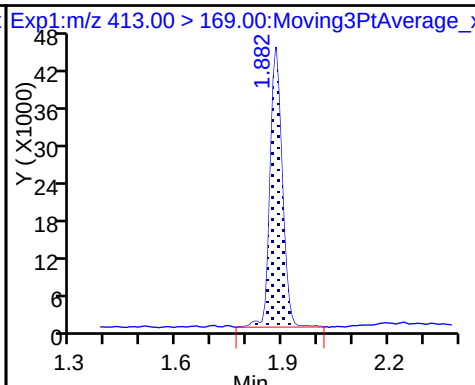
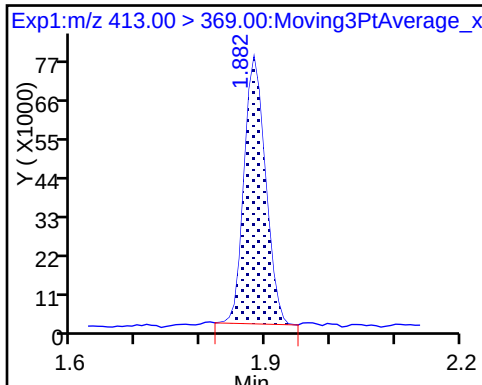
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

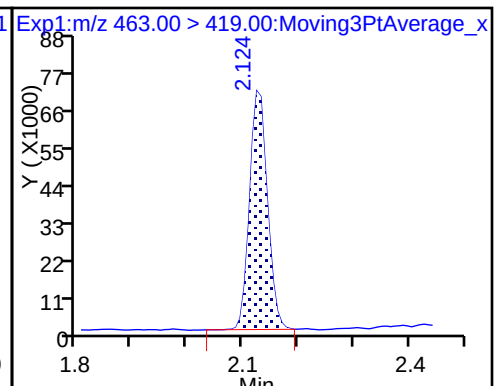
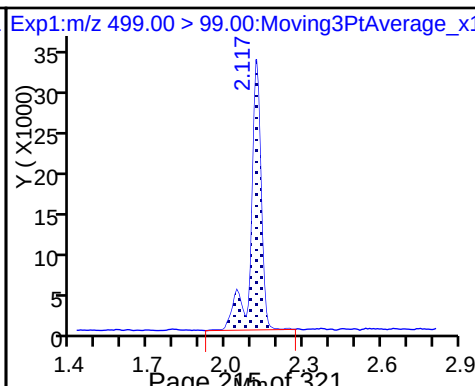
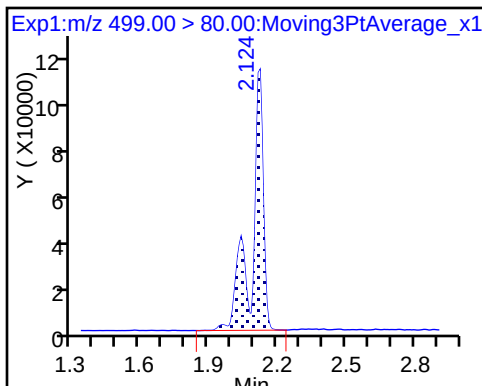
\* 7 13C4 PFOS



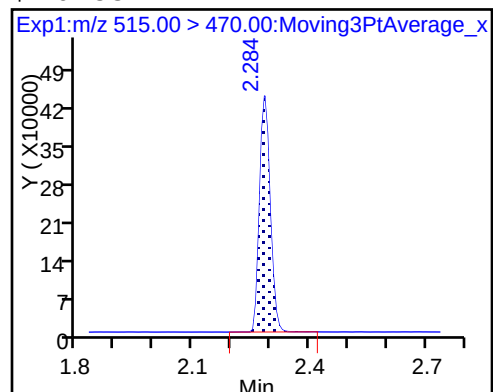
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



## TestAmerica Sacramento

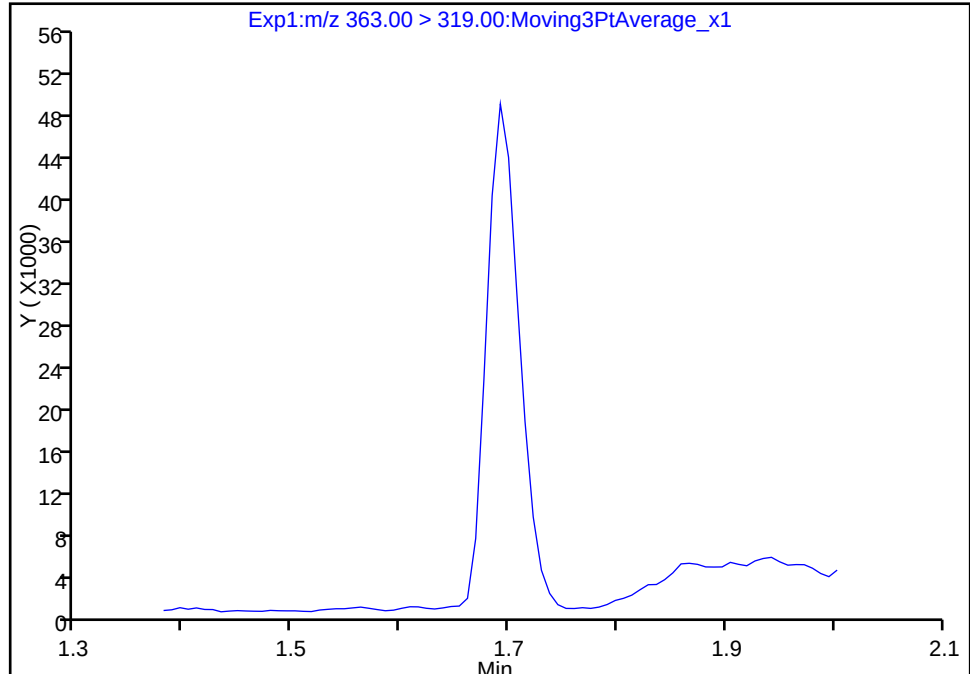
Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_004.d  
Injection Date: 05-Jul-2017 19:50:03 Instrument ID: A8\_N  
Lims ID: IC L1  
Client ID:  
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 4  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Method: 537\_A8\_N Limit Group: LC 537 ICAL  
Column: Detector EXP1

**4 Perfluoroheptanoic acid, CAS: 375-85-9**

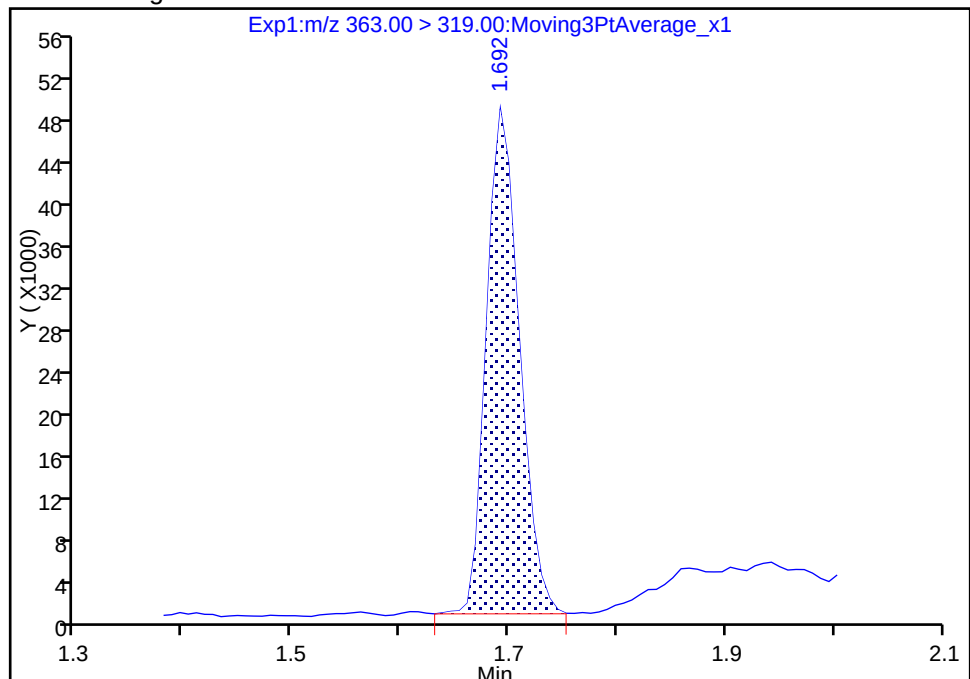
Signal: 1

Not Detected  
Expected RT: 1.69

## Processing Integration Results



## Manual Integration Results



RT: 1.69  
Area: 101135  
Amount: 0.968791  
Amount Units: ng/ml

Reviewer: barnettj, 06-Jul-2017 11:03:45

Audit Action: Manually Integrated

Audit Reason: Missed Peak

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_005.d  
 Lims ID: IC L2  
 Client ID:  
 Sample Type: IC Calib Level: 2  
 Inject. Date: 05-Jul-2017 19:54:49 ALS Bottle#: 2 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L2\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:34 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: westendorfc

Date: 06-Jul-2017 10:59:32

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 1925519  | 22.5         |                 | 627  |       |
| 298.90 > 99.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 1437061  |              | 1.34(0.00-0.00) | 617  |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.533 | 1.539  | -0.006 | 1.000  | 1124762  | 10.5         |                 | 3950 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.684 | 1.691  | -0.007 | 1.000  | 250235   | 2.55         |                 | 35.1 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.692 | 1.692  | 0.0    | 1.000  | 980019   | 7.32         |                 | 336  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.874 | 1.878  | -0.004 |        | 938771   | 10.0         |                 | 3641 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 426873   | 4.93         |                 | 51.1 |       |
| 413.00 > 169.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 256717   |              | 1.66(0.00-0.00) | 260  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.117 | 2.117  | 0.0    |        | 2755145  | 28.7         |                 | 3792 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.124 | 2.124  | 0.0    | 1.000  | 376270   | 4.86         |                 | 63.1 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 939618   | 9.55         |                 | 901  |       |
| 499.00 > 99.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 215298   |              | 4.36(0.00-0.00) | 444  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.284 | 2.281  | 0.003  | 1.000  | 818323   | 10.4         |                 | 2010 |       |

**Reagents:**

LC537-L2\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_005.d

Injection Date: 05-Jul-2017 19:54:49

Instrument ID: A8\_N

Lims ID: IC L2

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

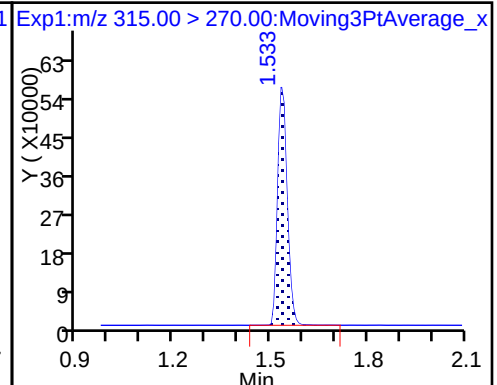
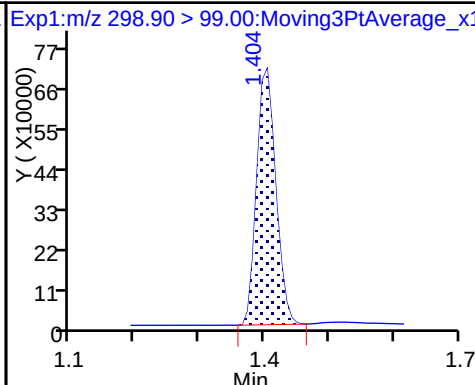
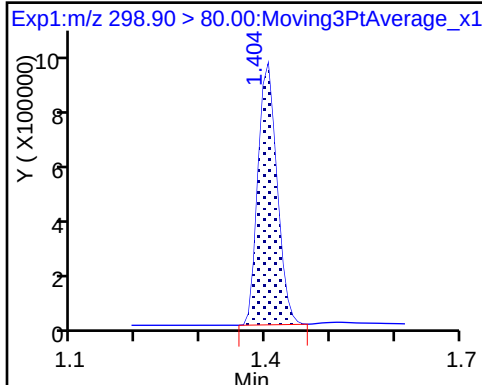
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

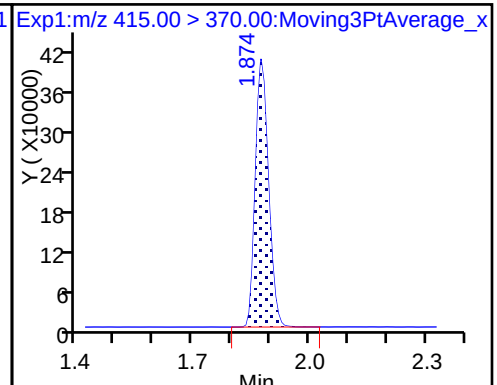
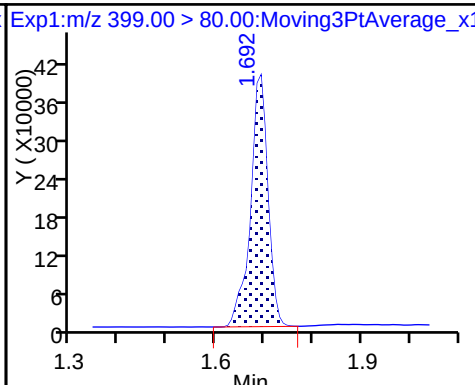
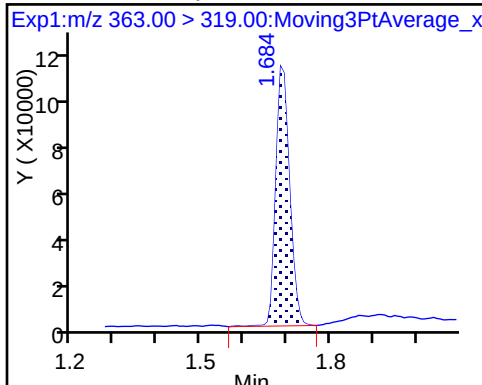
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

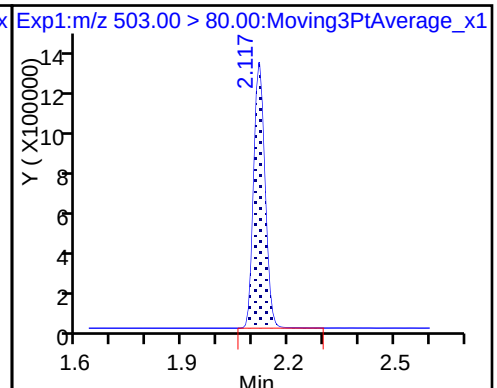
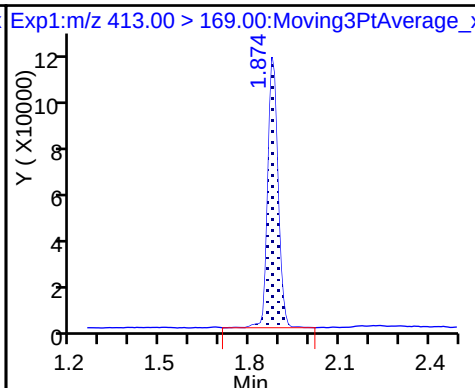
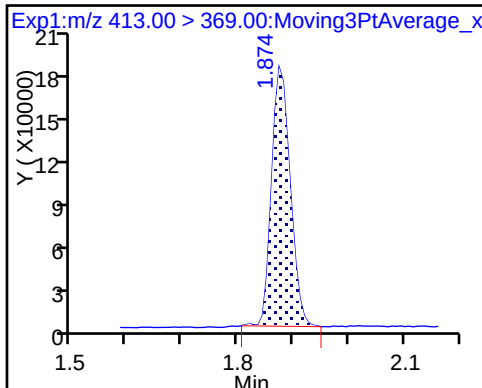
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

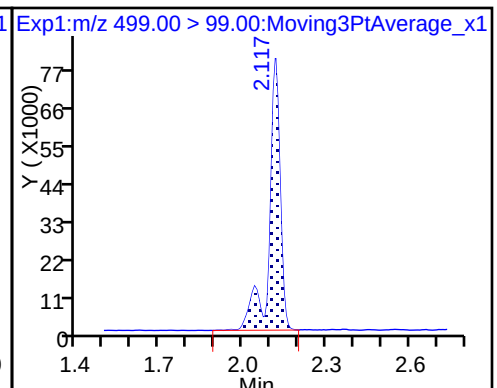
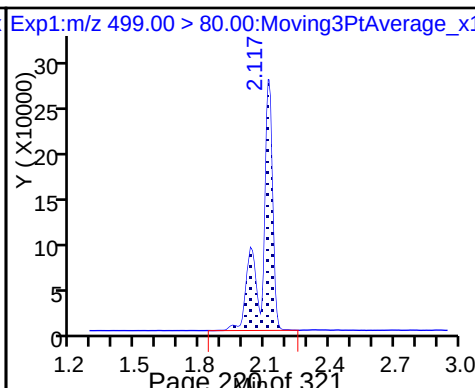
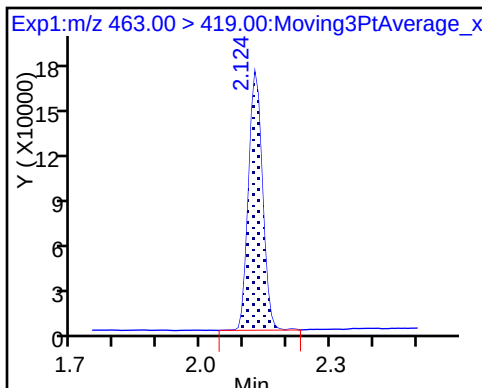
\* 7 13C4 PFOS



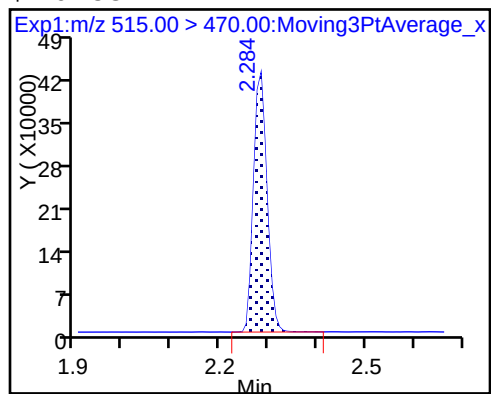
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_006.d  
 Lims ID: IC L3  
 Client ID:  
 Sample Type: IC Calib Level: 3  
 Inject. Date: 05-Jul-2017 19:59:33 ALS Bottle#: 3 Worklist Smp#: 6  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L3\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:41 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: westendorfc

Date: 06-Jul-2017 10:59:07

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 3823269  | 44.9         |                 | 1166 |       |
| 298.90 > 99.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 2920357  |              | 1.31(0.00-0.00) | 1258 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.540 | 1.539  | 0.001  | 1.000  | 1101523  | 9.94         |                 | 3884 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.692 | 1.691  | 0.001  | 1.000  | 490415   | 4.81         |                 | 75.9 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.692 | 1.692  | 0.0    | 1.000  | 1948018  | 14.6         |                 | 651  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.882 | 1.878  | 0.004  |        | 975549   | 10.0         |                 | 3730 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 872357   | 9.70         |                 | 109  |       |
| 413.00 > 169.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 514618   |              | 1.70(0.00-0.00) | 504  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.117 | 2.117  | 0.0    |        | 2742820  | 28.7         |                 | 3791 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 1936577  | 19.8         |                 | 2045 |       |
| 499.00 > 99.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 449750   |              | 4.31(0.00-0.00) | 935  |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.124 | 2.124  | 0.0    | 1.000  | 756974   | 9.42         |                 | 111  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.284 | 2.281  | 0.003  | 1.000  | 829957   | 10.1         |                 | 2049 |       |



**Reagents:**

LC537-L3\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_006.d

Injection Date: 05-Jul-2017 19:59:33

Instrument ID: A8\_N

Lims ID: IC L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

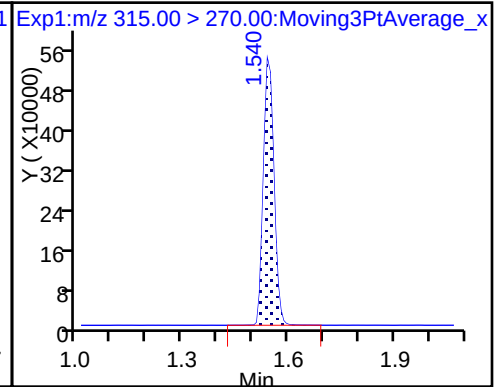
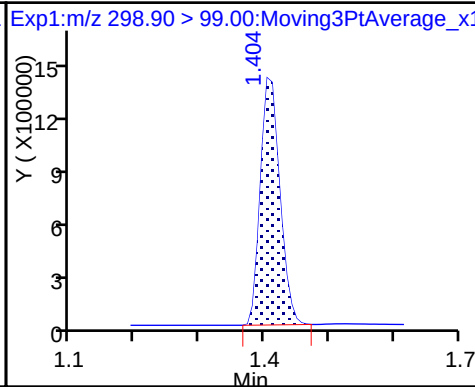
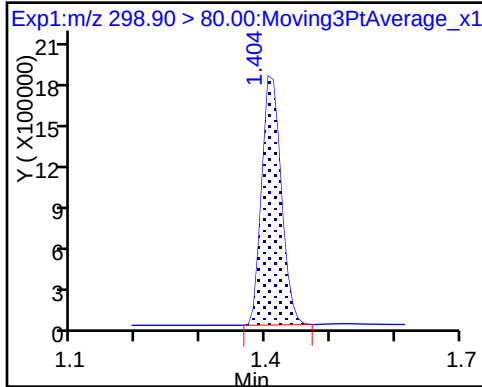
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

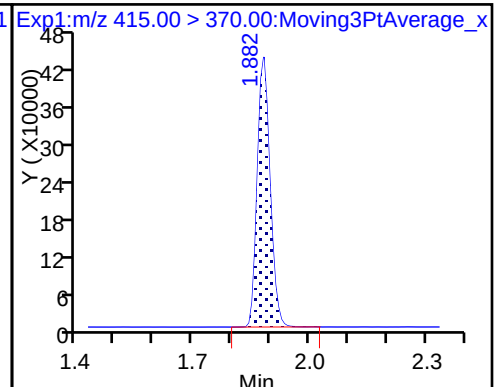
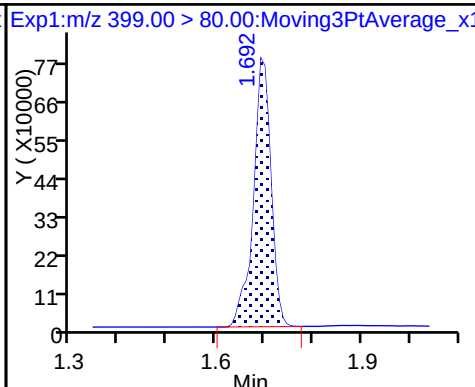
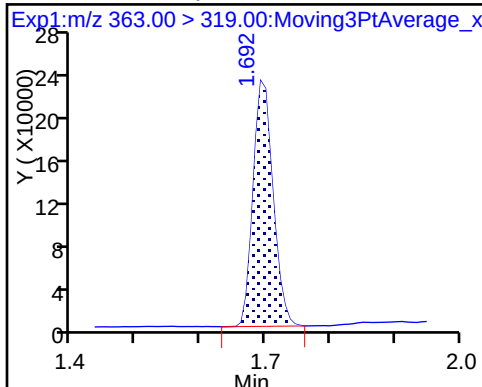
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

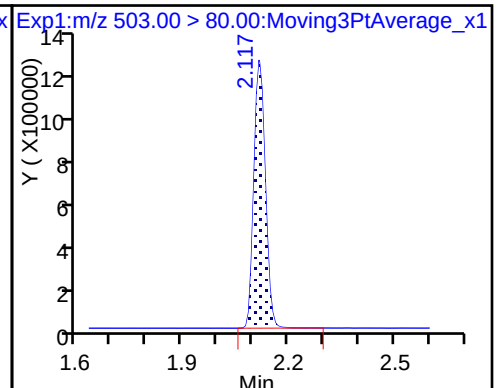
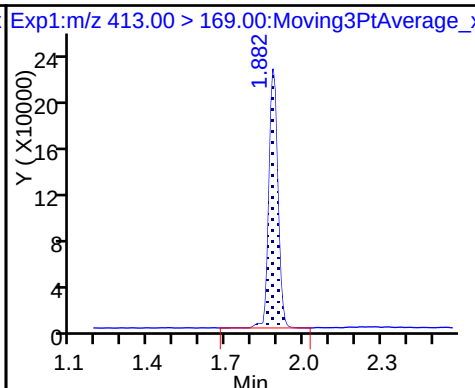
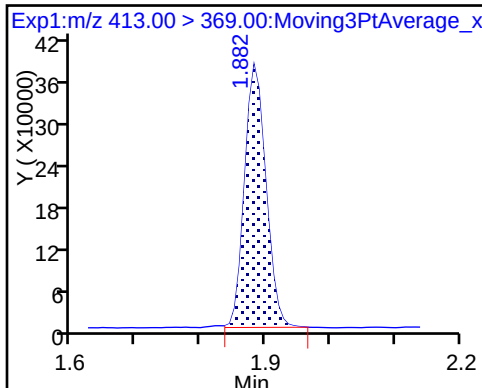
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

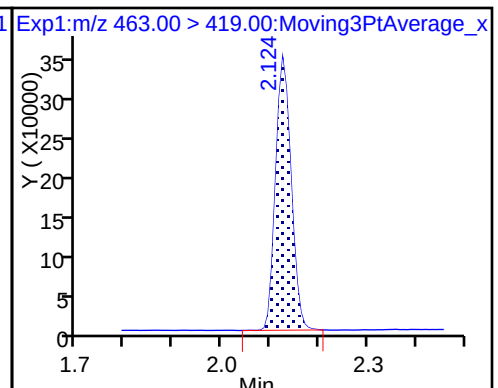
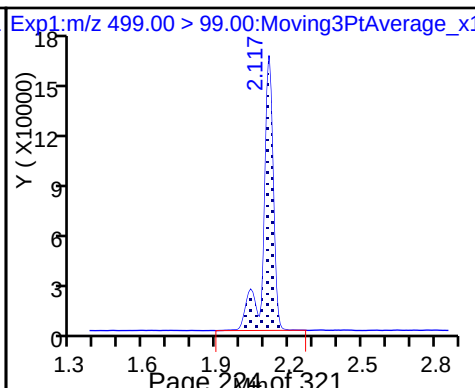
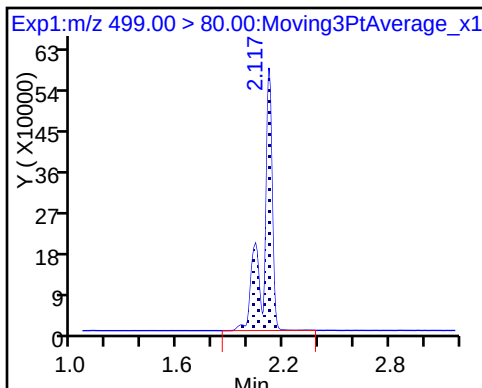
\* 7 13C4 PFOS



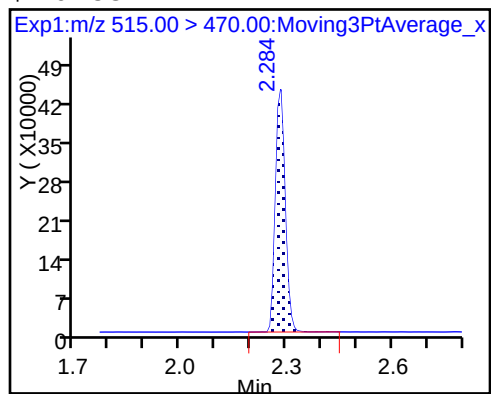
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_007.d  
 Lims ID: IC L4  
 Client ID:  
 Sample Type: ICISAV Calib Level: 4  
 Inject. Date: 05-Jul-2017 20:04:17 ALS Bottle#: 4 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L4\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:45 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: barnettj

Date: 06-Jul-2017 13:17:36

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 7725129  | 85.9         |                 | 2754 |       |
| 298.90 > 99.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 6080754  |              | 1.27(0.00-0.00) | 3025 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.540 | 1.539  | 0.001  | 1.000  | 1077727  | 9.73         |                 | 3508 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.692 | 1.691  | 0.001  | 1.000  | 984967   | 9.66         |                 | 146  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.692 | 1.692  | 0.0    | 1.000  | 4095579  | 29.1         |                 | 1332 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.874 | 1.878  | -0.004 |        | 974930   | 10.0         |                 | 3371 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 1805622  | 20.1         |                 | 203  |       |
| 413.00 > 169.00                 | 1.874 | 1.879  | -0.005 | 0.996  | 1061719  |              | 1.70(0.00-0.00) | 1067 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.117 | 2.117  | 0.0    |        | 2893551  | 28.7         |                 | 3911 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.124 | 2.124  | 0.0    | 1.000  | 1552293  | 19.3         |                 | 265  |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 4098834  | 39.7         |                 | 3405 |       |
| 499.00 > 99.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 919355   |              | 4.46(0.00-0.00) | 1708 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.276 | 2.281  | -0.005 | 1.000  | 796662   | 9.73         |                 | 1776 |       |

**Reagents:**

LC537-L4\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_007.d

Injection Date: 05-Jul-2017 20:04:17

Instrument ID: A8\_N

Lims ID: IC L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

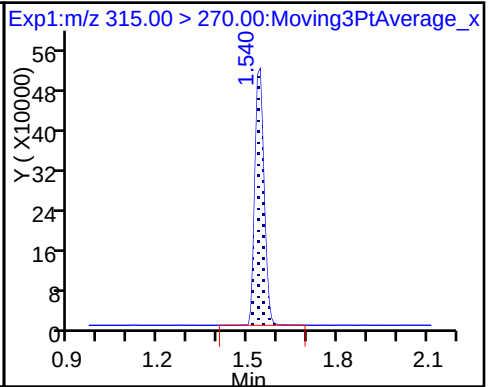
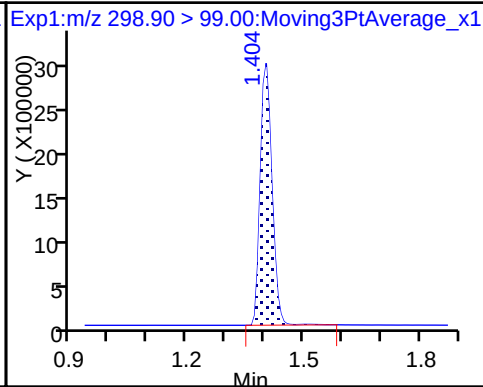
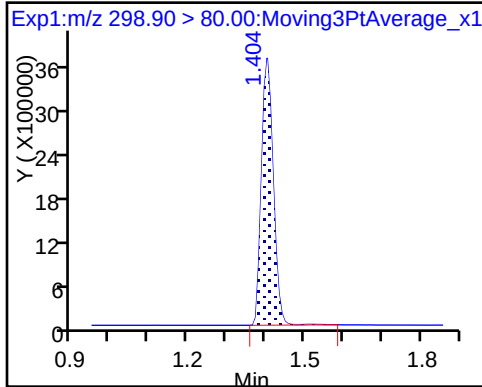
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

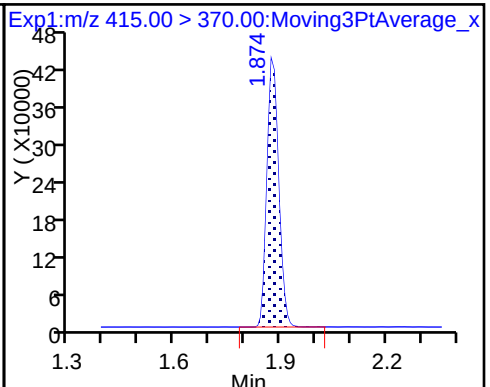
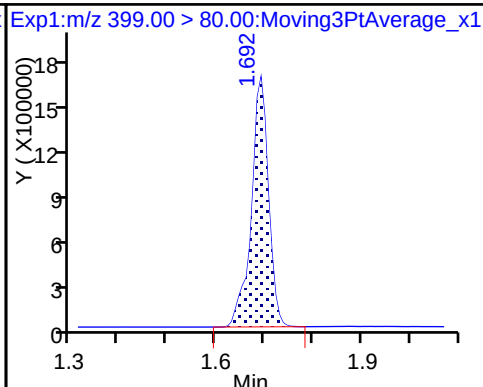
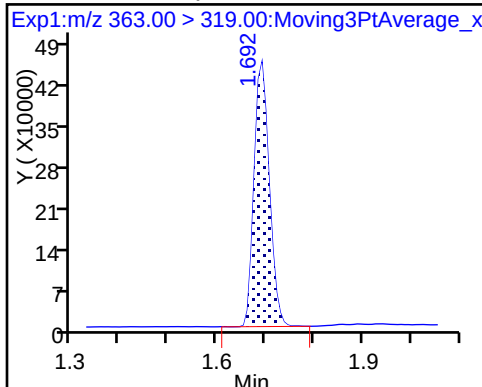
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

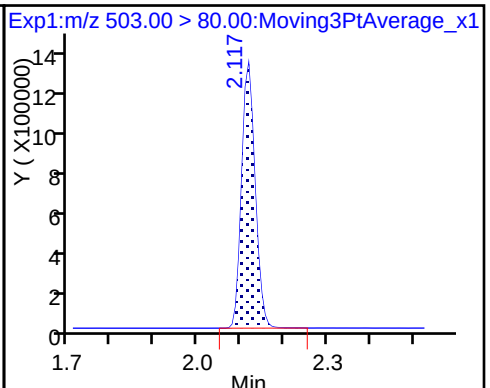
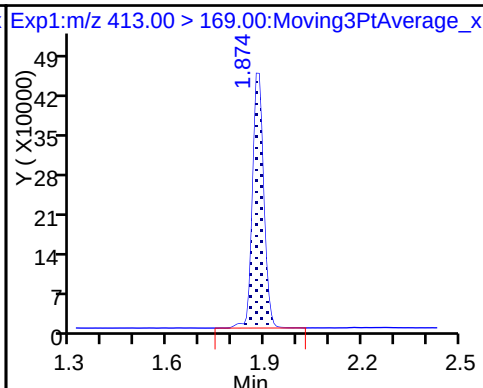
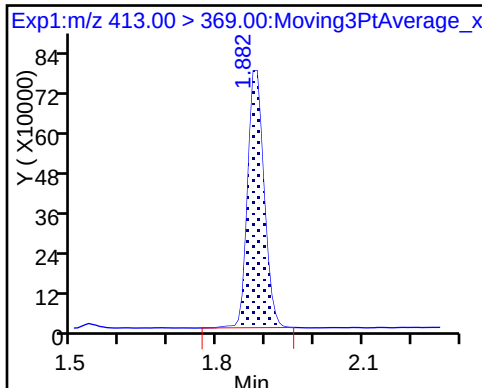
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

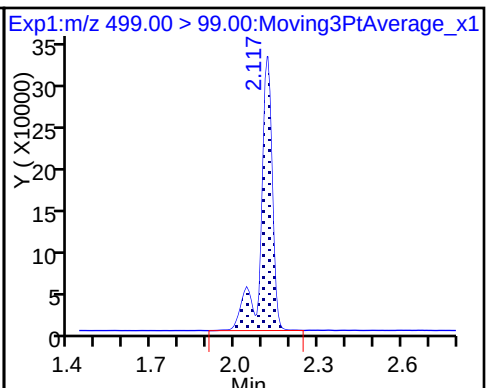
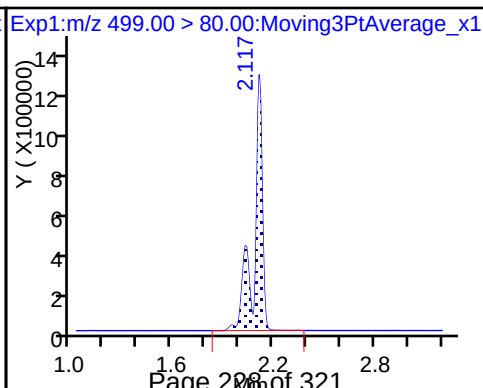
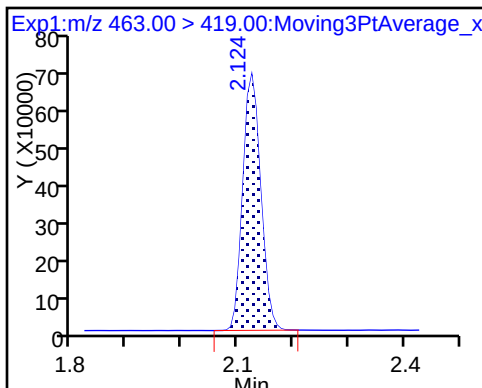
\* 7 13C4 PFOS



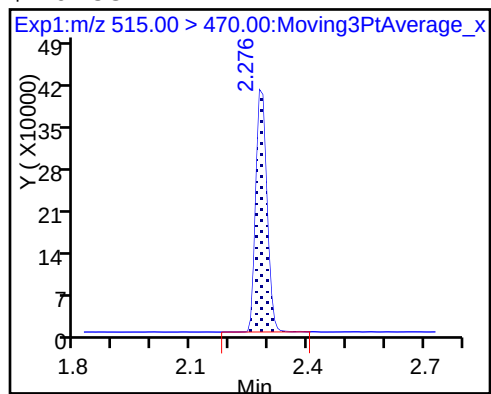
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_008.d  
 Lims ID: IC L5  
 Client ID:  
 Sample Type: IC Calib Level: 5  
 Inject. Date: 05-Jul-2017 20:09:01 ALS Bottle#: 5 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L5\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:48 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: barnettj

Date: 06-Jul-2017 14:15:17

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 11133396 | 134.8        |                 | 2833 |       |
| 298.90 > 99.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 9082765  |              | 1.23(0.00-0.00) | 2901 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.540 | 1.539  | 0.001  | 1.000  | 1120950  | 10.4         |                 | 4043 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.692 | 1.691  | 0.001  | 1.000  | 1494114  | 15.0         |                 | 221  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.692 | 1.692  | 0.0    | 1.000  | 6272381  | 48.6         |                 | 1990 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.874 | 1.878  | -0.004 |        | 950425   | 10.0         |                 | 3440 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 2747595  | 31.4         |                 | 299  |       |
| 413.00 > 169.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 1674247  |              | 1.64(0.00-0.00) | 1571 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.117 | 2.117  | 0.0    |        | 2657493  | 28.7         |                 | 3483 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 6095701  | 64.2         |                 | 4978 |       |
| 499.00 > 99.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 1321716  |              | 4.61(0.00-0.00) | 2212 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.124 | 2.124  | 0.0    | 1.000  | 2310846  | 29.5         |                 | 371  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.284 | 2.281  | 0.003  | 1.000  | 800975   | 10.0         |                 | 1851 |       |



**Reagents:**

LC537-L5\_00023

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_008.d

Injection Date: 05-Jul-2017 20:09:01

Instrument ID: A8\_N

Lims ID: IC L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

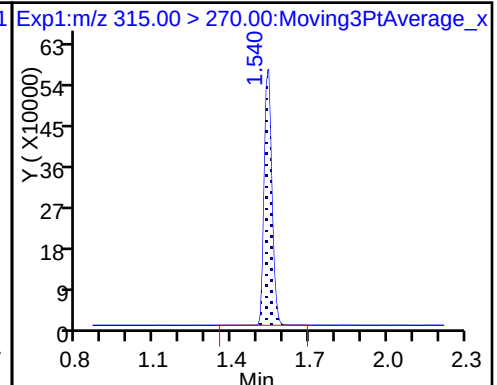
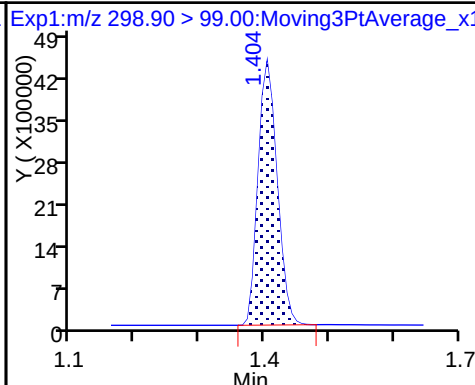
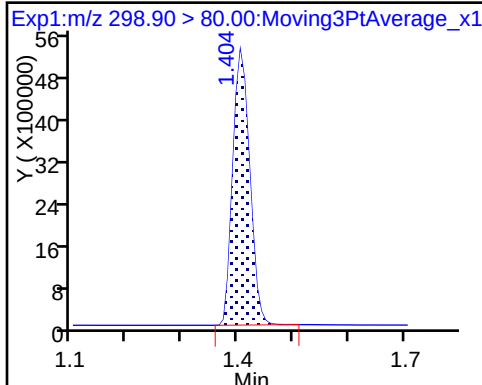
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

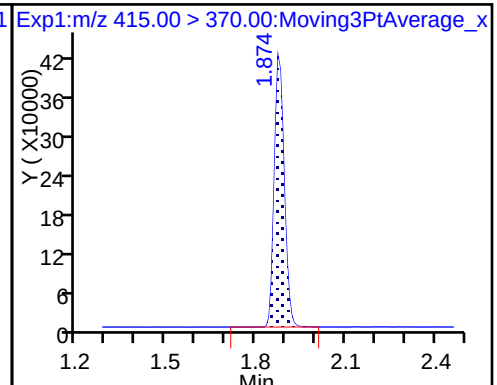
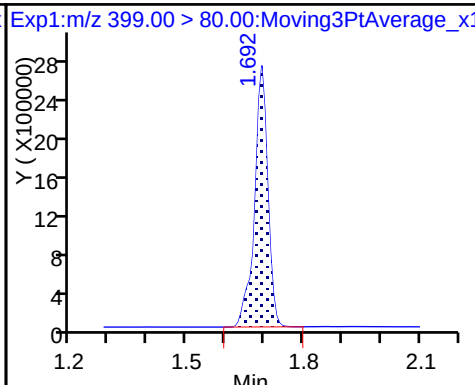
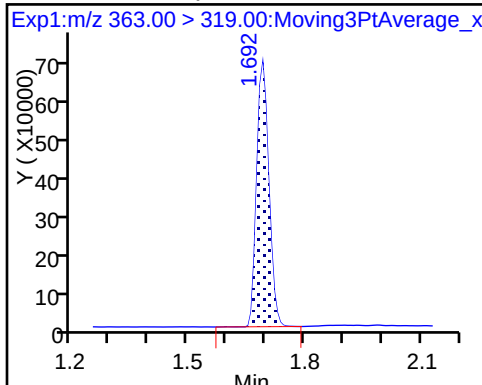
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

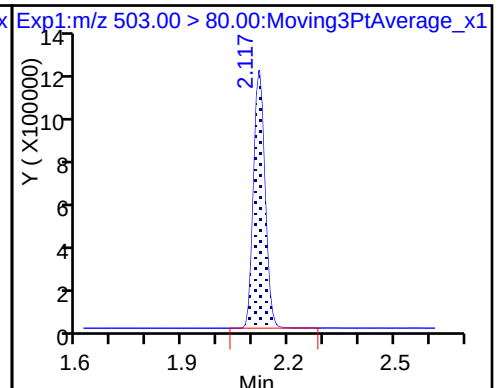
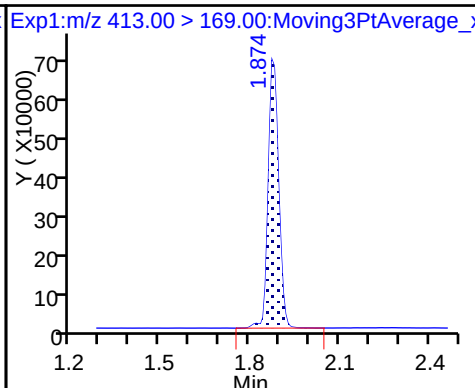
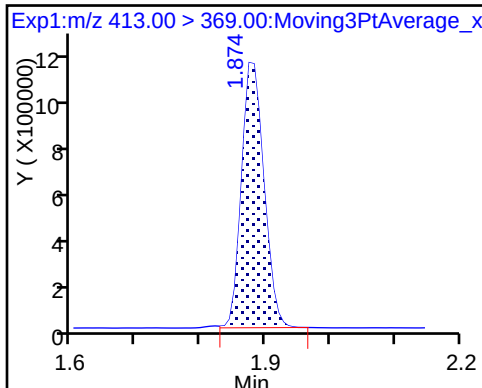
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

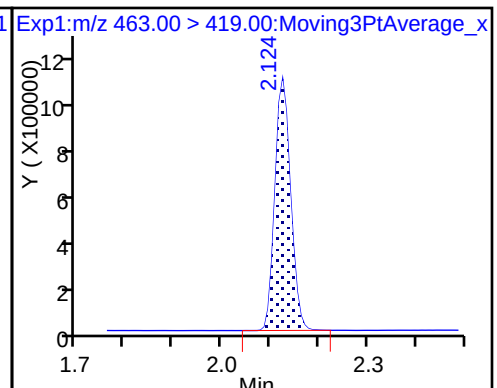
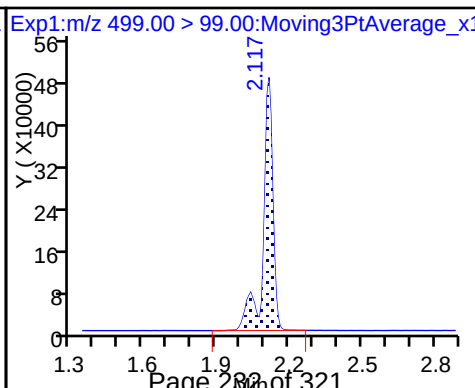
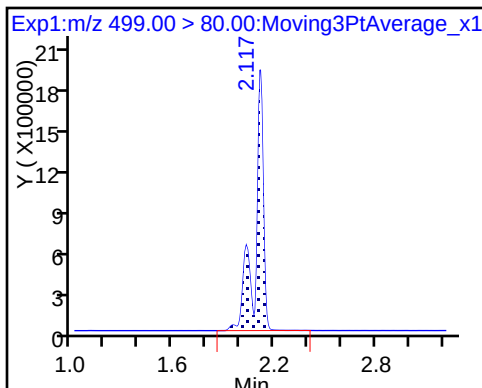
\* 7 13C4 PFOS



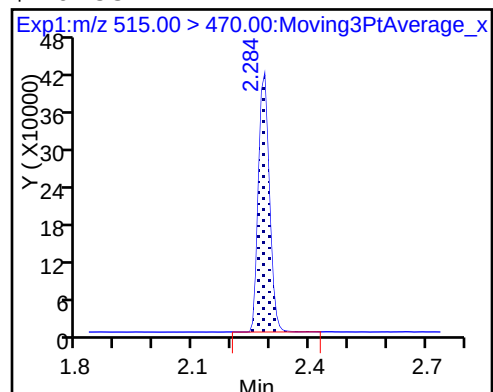
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Lims ID: IC L6  
 Client ID:  
 Sample Type: IC Calib Level: 6  
 Inject. Date: 05-Jul-2017 20:13:46 ALS Bottle#: 6 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: L6\_537  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:51 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: barnettj

Date: 06-Jul-2017 11:02:39

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 14234634 | 155.6        |                 | 3178 |       |
| 298.90 > 99.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 10833802 |              | 1.31(0.00-0.00) | 3119 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.540 | 1.539  | 0.001  | 1.000  | 1113221  | 10.2         |                 | 3988 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.692 | 1.691  | 0.001  | 1.000  | 1993330  | 19.8         |                 | 301  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.692 | 1.692  | 0.0    | 1.000  | 8271288  | 57.8         |                 | 2408 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.882 | 1.878  | 0.004  |        | 963179   | 10.0         |                 | 3523 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 3617366  | 40.7         |                 | 410  |       |
| 413.00 > 169.00                 | 1.882 | 1.879  | 0.003  | 1.000  | 2130918  |              | 1.70(0.00-0.00) | 1930 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.117 | 2.117  | 0.0    |        | 2944302  | 28.7         |                 | 3886 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.124 | 2.124  | 0.0    | 1.000  | 2953507  | 37.2         |                 | 463  |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 8159668  | 77.6         |                 | 5286 |       |
| 499.00 > 99.00                  | 2.117 | 2.124  | -0.007 | 1.000  | 1870549  |              | 4.36(0.00-0.00) | 2998 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.276 | 2.281  | -0.005 | 1.000  | 801864   | 9.92         |                 | 1695 |       |

**Reagents:**

LC537-L6\_00018

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Injection Date: 05-Jul-2017 20:13:46

Instrument ID: A8\_N

Lims ID: IC L6

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

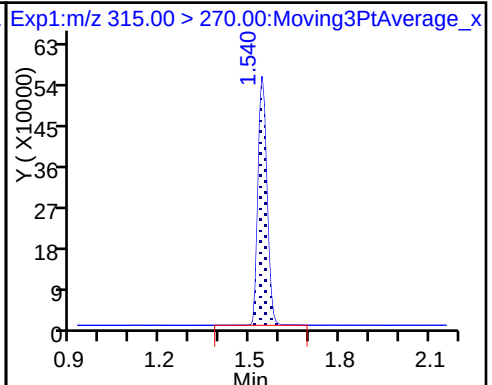
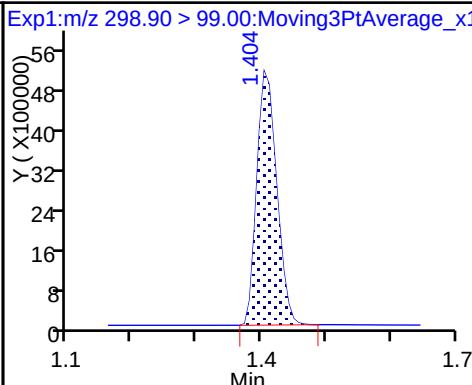
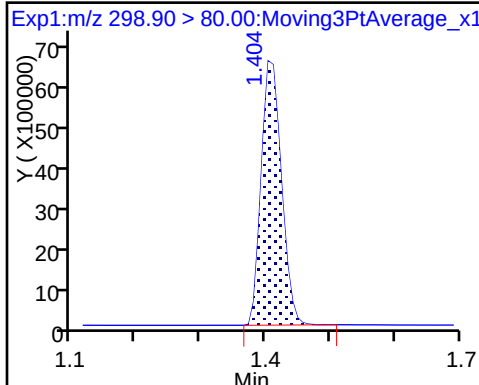
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

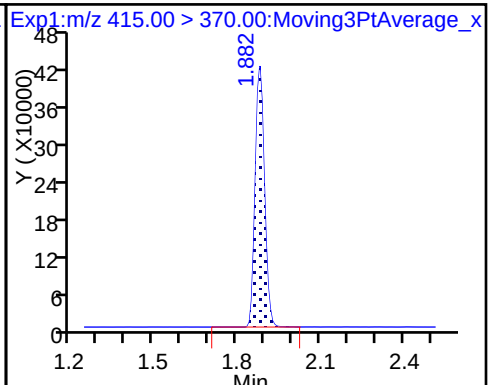
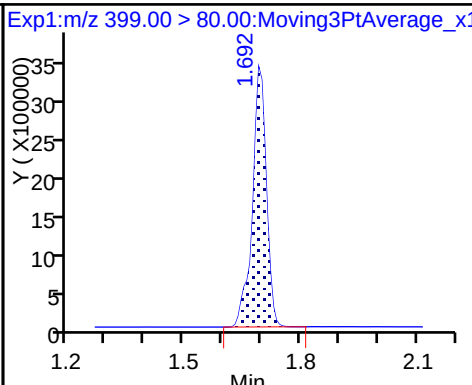
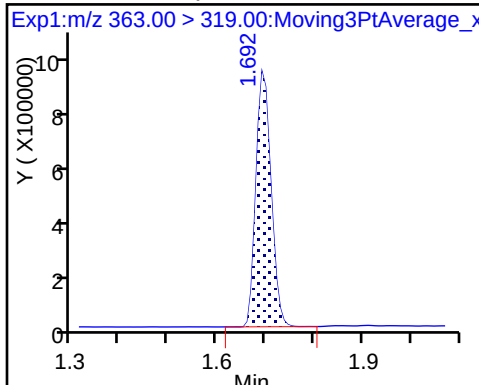
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

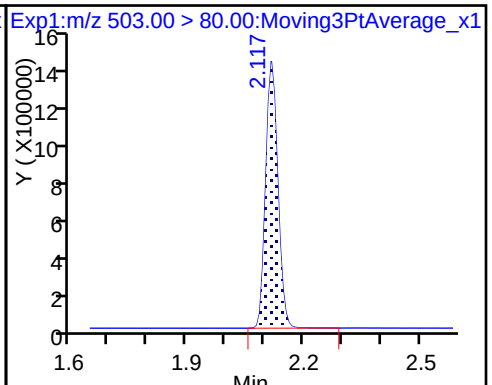
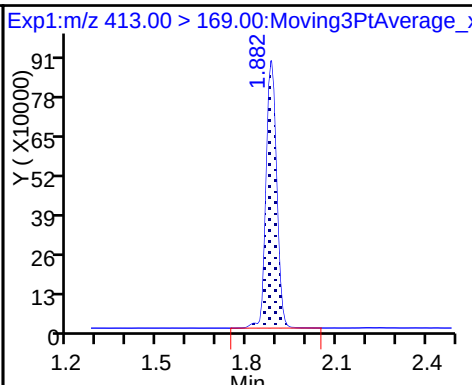
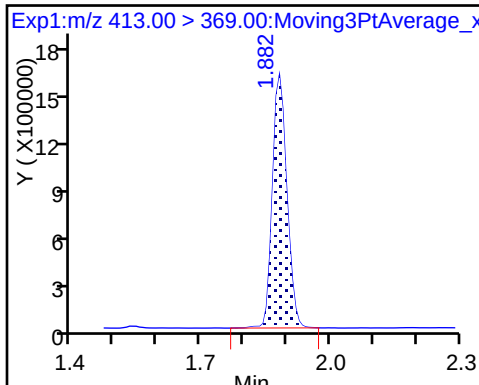
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

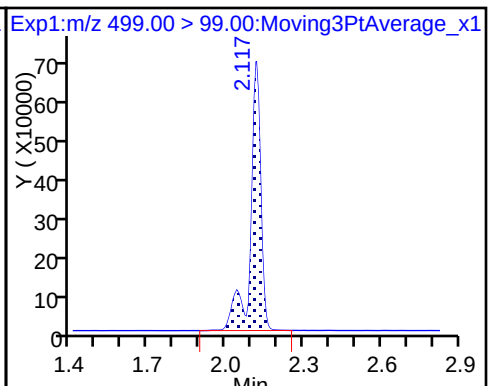
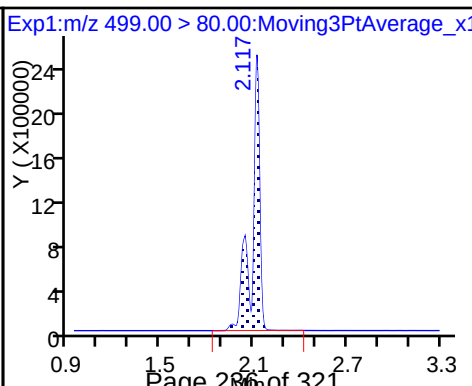
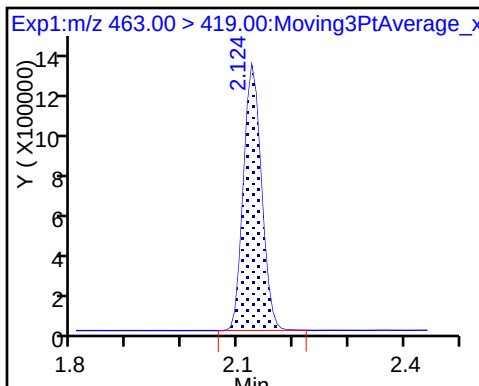
\* 7 13C4 PFOS



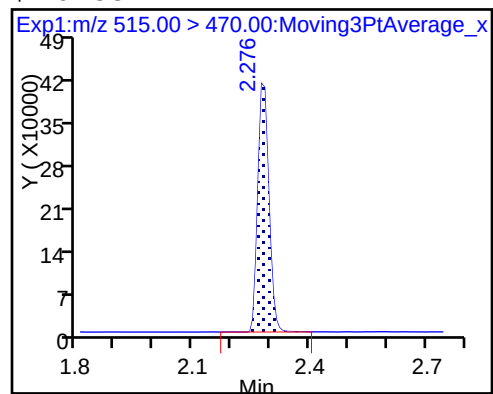
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-172646/11 Calibration Date: 07/05/2017 20:23  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.05\_537CURVE\_011.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9450 |         | 22.5           | 21.2            | 6.0  | 50.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.013  |         | 2.30           | 2.38            | -3.1 | 50.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.375  |         | 7.12           | 7.21            | -1.3 | 50.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9158 |         | 4.76           | 4.80            | -0.6 | 50.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 0.9585 |         | 8.99           | 9.61            | -6.4 | 50.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8346 |         | 4.68           | 4.62            | 1.3  | 50.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.093  |         | 9.62           | 10.0            | -3.8 | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8398 |         | 10.0           | 10.0            | 0.0  | 30.0      |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_011.d  
 Lims ID: CCVL  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 05-Jul-2017 20:23:16 ALS Bottle#: 2 Worklist Smp#: 11  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L2  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:15:58 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: barnettj

Date: 06-Jul-2017 11:10:24

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.396 | 1.404  | -0.008 | 1.000  | 1978330  | 22.5         |                 | 577  |       |
| 298.90 > 99.00                  | 1.396 | 1.404  | -0.008 | 1.000  | 1439219  |              | 1.37(0.00-0.00) | 562  |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.533 | 1.539  | -0.006 | 1.000  | 1049709  | 9.62         |                 | 3794 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.684 | 1.691  | -0.007 | 1.000  | 231101   | 2.30         |                 | 34.4 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.684 | 1.692  | -0.008 | 1.000  | 979833   | 7.12         |                 | 363  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.874 | 1.878  | -0.004 |        | 960063   | 10.0         |                 | 3662 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 421619   | 4.76         |                 | 51.2 |       |
| 413.00 > 169.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 257723   |              | 1.64(0.00-0.00) | 279  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.109 | 2.117  | -0.008 |        | 2831967  | 28.7         |                 | 3554 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.109 | 2.124  | -0.015 | 1.000  | 909348   | 8.99         |                 | 844  |       |
| 499.00 > 99.00                  | 2.109 | 2.124  | -0.015 | 1.000  | 216396   |              | 4.20(0.00-0.00) | 463  |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.117 | 2.124  | -0.007 | 1.000  | 370397   | 4.68         |                 | 53.0 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.276 | 2.281  | -0.005 | 1.000  | 806268   | 10.0         |                 | 1841 |       |

**Reagents:**

LC537-L2\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_011.d

Injection Date: 05-Jul-2017 20:23:16

Instrument ID: A8\_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

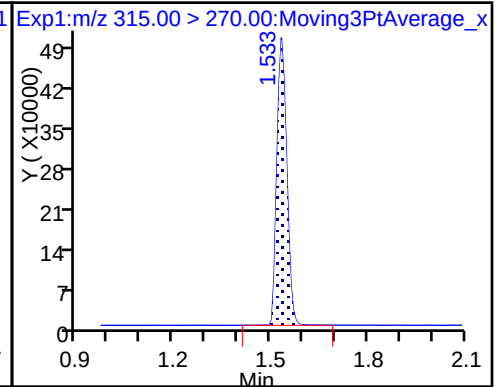
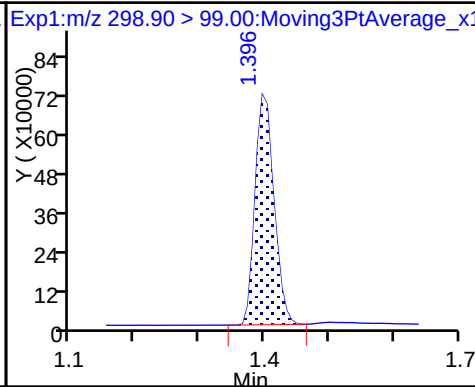
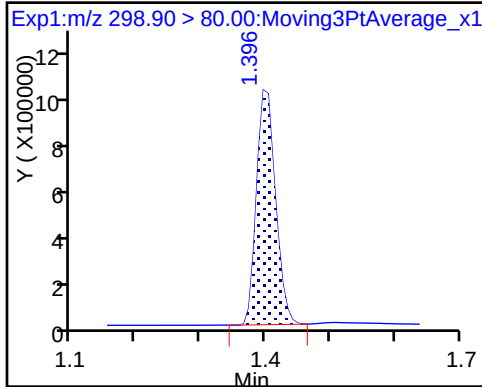
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

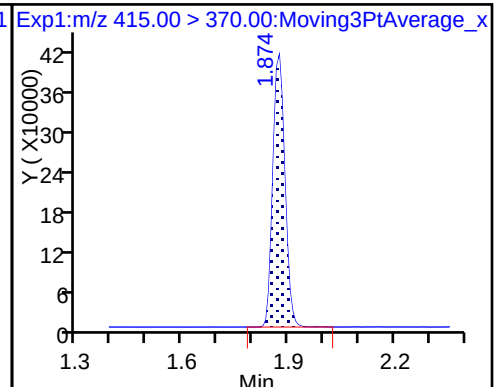
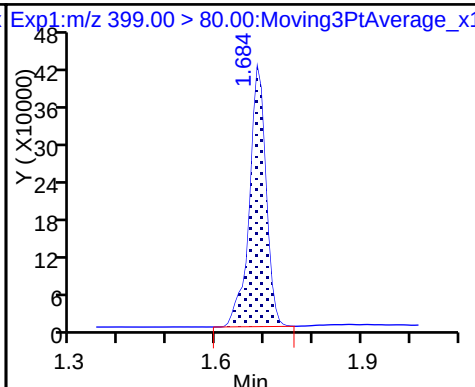
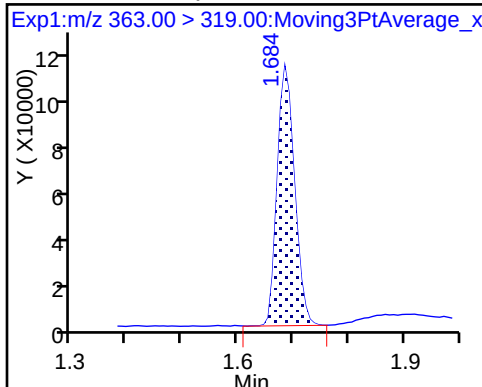
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

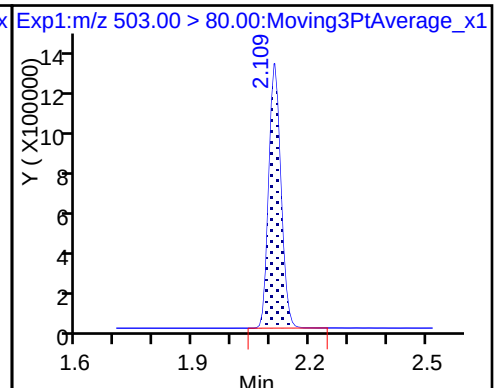
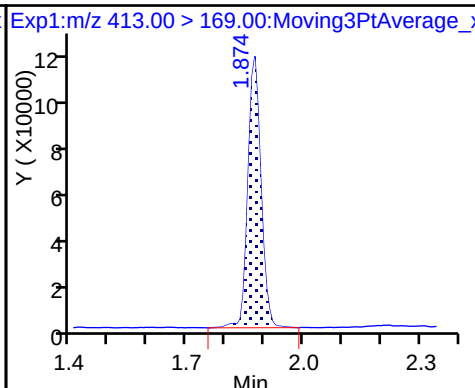
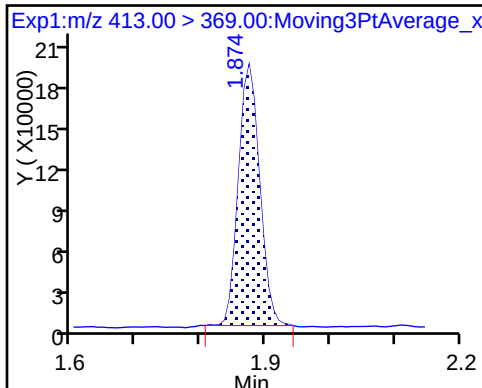
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

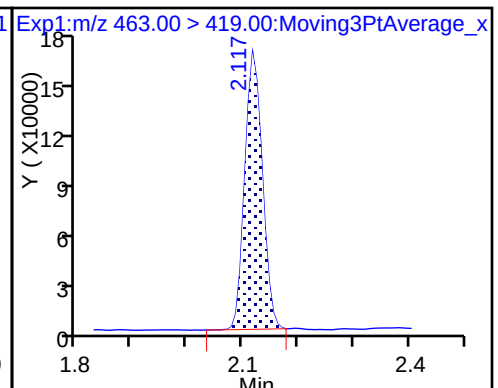
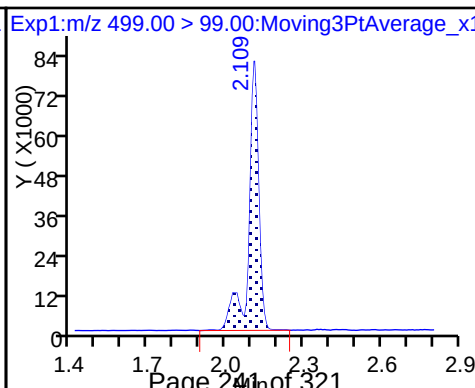
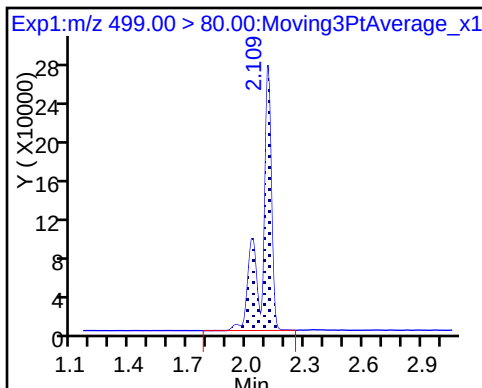
\* 7 13C4 PFOS



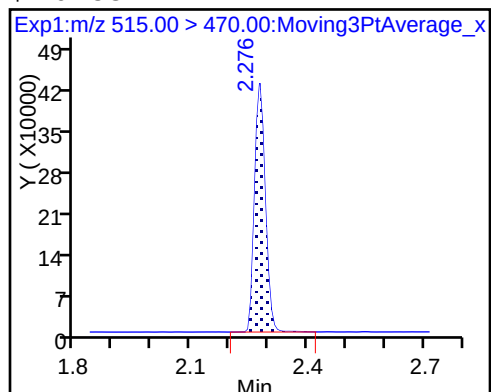
8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-172646/13 Calibration Date: 07/05/2017 20:32  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.05\_537CURVE\_013.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9309 |         | 105            | 101             | 4.5  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 0.9545 |         | 9.20           | 10.1            | -8.7 | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.547  |         | 23.5           | 21.2            | 11.0 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9807 |         | 21.3           | 20.0            | 6.4  | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.035  |         | 20.9           | 20.7            | 1.0  | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8757 |         | 21.3           | 20.0            | 6.3  | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.143  |         | 10.1           | 10.0            | 0.6  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8348 |         | 9.94           | 10.0            | -0.6 | 30.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_013.d  
 Lims ID: ICV  
 Client ID:  
 Sample Type: ICV  
 Inject. Date: 05-Jul-2017 20:32:46 ALS Bottle#: 7 Worklist Smp#: 13  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: ICV  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 06-Jul-2017 14:16:05 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK001

First Level Reviewer: barnettj

Date: 06-Jul-2017 11:07:19

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.404 | 1.404  | 0.0    | 1.000  | 8717456  | 105.2        |                 | 2832 |       |
| 298.90 > 99.00                  | 1.396 | 1.404  | -0.008 | 0.995  | 6912302  |              | 1.26(0.00-0.00) | 2975 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.533 | 1.539  | -0.006 | 1.000  | 1052723  | 10.1         |                 | 4488 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.684 | 1.691  | -0.007 | 1.000  | 885966   | 9.20         |                 | 135  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.684 | 1.692  | -0.008 | 1.000  | 3047530  | 23.5         |                 | 1030 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.874 | 1.878  | -0.004 |        | 920859   | 10.0         |                 | 3493 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.874 | 1.879  | -0.005 | 1.000  | 1807847  | 21.3         |                 | 208  |       |
| 413.00 > 169.00                 | 1.866 | 1.879  | -0.013 | 0.996  | 1047091  |              | 1.73(0.00-0.00) | 1088 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.109 | 2.117  | -0.008 |        | 2667731  | 28.7         |                 | 3721 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.109 | 2.124  | -0.015 | 1.000  | 1991461  | 20.9         |                 | 1878 |       |
| 499.00 > 99.00                  | 2.109 | 2.124  | -0.015 | 1.000  | 375691   |              | 5.30(0.00-0.00) | 756  |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.117 | 2.124  | -0.007 | 1.000  | 1613491  | 21.3         |                 | 254  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.276 | 2.281  | -0.005 | 1.000  | 768757   | 9.94         |                 | 1760 |       |

**Reagents:**

LC537-ICV\_00020

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_013.d

Injection Date: 05-Jul-2017 20:32:46

Instrument ID: A8\_N

Lims ID: ICV

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

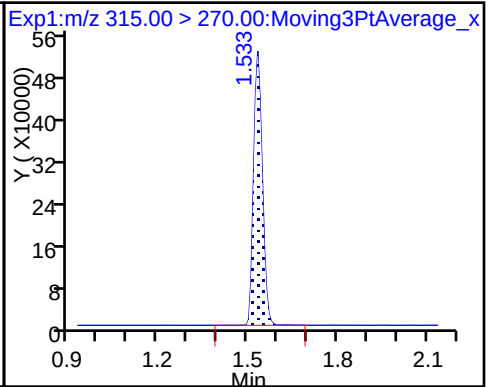
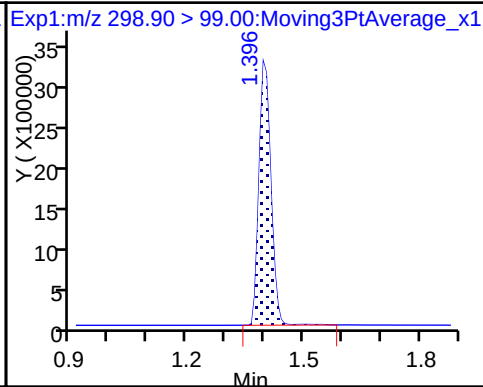
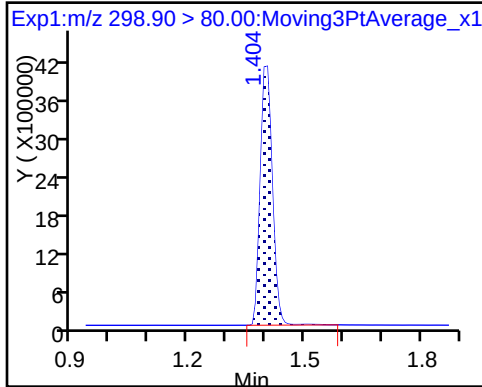
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

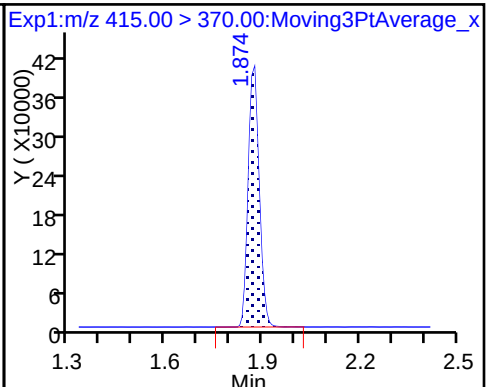
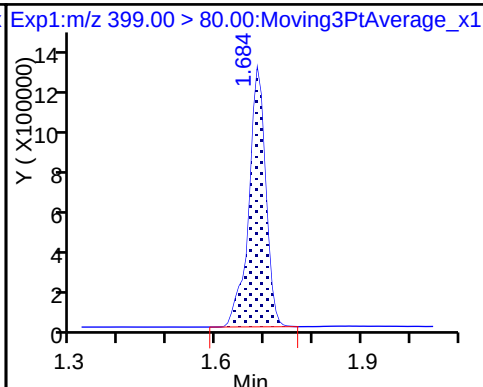
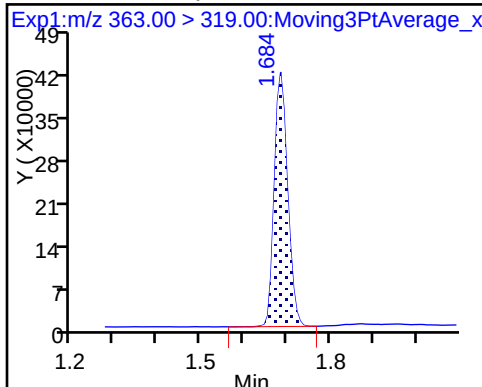
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

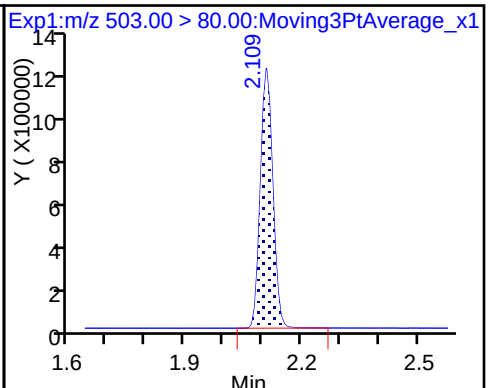
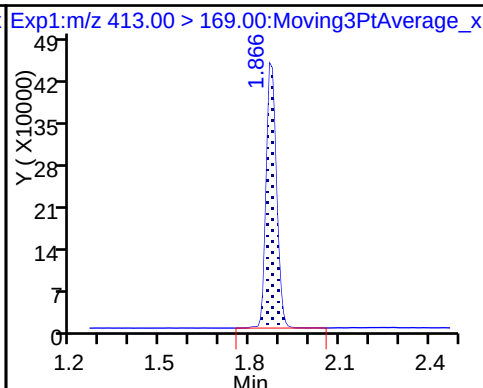
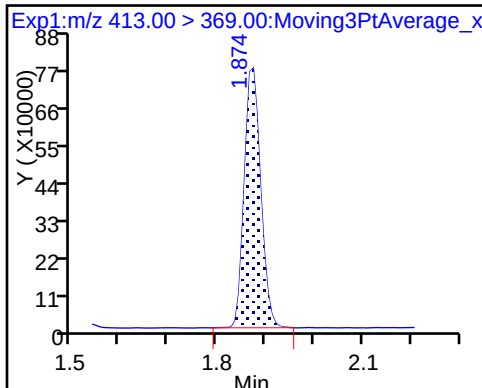
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

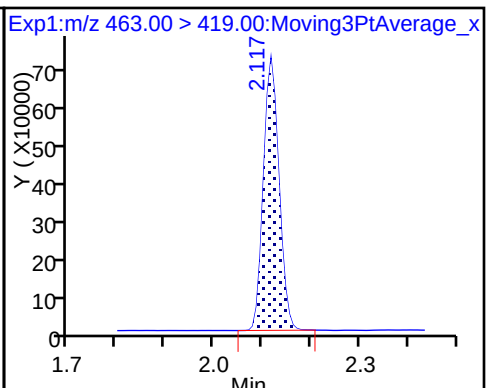
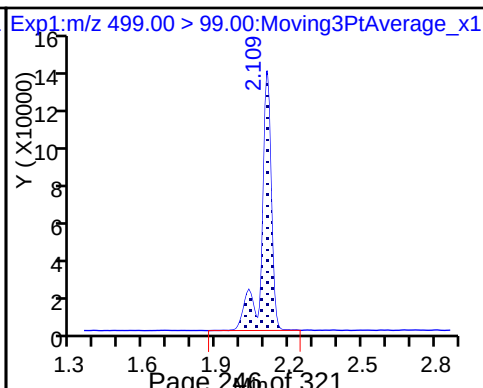
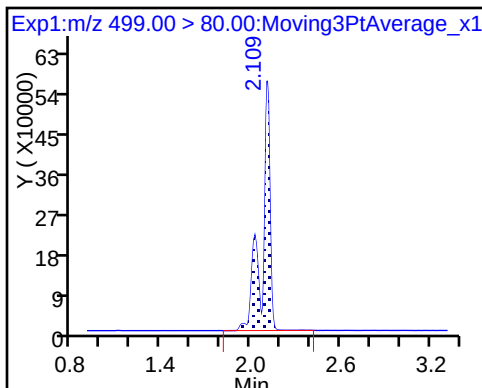
\* 7 13C4 PFOS



8 Perfluorooctane sulfonic acid

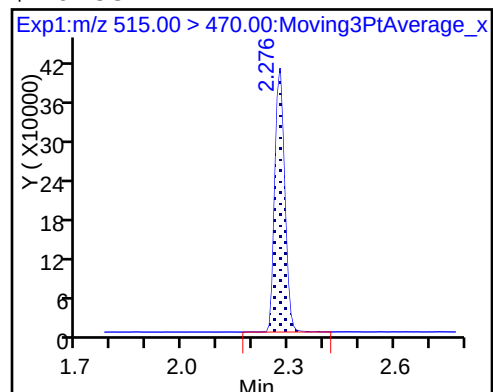
8 Perfluorooctane sulfonic acid

9 Perfluorononanoic acid





\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-173114/4 Calibration Date: 07/08/2017 11:40  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_004.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9701 |         | 23.1           | 21.2            | 8.9  | 50.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.010  |         | 2.29           | 2.38            | -3.4 | 50.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.264  |         | 6.54           | 7.21            | -9.3 | 50.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9027 |         | 4.70           | 4.80            | -2.1 | 50.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 0.998  |         | 9.36           | 9.61            | -2.6 | 50.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.7837 |         | 4.40           | 4.62            | -4.9 | 50.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.151  |         | 10.1           | 10.0            | 1.3  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8172 |         | 9.73           | 10.0            | -2.7 | 30.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_004.d  
 Lims ID: CCVL  
 Client ID:  
 Sample Type: CCVL  
 Inject. Date: 08-Jul-2017 11:40:23 ALS Bottle#: 2 Worklist Smp#: 4  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L2  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:16:29 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: phomsophat

Date: 08-Jul-2017 12:34:00

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.426 | 1.404  | 0.022  | 1.000  | 2244475  | 23.1         |                 | 808  |       |
| 298.90 > 99.00                  | 1.426 | 1.404  | 0.022  | 1.000  | 1653438  |              | 1.36(0.00-0.00) | 712  |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.571 | 1.539  | 0.031  | 1.000  | 1128689  | 10.1         |                 | 7320 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.737 | 1.691  | 0.046  | 1.000  | 235332   | 2.29         |                 | 37.0 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.737 | 1.692  | 0.045  | 1.000  | 994818   | 6.54         |                 | 370  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.942 | 1.878  | 0.064  |        | 980863   | 10.0         |                 | 4681 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.942 | 1.879  | 0.063  | 1.000  | 424594   | 4.70         |                 | 34.0 |       |
| 413.00 > 169.00                 | 1.942 | 1.879  | 0.063  | 1.000  | 252436   |              | 1.68(0.00-0.00) | 436  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.170 | 2.117  | 0.053  |        | 3129733  | 28.7         |                 | 5402 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.177 | 2.124  | 0.053  | 1.000  | 355328   | 4.40         |                 | 54.3 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.170 | 2.162  | 0.008  | 1.000  | 1046110  | 9.36         |                 | 1416 |       |
| 499.00 > 99.00                  | 2.170 | 2.162  | 0.008  | 1.000  | 249526   |              | 4.19(0.00-0.00) | 508  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.322 | 2.281  | 0.041  | 1.000  | 801531   | 9.73         |                 | 1635 |       |

**Reagents:**

LC537-L2\_00019

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_004.d

Injection Date: 08-Jul-2017 11:40:23

Instrument ID: A8\_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

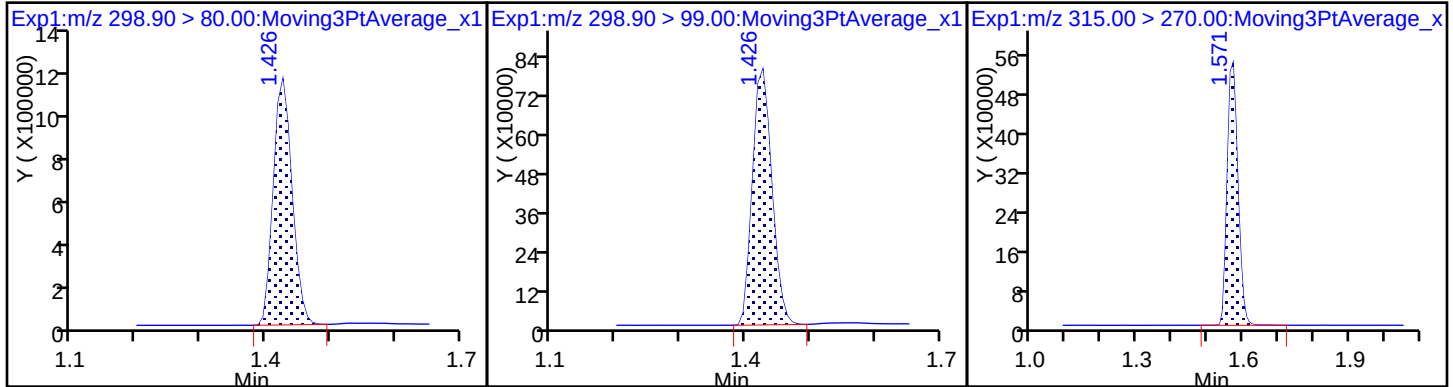
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

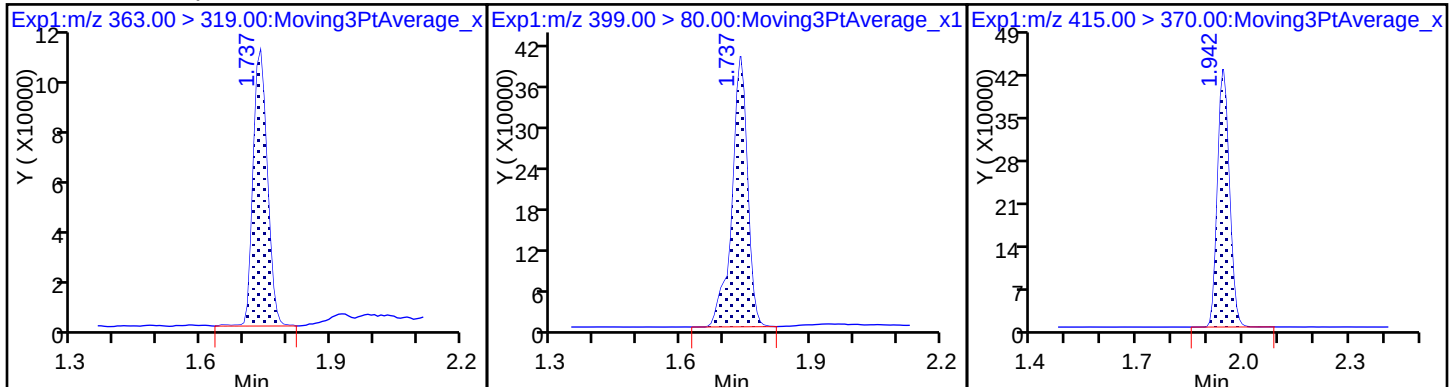
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

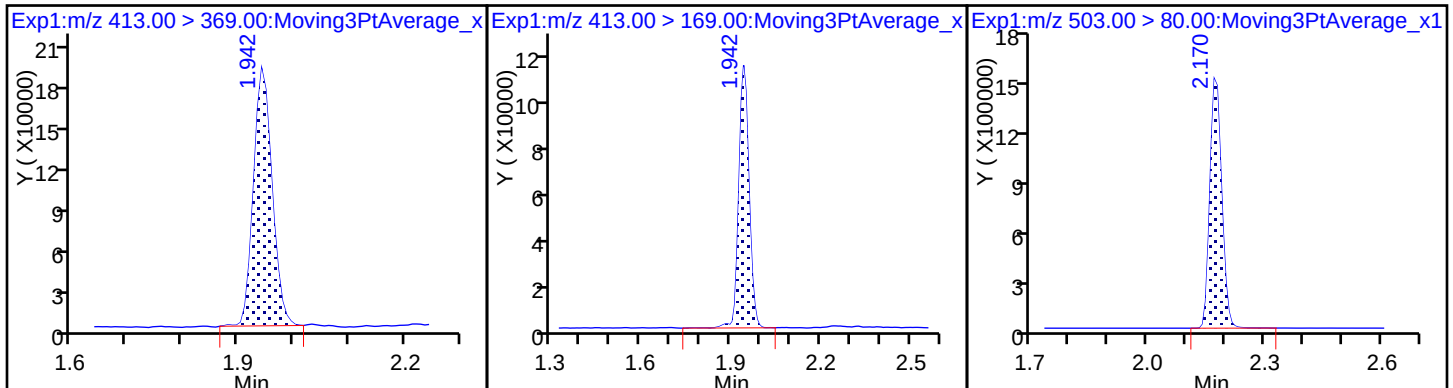
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

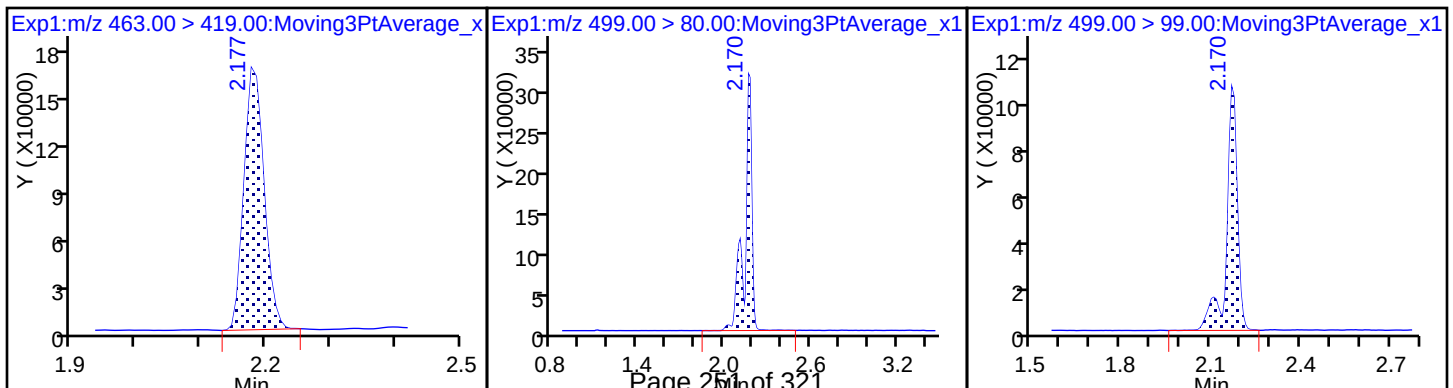
\* 7 13C4 PFOS



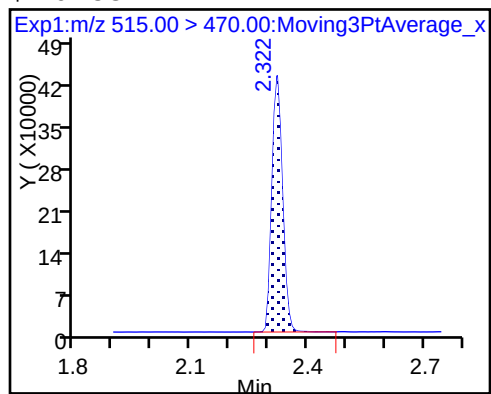
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173114/5 Calibration Date: 07/08/2017 11:45  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_005.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.8311 |         | 124            | 133             | -6.7  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.046  |         | 14.9           | 14.9            | 0.0   | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.243  |         | 40.2           | 45.1            | -10.8 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9796 |         | 31.9           | 30.0            | 6.3   | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.030  |         | 60.4           | 60.0            | 0.6   | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8376 |         | 29.4           | 28.9            | 1.6   | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.150  |         | 10.1           | 10.0            | 1.2   | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8581 |         | 10.2           | 10.0            | 2.2   | 30.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_005.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 08-Jul-2017 11:45:07 ALS Bottle#: 5 Worklist Smp#: 5  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:16:34 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: phomsophat

Date: 08-Jul-2017 12:34:29

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 12473885 | 123.6        |                 | 3474 |       |
| 298.90 > 99.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 9832643  |              | 1.27(0.00-0.00) | 3182 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.555 | 1.539  | 0.016  | 1.000  | 1084341  | 10.1         |                 | 5910 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.722 | 1.691  | 0.031  | 1.000  | 1464081  | 14.9         |                 | 215  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.722 | 1.692  | 0.030  | 1.000  | 6348452  | 40.2         |                 | 2059 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878  | 0.049  |        | 942853   | 10.0         |                 | 4302 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 2767996  | 31.9         |                 | 205  |       |
| 413.00 > 169.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 1582559  |              | 1.75(0.00-0.00) | 2272 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117  | 0.045  |        | 3248548  | 28.7         |                 | 5170 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124  | 0.046  | 1.000  | 2281458  | 29.4         |                 | 352  |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 7006185  | 60.4         |                 | 6240 |       |
| 499.00 > 99.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 1599599  |              | 4.38(0.00-0.00) | 2491 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.306 | 2.281  | 0.025  | 1.000  | 809062   | 10.2         |                 | 1405 |       |



**Reagents:**

LC537-L5\_00023

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_005.d

Injection Date: 08-Jul-2017 11:45:07

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

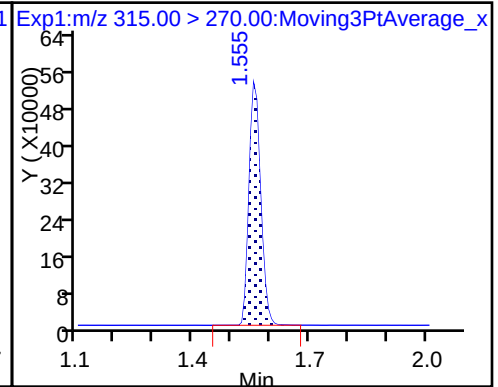
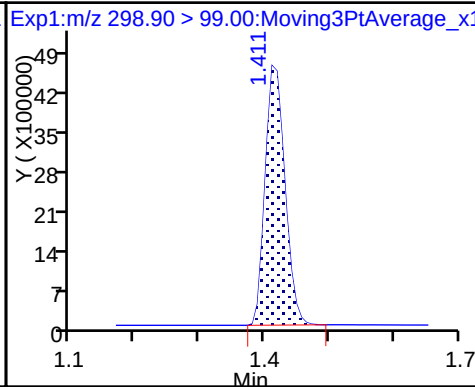
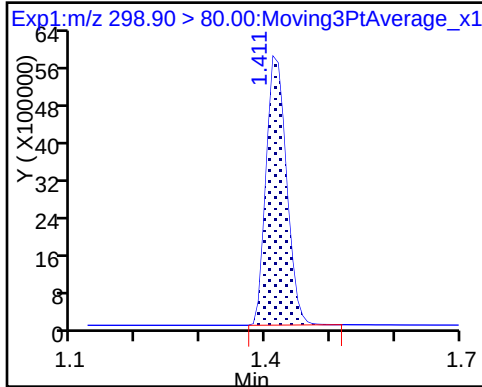
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

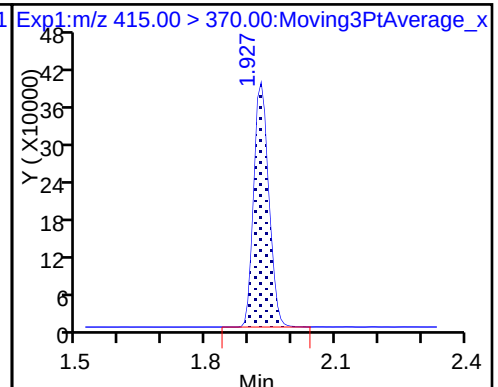
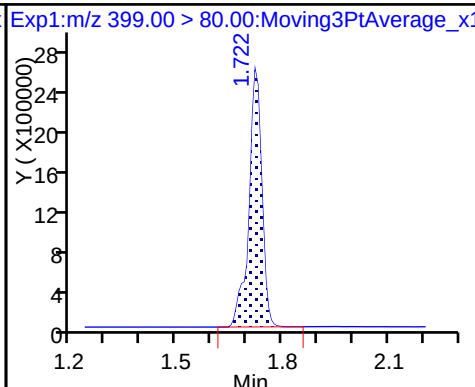
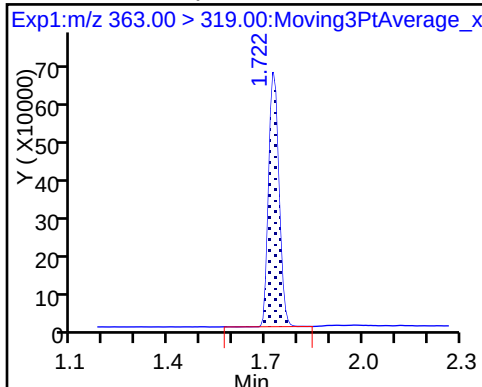
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

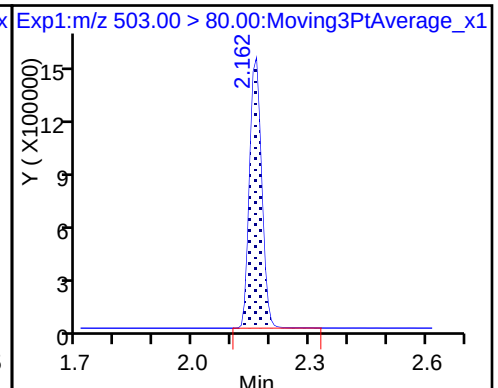
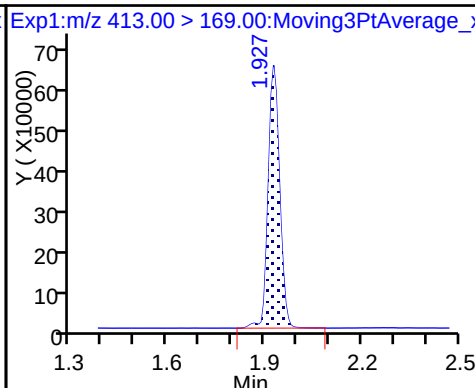
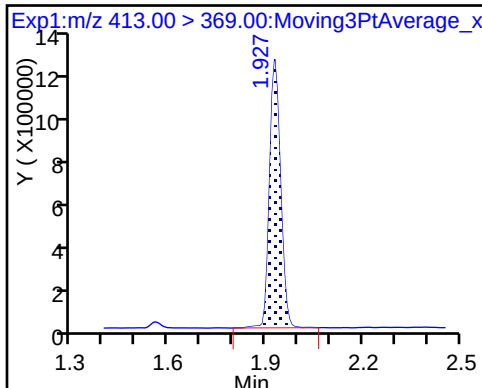
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

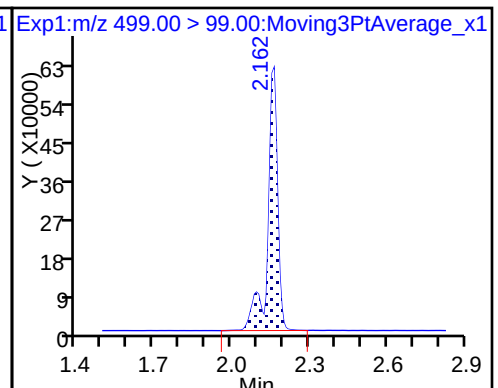
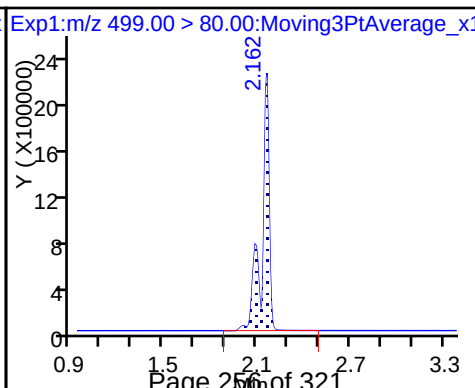
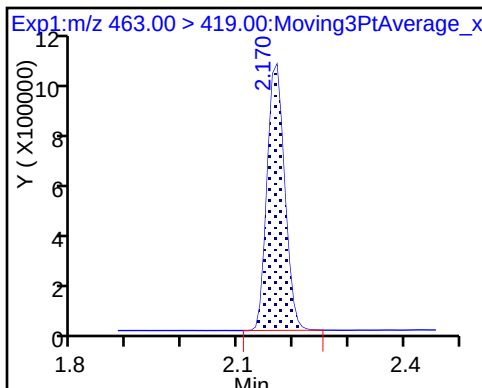
\* 7 13C4 PFOS



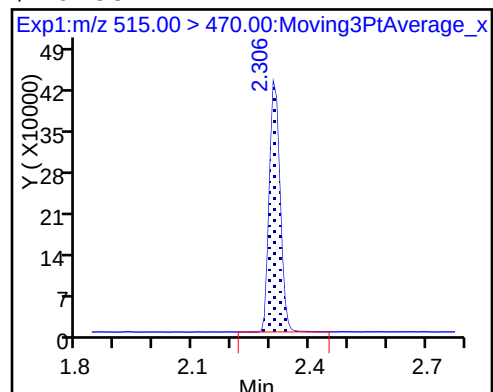
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173114/17 Calibration Date: 07/08/2017 12:42  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_017.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9576 |         | 47.7           | 44.4            | 7.5  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.027  |         | 4.89           | 4.97            | -1.8 | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.292  |         | 14.0           | 15.1            | -7.3 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.8879 |         | 9.67           | 10.0            | -3.7 | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.004  |         | 19.7           | 20.1            | -2.0 | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.7807 |         | 9.17           | 9.68            | -5.3 | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.185  |         | 10.4           | 10.0            | 4.3  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8247 |         | 9.82           | 10.0            | -1.8 | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173116/17 Calibration Date: 07/08/2017 12:42  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_017.d Conc. Units: ng/mL

| ANALYTE                              | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|--------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid (PFBS)  | Ave           | 0.8911  | 0.9576 |         | 47.7           | 44.4            | 7.5  | 30.0      |
| Perfluoroheptanoic acid (PFHpA)      | Ave           | 1.046   | 1.027  |         | 4.89           | 4.97            | -1.8 | 30.0      |
| Perfluorohexanesulfonic acid (PFHxS) | Ave           | 1.394   | 1.292  |         | 14.0           | 15.1            | -7.3 | 30.0      |
| Perfluorooctanoic acid (PFOA)        | Ave           | 0.9217  | 0.8879 |         | 9.67           | 10.0            | -3.7 | 30.0      |
| Perfluorooctanesulfonic acid (PFOS)  | Ave           | 1.024   | 1.004  |         | 19.7           | 20.1            | -2.0 | 30.0      |
| Perfluorononanoic acid (PFNA)        | Ave           | 0.8241  | 0.7807 |         | 9.17           | 9.68            | -5.3 | 30.0      |
| 13C2 PFHxA                           | Ave           | 1.136   | 1.185  |         | 10.4           | 10.0            | 4.3  | 30.0      |
| 13C2 PFDA                            | Ave           | 0.8395  | 0.8247 |         | 9.82           | 10.0            | -1.8 | 30.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_017.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 08-Jul-2017 12:42:04 ALS Bottle#: 3 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L3  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:49:13

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 4470778  | 47.7         |                 | 2061 |       |
| 298.90 > 99.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 3455949  |              | 1.29(0.00-0.00) | 2112 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.555 | 1.539  | 0.016  | 1.000  | 1122844  | 10.4         |                 | 5468 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.715 | 1.691  | 0.024  | 1.000  | 484026   | 4.89         |                 | 78.6 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.715 | 1.692  | 0.023  | 1.000  | 2052736  | 14.0         |                 | 795  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.912 | 1.878  | 0.034  |        | 947388   | 10.0         |                 | 4129 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.912 | 1.879  | 0.033  | 1.000  | 844536   | 9.67         |                 | 69.4 |       |
| 413.00 > 169.00                 | 1.912 | 1.879  | 0.033  | 1.000  | 533842   |              | 1.58(0.00-0.00) | 776  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.147 | 2.117  | 0.030  |        | 3016336  | 28.7         |                 | 4142 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.155 | 2.124  | 0.031  | 1.000  | 715819   | 9.17         |                 | 57.5 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.147 | 2.162  | -0.015 | 1.000  | 2123949  | 19.7         |                 | 2499 |       |
| 499.00 > 99.00                  | 2.147 | 2.162  | -0.015 | 1.000  | 480627   |              | 4.42(0.00-0.00) | 955  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.299 | 2.281  | 0.018  | 1.000  | 781278   | 9.82         |                 | 1355 |       |

**Reagents:**

LC537-L3\_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_017.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 08-Jul-2017 12:42:04 ALS Bottle#: 3 Worklist Smp#: 17  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L3  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:16 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:49:13

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 4470778  | 47.7         |                 | 2061 |       |
| 298.90 > 99.00                  | 1.411 | 1.404  | 0.007  | 1.000  | 3455949  |              | 1.29(0.00-0.00) | 2112 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.555 | 1.539  | 0.016  | 1.000  | 1122844  | 10.4         |                 | 5468 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.715 | 1.691  | 0.024  | 1.000  | 484026   | 4.89         |                 | 78.6 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.715 | 1.692  | 0.023  | 1.000  | 2052736  | 14.0         |                 | 795  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.912 | 1.878  | 0.034  |        | 947388   | 10.0         |                 | 4129 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.912 | 1.879  | 0.033  | 1.000  | 844536   | 9.67         |                 | 69.4 |       |
| 413.00 > 169.00                 | 1.912 | 1.879  | 0.033  | 1.000  | 533842   |              | 1.58(0.00-0.00) | 776  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.147 | 2.117  | 0.030  |        | 3016336  | 28.7         |                 | 4142 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.155 | 2.124  | 0.031  | 1.000  | 715819   | 9.17         |                 | 57.5 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.147 | 2.162  | -0.015 | 1.000  | 2123949  | 19.7         |                 | 2499 |       |
| 499.00 > 99.00                  | 2.147 | 2.162  | -0.015 | 1.000  | 480627   |              | 4.42(0.00-0.00) | 955  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.299 | 2.281  | 0.018  | 1.000  | 781278   | 9.82         |                 | 1355 |       |



**Reagents:**

LC537-L3\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_017.d

Injection Date: 08-Jul-2017 12:42:04

Instrument ID: A8\_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

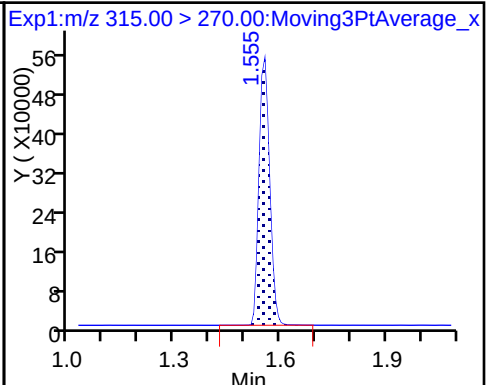
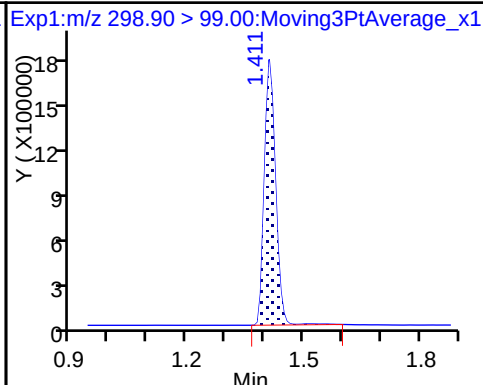
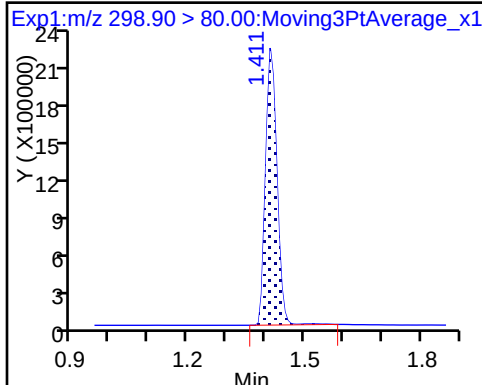
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

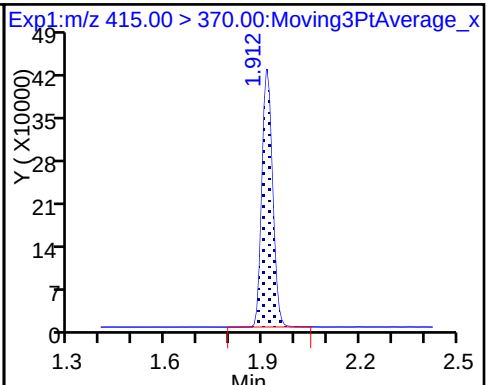
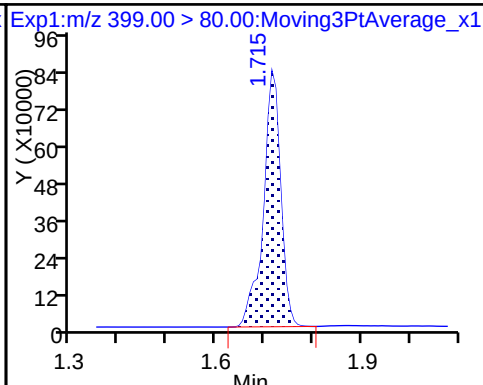
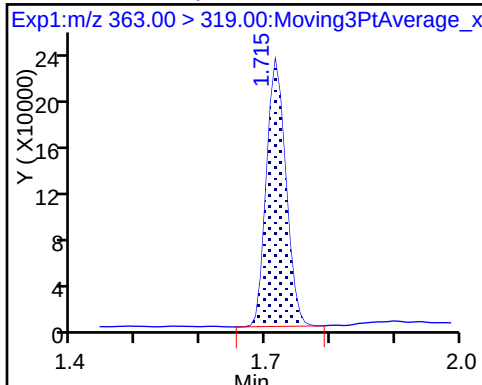
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

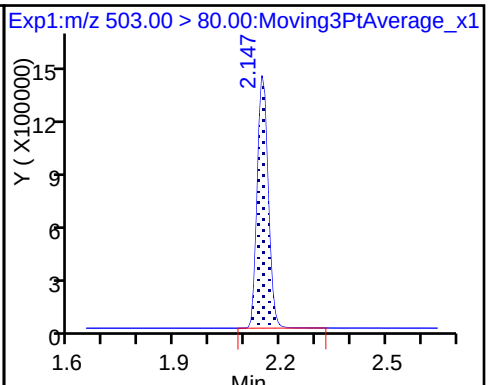
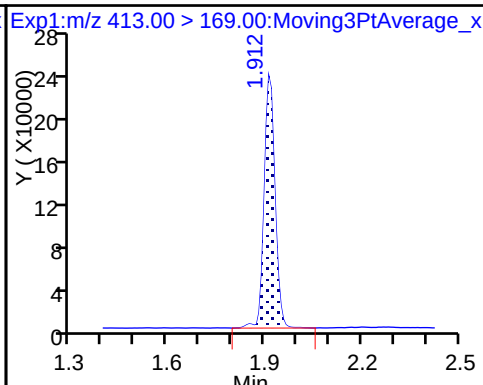
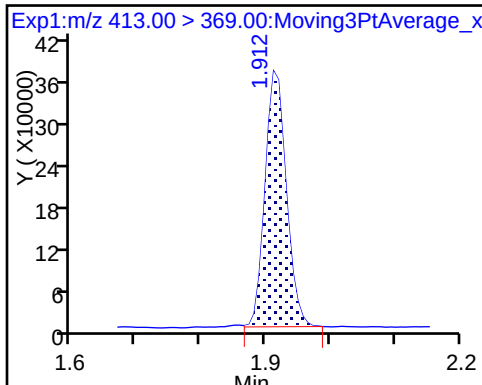
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

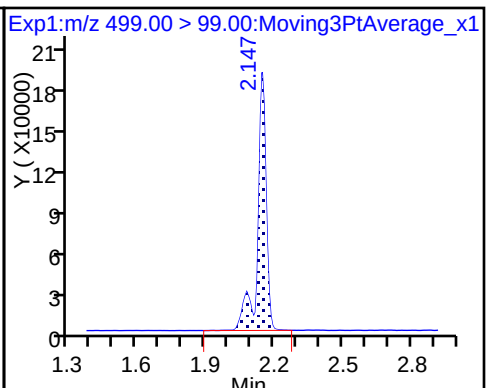
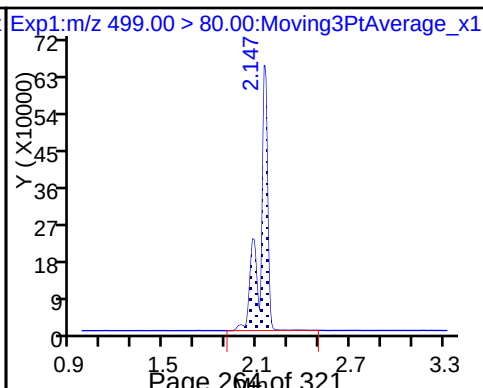
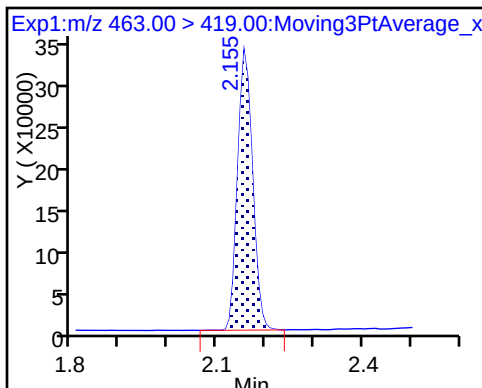
\* 7 13C4 PFOS



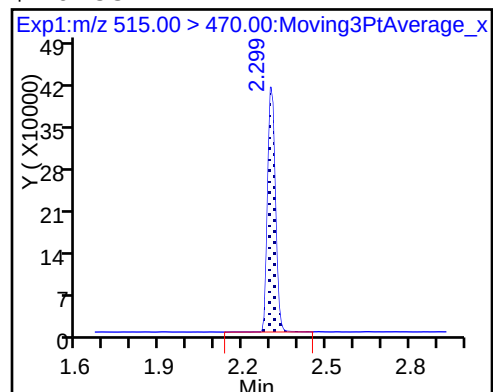
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_017.d

Injection Date: 08-Jul-2017 12:42:04

Instrument ID: A8\_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

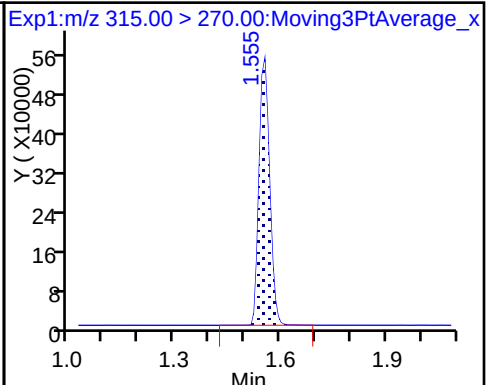
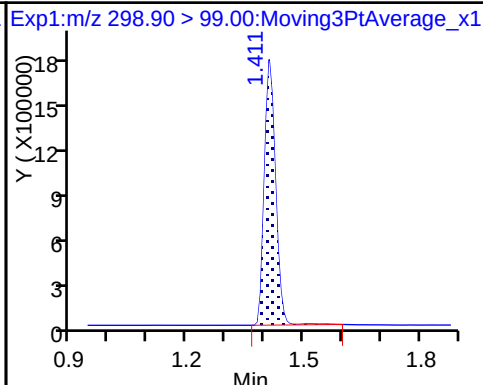
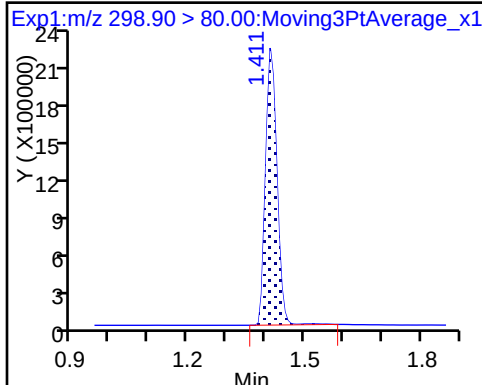
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

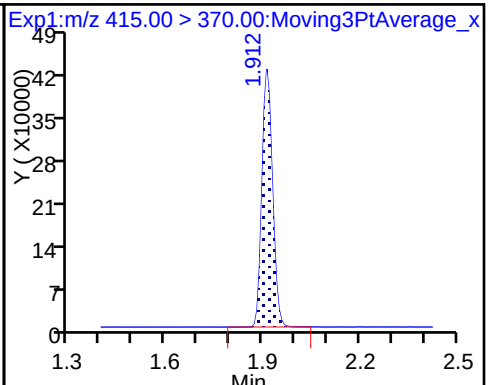
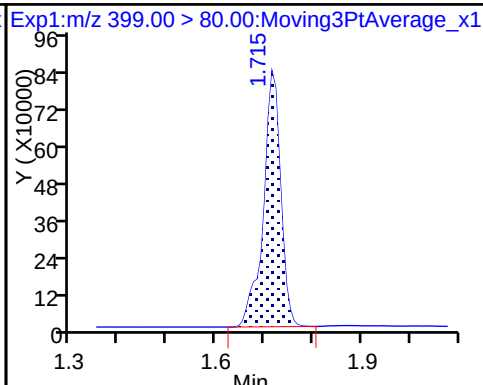
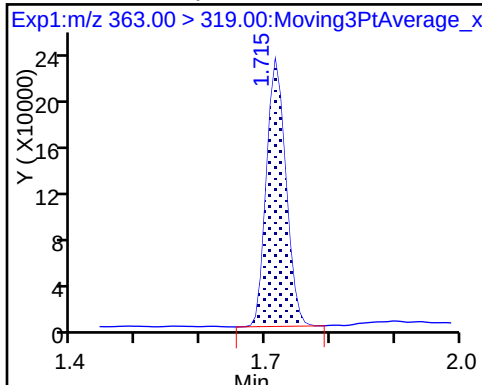
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

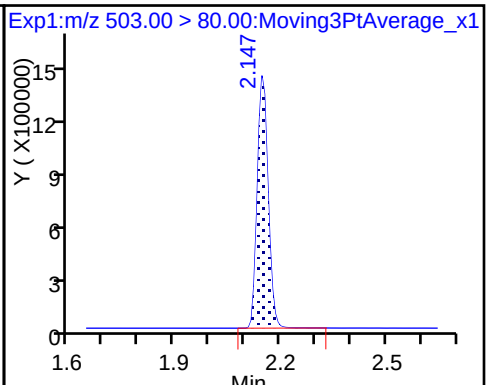
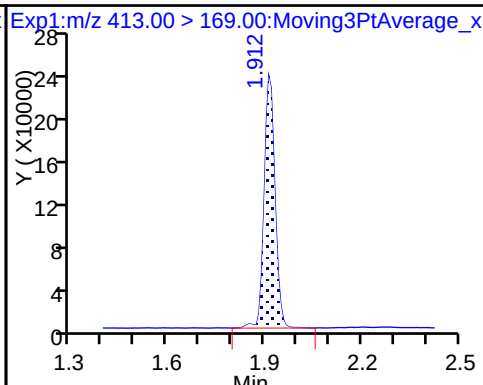
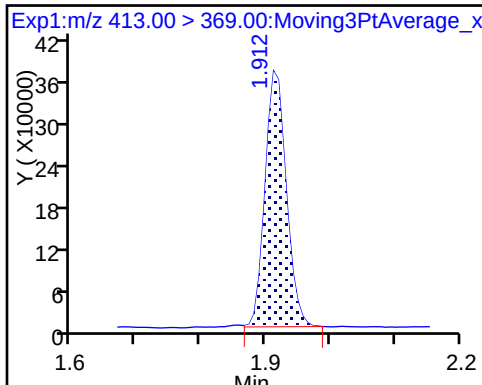
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

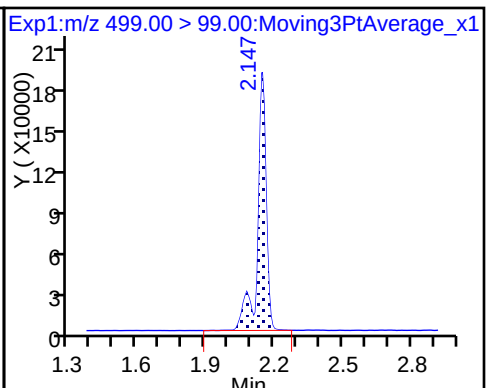
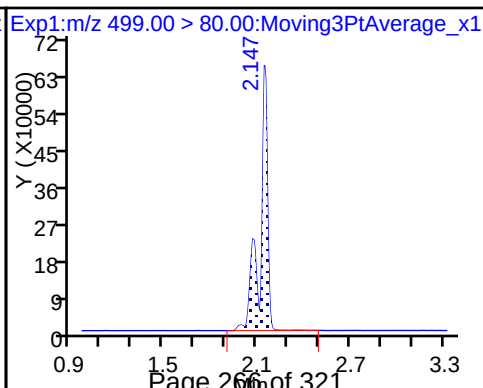
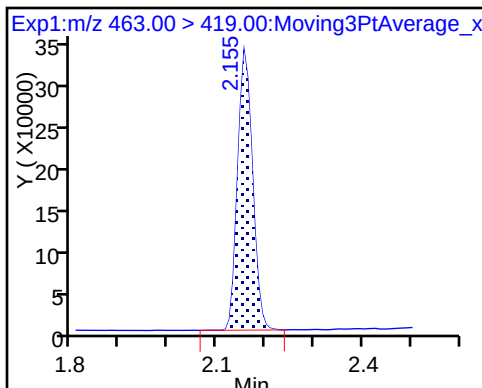
\* 7 13C4 PFOS



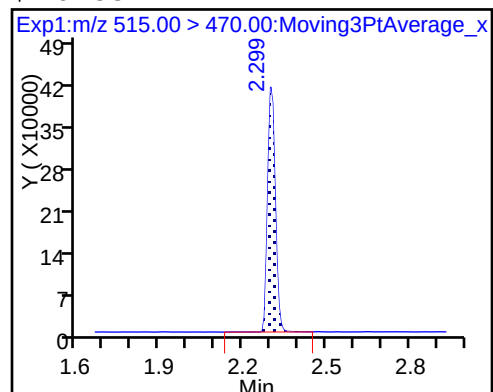
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173116/29 Calibration Date: 07/08/2017 13:39  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_029.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.7864 |         | 117            | 133             | -11.8 | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.036  |         | 14.7           | 14.9            | -0.9  | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.299  |         | 42.0           | 45.1            | -6.8  | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9241 |         | 30.0           | 30.0            | 0.3   | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.013  |         | 59.4           | 60.0            | -1.1  | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8277 |         | 29.0           | 28.9            | 0.4   | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.211  |         | 10.7           | 10.0            | 6.6   | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8366 |         | 9.96           | 10.0            | -0.4  | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173117/29 Calibration Date: 07/08/2017 13:39  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_029.d Conc. Units: ng/mL

| ANALYTE                              | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|--------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid (PFBS)  | Ave           | 0.8911  | 0.7864 |         | 117            | 133             | -11.8 | 30.0      |
| Perfluoroheptanoic acid (PFHpA)      | Ave           | 1.046   | 1.036  |         | 14.7           | 14.9            | -0.9  | 30.0      |
| Perfluorohexanesulfonic acid (PFHxS) | Ave           | 1.394   | 1.299  |         | 42.0           | 45.1            | -6.8  | 30.0      |
| Perfluorooctanoic acid (PFOA)        | Ave           | 0.9217  | 0.9241 |         | 30.0           | 30.0            | 0.3   | 30.0      |
| Perfluorooctanesulfonic acid (PFOS)  | Ave           | 1.024   | 1.013  |         | 59.4           | 60.0            | -1.1  | 30.0      |
| Perfluorononanoic acid (PFNA)        | Ave           | 0.8241  | 0.8277 |         | 29.0           | 28.9            | 0.4   | 30.0      |
| 13C2 PFHxA                           | Ave           | 1.136   | 1.211  |         | 10.7           | 10.0            | 6.6   | 30.0      |
| 13C2 PFDA                            | Ave           | 0.8395  | 0.8366 |         | 9.96           | 10.0            | -0.4  | 30.0      |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_029.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 08-Jul-2017 13:39:00 ALS Bottle#: 5 Worklist Smp#: 29  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:39 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:05:13

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.419 | 1.404  | 0.015  | 1.000  | 11095437 | 116.9        |                 | 3459 |       |
| 298.90 > 99.00                  | 1.419 | 1.404  | 0.015  | 1.000  | 9055730  |              | 1.23(0.00-0.00) | 3251 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.563 | 1.539  | 0.024  | 1.000  | 1053272  | 10.7         |                 | 5555 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691  | 0.039  | 1.000  | 1338279  | 14.7         |                 | 227  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.730 | 1.692  | 0.038  | 1.000  | 6235562  | 42.0         |                 | 2201 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878  | 0.049  |        | 869614   | 10.0         |                 | 3582 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 2408277  | 30.0         |                 | 191  |       |
| 413.00 > 169.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 1592640  |              | 1.51(0.00-0.00) | 2142 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117  | 0.045  |        | 3053864  | 28.7         |                 | 4572 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124  | 0.046  | 1.000  | 2079421  | 29.0         |                 | 224  |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 6477515  | 59.4         |                 | 5338 |       |
| 499.00 > 99.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 1470641  |              | 4.40(0.00-0.00) | 2537 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281  | 0.033  | 1.000  | 727477   | 9.96         |                 | 1282 |       |



**Reagents:**

LC537-L5\_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_029.d  
 Lims ID: CCV L5  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 08-Jul-2017 13:39:00 ALS Bottle#: 5 Worklist Smp#: 29  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L5  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:39 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:05:13

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.419 | 1.404  | 0.015  | 1.000  | 11095437 | 116.9        |                 | 3459 |       |
| 298.90 > 99.00                  | 1.419 | 1.404  | 0.015  | 1.000  | 9055730  |              | 1.23(0.00-0.00) | 3251 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.563 | 1.539  | 0.024  | 1.000  | 1053272  | 10.7         |                 | 5555 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691  | 0.039  | 1.000  | 1338279  | 14.7         |                 | 227  |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.730 | 1.692  | 0.038  | 1.000  | 6235562  | 42.0         |                 | 2201 |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878  | 0.049  |        | 869614   | 10.0         |                 | 3582 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 2408277  | 30.0         |                 | 191  |       |
| 413.00 > 169.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 1592640  |              | 1.51(0.00-0.00) | 2142 |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117  | 0.045  |        | 3053864  | 28.7         |                 | 4572 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124  | 0.046  | 1.000  | 2079421  | 29.0         |                 | 224  |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 6477515  | 59.4         |                 | 5338 |       |
| 499.00 > 99.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 1470641  |              | 4.40(0.00-0.00) | 2537 |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281  | 0.033  | 1.000  | 727477   | 9.96         |                 | 1282 |       |

**Reagents:**

LC537-L5\_00023

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_029.d

Injection Date: 08-Jul-2017 13:39:00

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

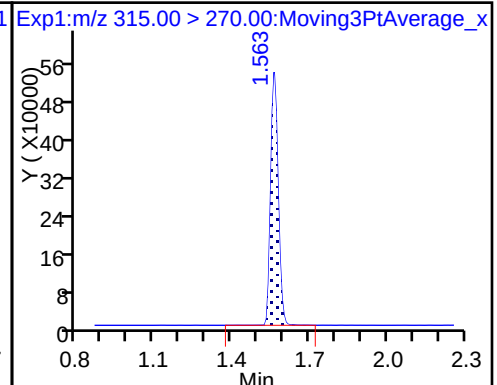
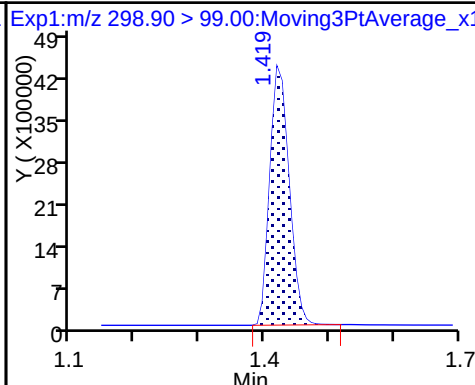
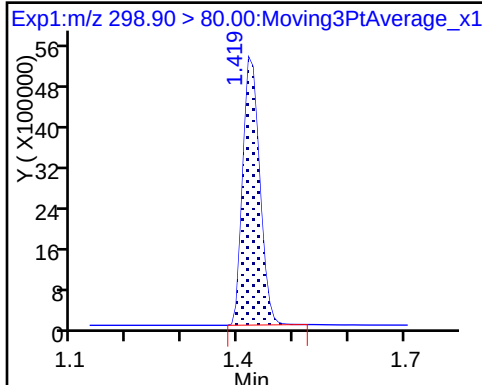
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

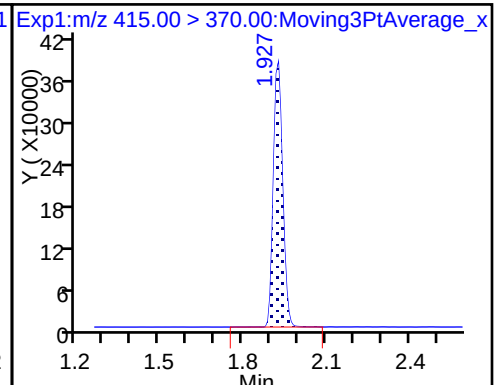
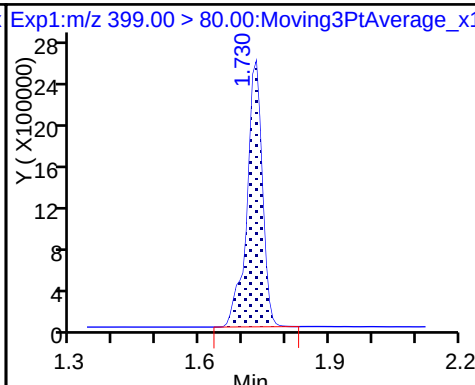
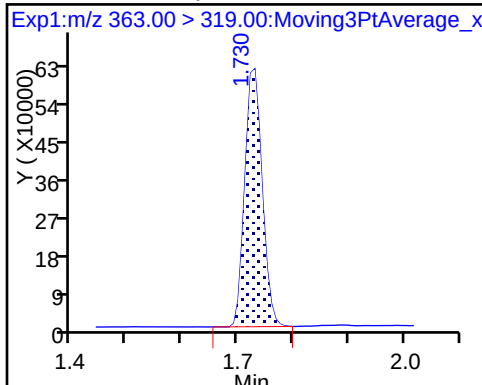
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

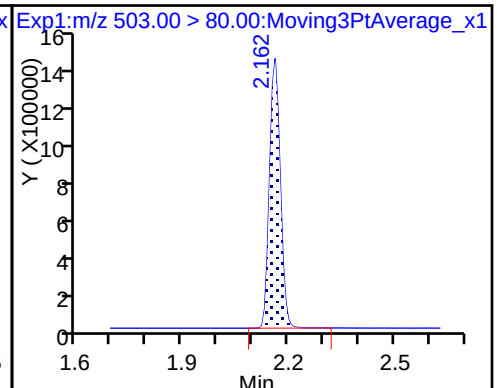
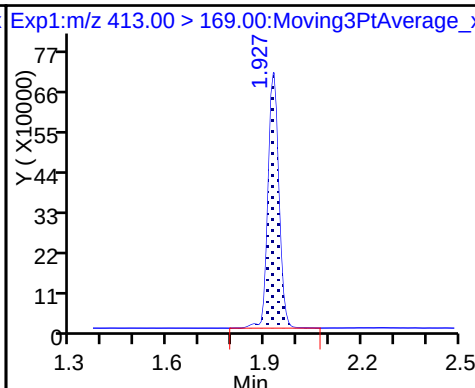
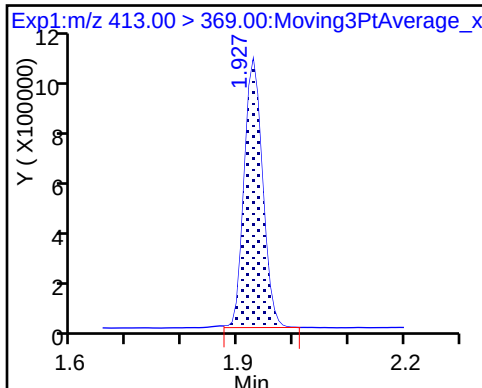
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

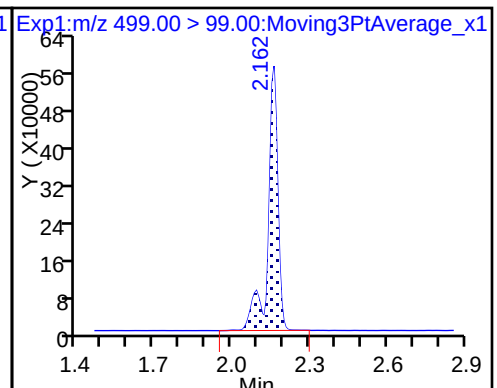
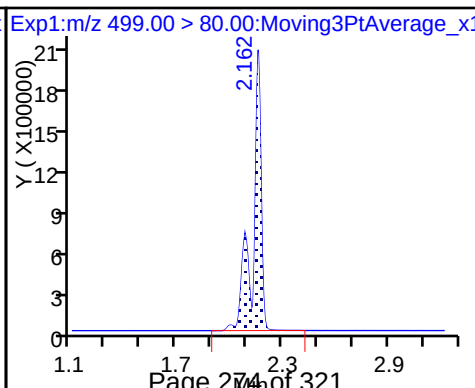
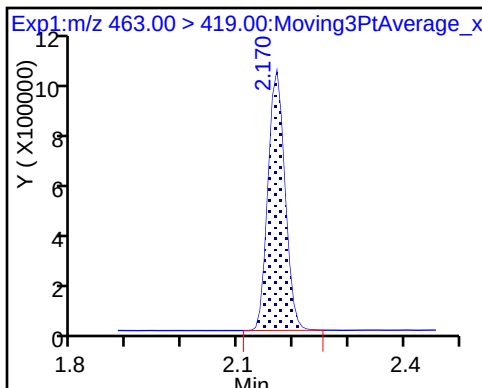
\* 7 13C4 PFOS



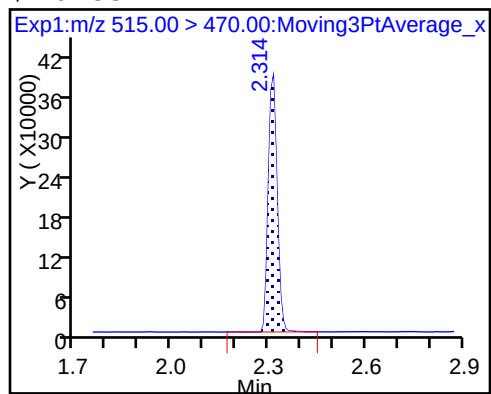
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_029.d

Injection Date: 08-Jul-2017 13:39:00

Instrument ID: A8\_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

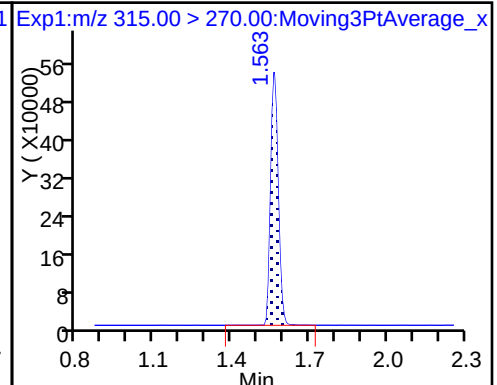
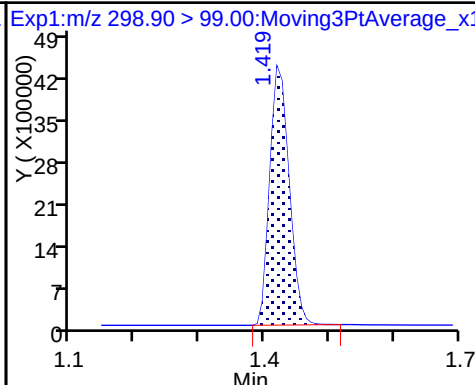
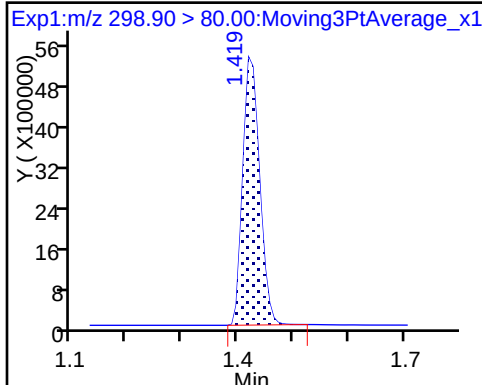
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

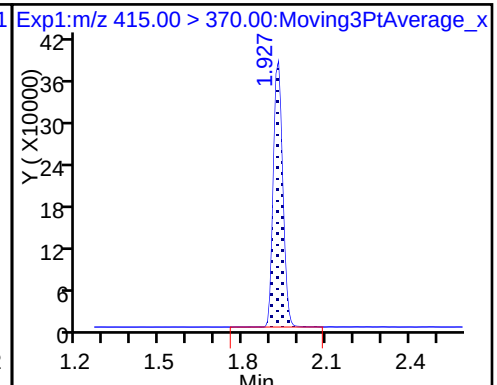
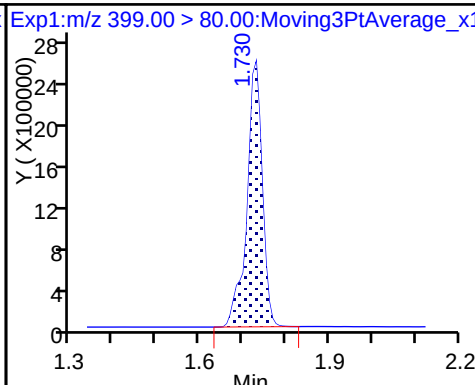
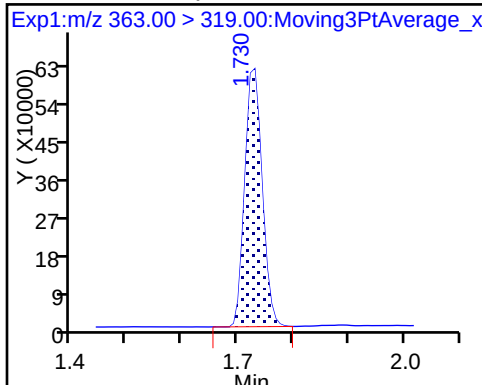
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

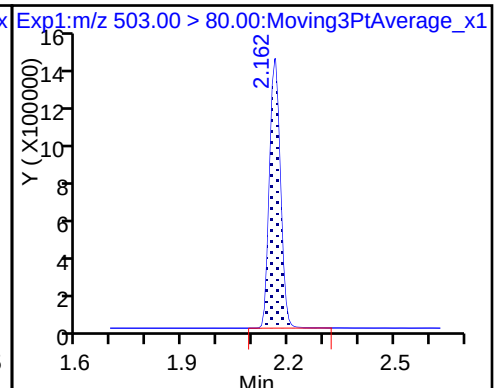
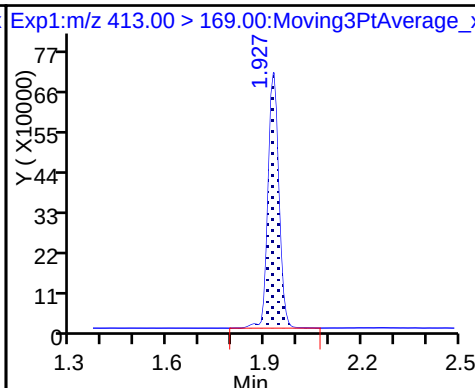
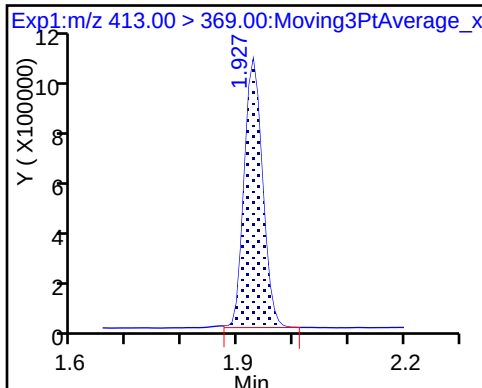
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

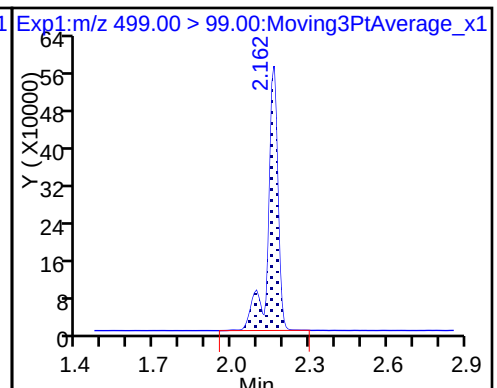
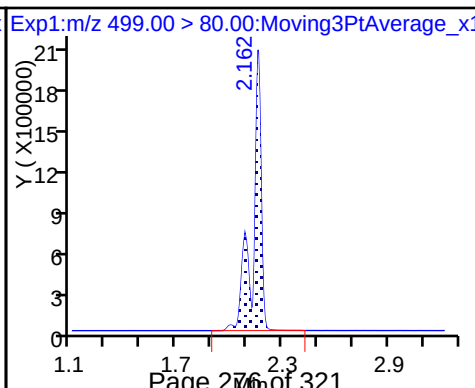
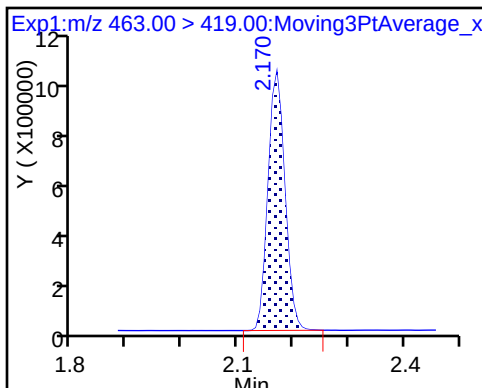
\* 7 13C4 PFOS



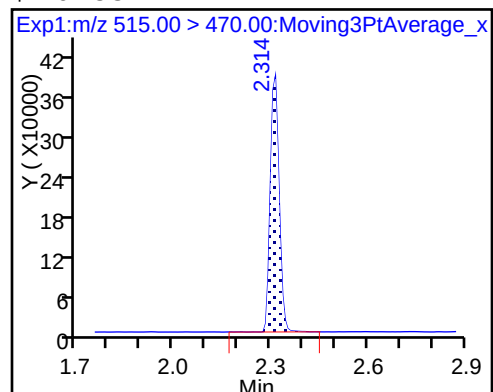
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173117/38 Calibration Date: 07/08/2017 14:21  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_038.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.8672 |         | 43.2           | 44.4            | -2.7  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.078  |         | 5.13           | 4.97            | 3.1   | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.237  |         | 13.4           | 15.1            | -11.3 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9122 |         | 9.94           | 10.0            | -1.0  | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.011  |         | 19.9           | 20.1            | -1.3  | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8235 |         | 9.67           | 9.68            | -0.0  | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.269  |         | 11.2           | 10.0            | 11.6  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8509 |         | 10.1           | 10.0            | 1.3   | 30.0      |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_038.d  
 Lims ID: CCV L3  
 Client ID:  
 Sample Type: CCVIS  
 Inject. Date: 08-Jul-2017 14:21:42 ALS Bottle#: 3 Worklist Smp#: 38  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: CCV L3  
 Misc. Info.: Plate: 1 Rack: 1  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Sublist: chrom-537\_A8\_N\*sub1  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:14:50 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d

Column 1 : Det: EXP1

Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 10:06:52

| Signal                          | RT    | EXP RT | DLT RT | REL RT | Response | Amount ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|--------|--------|--------|----------|--------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 298.90 > 80.00                  | 1.426 | 1.404  | 0.022  | 1.000  | 4041048  | 43.2         |                 | 2248 |       |
| 298.90 > 99.00                  | 1.426 | 1.404  | 0.022  | 1.000  | 3280970  |              | 1.23(0.00-0.00) | 2072 |       |
| \$ 2 13C2 PFHxA                 |       |        |        |        |          |              |                 |      |       |
| 315.00 > 270.00                 | 1.563 | 1.539  | 0.024  | 1.000  | 1091320  | 11.2         |                 | 5682 |       |
| 4 Perfluoroheptanoic acid       |       |        |        |        |          |              |                 |      |       |
| 363.00 > 319.00                 | 1.730 | 1.691  | 0.039  | 1.000  | 461369   | 5.13         |                 | 81.9 |       |
| 3 Perfluorohexanesulfonic acid  |       |        |        |        |          |              |                 |      |       |
| 399.00 > 80.00                  | 1.730 | 1.692  | 0.038  | 1.000  | 1960790  | 13.4         |                 | 796  |       |
| * 6 13C2-PFOA                   |       |        |        |        |          |              |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878  | 0.049  |        | 860316   | 10.0         |                 | 3899 |       |
| 5 Perfluorooctanoic acid        |       |        |        |        |          |              |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 787933   | 9.94         |                 | 64.9 |       |
| 413.00 > 169.00                 | 1.927 | 1.879  | 0.048  | 1.000  | 522941   |              | 1.51(0.00-0.00) | 798  |       |
| * 7 13C4 PFOS                   |       |        |        |        |          |              |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117  | 0.045  |        | 3010705  | 28.7         |                 | 4496 |       |
| 9 Perfluorononanoic acid        |       |        |        |        |          |              |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124  | 0.046  | 1.000  | 685678   | 9.67         |                 | 71.7 |       |
| 8 Perfluorooctane sulfonic acid |       |        |        |        |          |              |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 2135166  | 19.9         |                 | 2626 |       |
| 499.00 > 99.00                  | 2.162 | 2.162  | 0.0    | 1.000  | 476629   |              | 4.48(0.00-0.00) | 888  |       |
| \$ 10 13C2 PFDA                 |       |        |        |        |          |              |                 |      |       |
| 515.00 > 470.00                 | 2.314 | 2.281  | 0.033  | 1.000  | 732007   | 10.1         |                 | 1328 |       |

**Reagents:**

LC537-L3\_00022

Amount Added: 1.00

Units: mL

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_038.d

Injection Date: 08-Jul-2017 14:21:42

Instrument ID: A8\_N

Lims ID: CCV L3

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 38

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

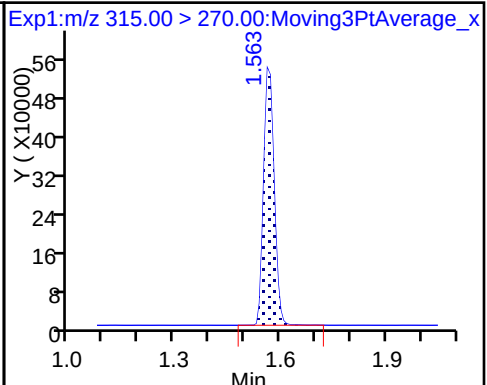
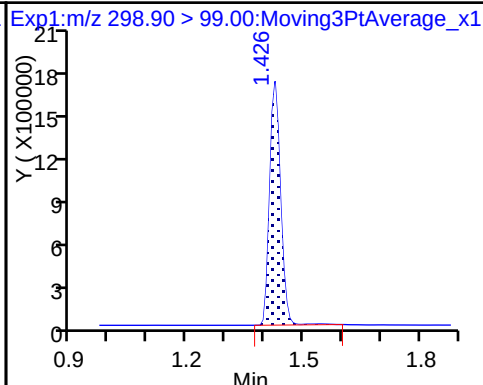
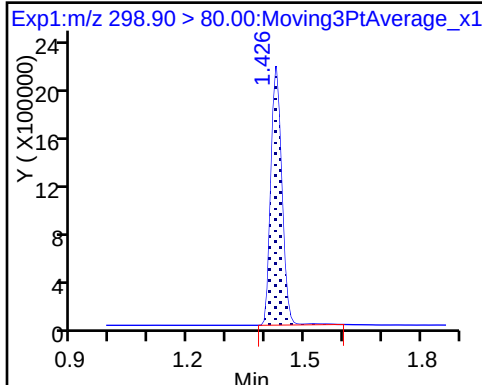
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

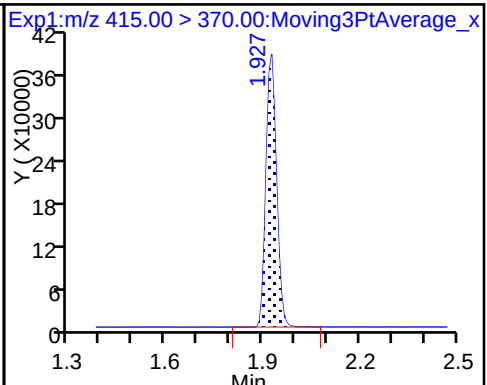
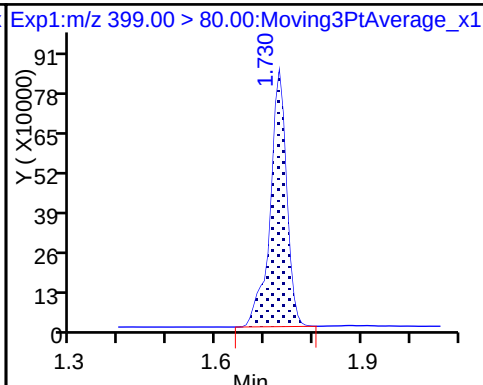
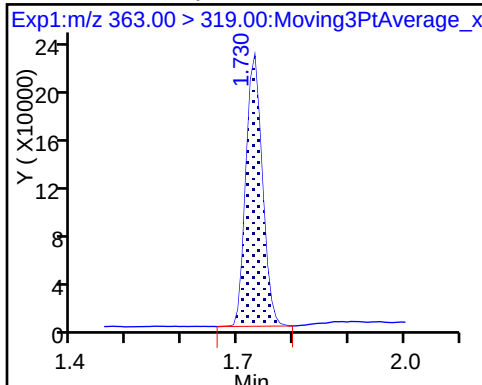
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

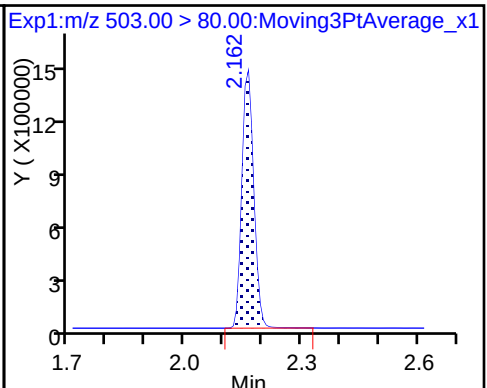
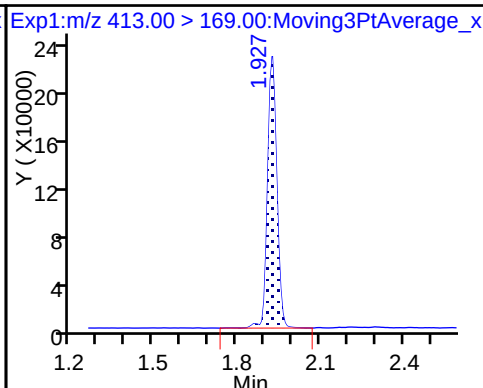
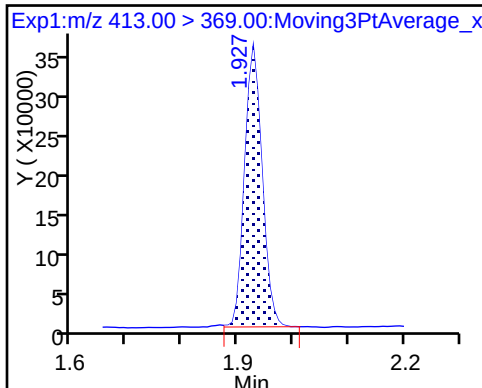
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

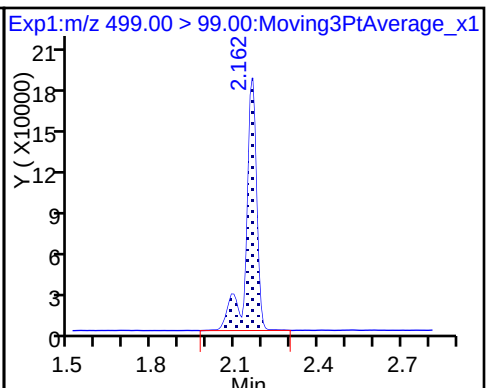
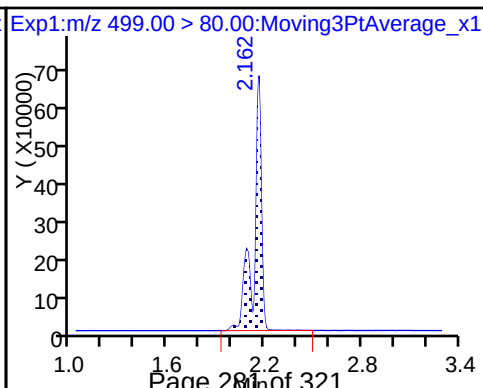
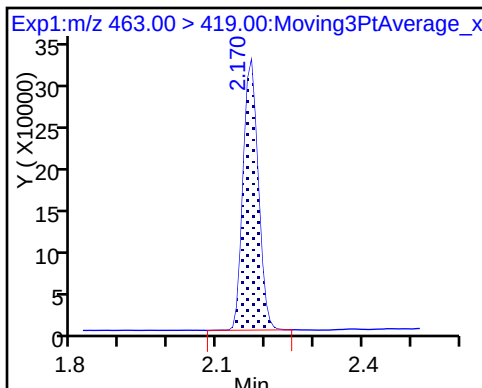
\* 7 13C4 PFOS



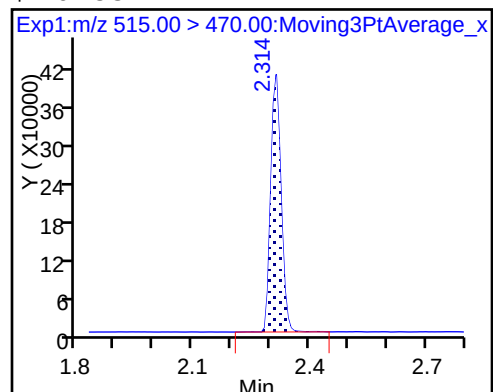
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-172426/1-A  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_007.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 250 (mL) Date Analyzed: 07/08/2017 11:54  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 99   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 100  |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_007.d  
 Lims ID: MB 320-172426/1-A  
 Client ID:  
 Sample Type: MB  
 Inject. Date: 08-Jul-2017 11:54:36 ALS Bottle#: 1 Worklist Smp#: 7  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: mb 320-172426/1-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: phomsophat

Date: 08-Jul-2017 12:35:28

| Signal | RT | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits) | S/N | Flags |
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|
|--------|----|-----------|-----------|-----------|----------|-----------------|---------------|-----|-------|

\$ 2 13C2 PFHxA

315.00 &gt; 270.00 1.563 1.539 0.024 1.000 1082198 9.87 5173

\* 6 13C2-PFOA

415.00 &gt; 370.00 1.927 1.878 0.049 964941 10.0 3397

\* 7 13C4 PFOS

503.00 &gt; 80.00 2.162 2.117 0.045 3151444 28.7 4528

\$ 10 13C2 PFDA

515.00 &gt; 470.00 2.314 2.281 0.033 1.000 813565 10.0 1434

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_007.d

Injection Date: 08-Jul-2017 11:54:36

Instrument ID: A8\_N

Lims ID: MB 320-172426/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

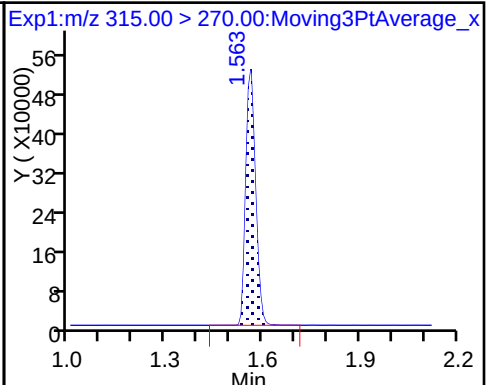
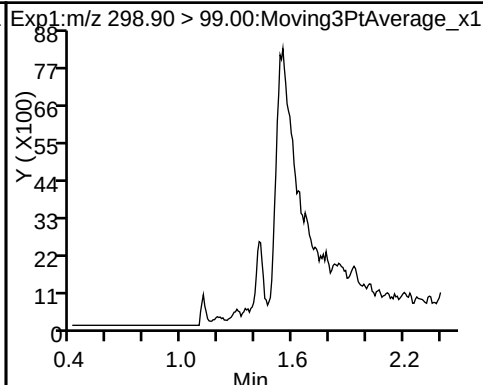
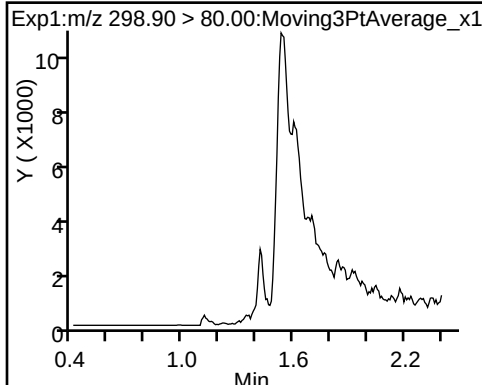
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid (ND)

1 Perfluorobutanesulfonic acid (ND)

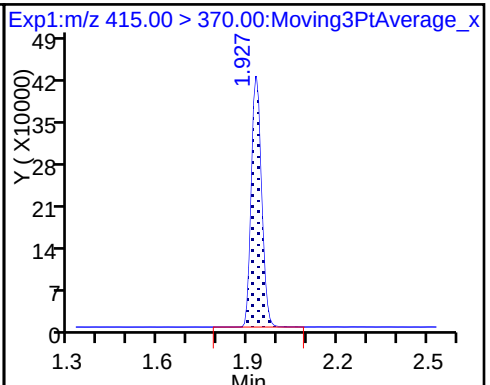
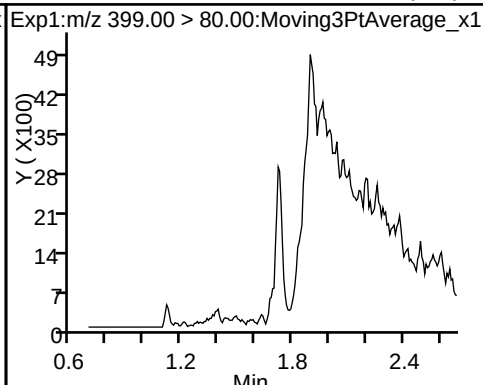
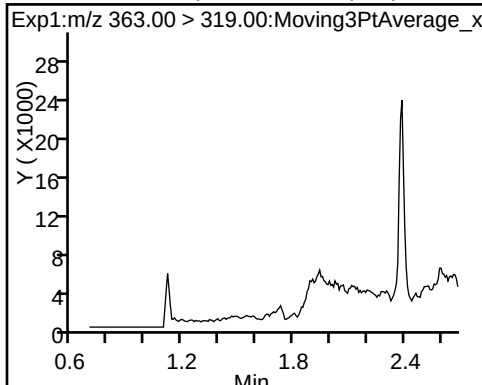
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid (ND)

3 Perfluorohexanesulfonic acid (ND)

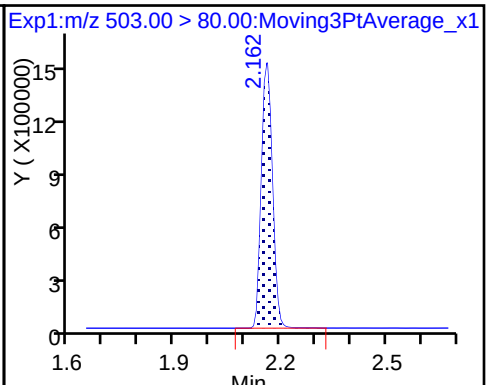
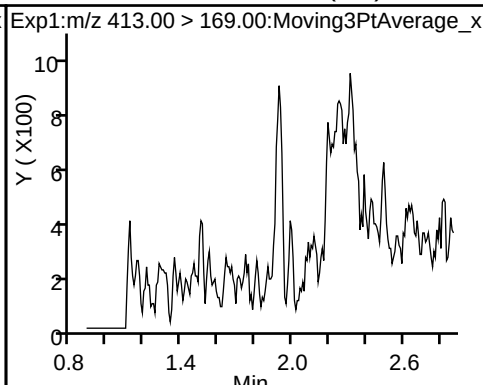
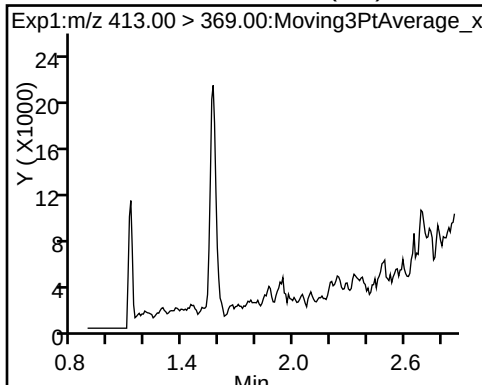
\* 6 13C2-PFOA



5 Perfluorooctanoic acid (ND)

5 Perfluorooctanoic acid (ND)

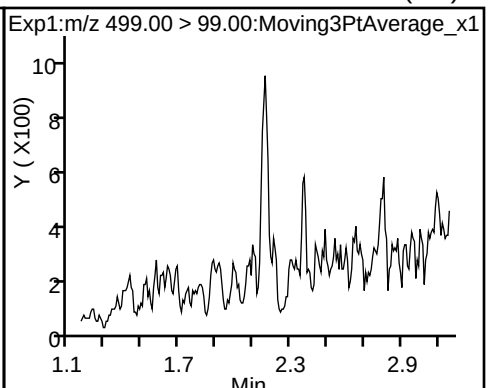
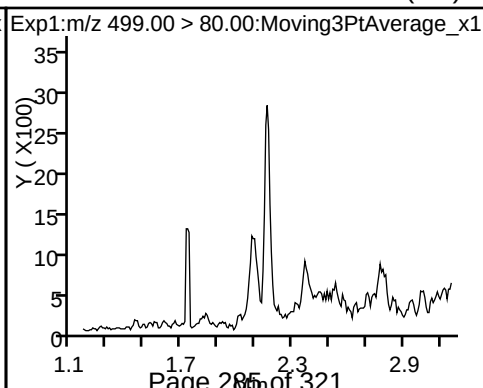
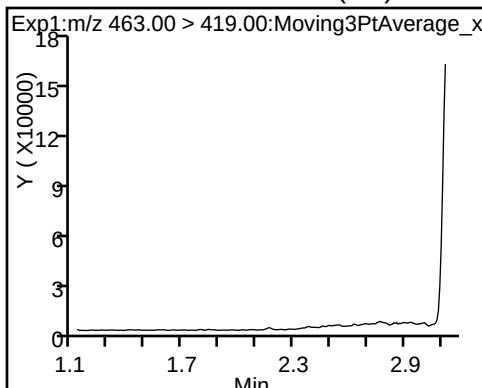
\* 7 13C4 PFOS



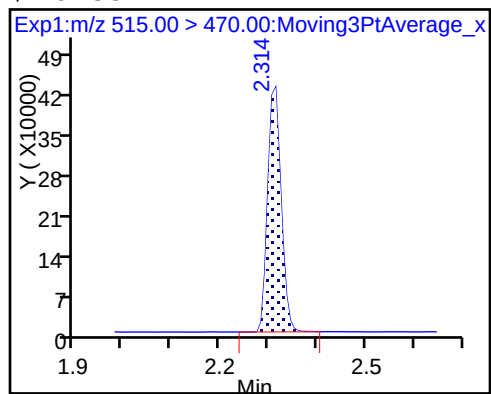
9 Perfluorononanoic acid (ND)

8 Perfluorooctane sulfonic acid (ND)

8 Perfluorooctane sulfonic acid (ND)



\$ 10 13C2 PFDA





TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_007.d  
Lims ID: MB 320-172426/1-A  
Client ID:  
Sample Type: MB  
Inject. Date: 08-Jul-2017 11:54:36 ALS Bottle#: 1 Worklist Smp#: 7  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: mb 320-172426/1-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: phomsophat

Date: 08-Jul-2017 12:35:28

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.87             | 98.71  |
| \$ 10 13C2 PFDA | 10.0         | 10.0             | 100.43 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCS 320-172426/2-A  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_008.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 250 (mL) Date Analyzed: 07/08/2017 11:59  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 302    |   | 40  | 16  | 6.8 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 161    | E | 20  | 8.0 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 149    |   | 24  | 20  | 8.0 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 216    |   | 30  | 12  | 5.5 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 82.2   | E | 10  | 4.0 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 630    |   | 90  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 99   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 103  |   | 70-130 |

TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_008.d  
 Lims ID: LCS 320-172426/2-A  
 Client ID:  
 Sample Type: LCS  
 Inject. Date: 08-Jul-2017 11:59:21 ALS Bottle#: 2 Worklist Smp#: 8  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcs 320-172426/2-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:50:05

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.419 | 1.404     | 0.015     | 1.000     | 15342309 | 157.4           |                 | 3946 |       |
| 298.90 > 99.00                  | 1.419 | 1.404     | 0.015     | 1.000     | 11868429 |                 | 1.29(0.00-0.00) | 3671 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.563 | 1.539     | 0.024     | 1.000     | 1051307  | 9.91            |                 | 5302 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.722 | 1.691     | 0.031     | 1.000     | 2006223  | 20.6            |                 | 295  | E     |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.722 | 1.692     | 0.030     | 1.000     | 8221265  | 53.9            |                 | 3222 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878     | 0.049     |           | 933319   | 10.0            |                 | 3720 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879     | 0.048     | 1.000     | 3462673  | 40.3            |                 | 271  | E     |
| 413.00 > 169.00                 | 1.927 | 1.879     | 0.048     | 1.000     | 2024259  |                 | 1.71(0.00-0.00) | 2422 | E     |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.162 | 2.117     | 0.045     |           | 3136705  | 28.7            |                 | 4622 |       |
| 9 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 463.00 > 419.00                 | 2.170 | 2.124     | 0.046     | 1.000     | 2856083  | 37.1            |                 | 155  |       |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162     | 0.0       | 1.000     | 8459863  | 75.5            |                 | 5968 |       |
| 499.00 > 99.00                  | 2.162 | 2.162     | 0.0       | 1.000     | 1952950  |                 | 4.33(0.00-0.00) | 2630 |       |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.306 | 2.281     | 0.025     | 1.000     | 807347   | 10.3            |                 | 1462 |       |

**QC Flag Legend**

Processing Flags

E - Exceeded Maximum Amount

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_008.d

Injection Date: 08-Jul-2017 11:59:21

Instrument ID: A8\_N

Lims ID: LCS 320-172426/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

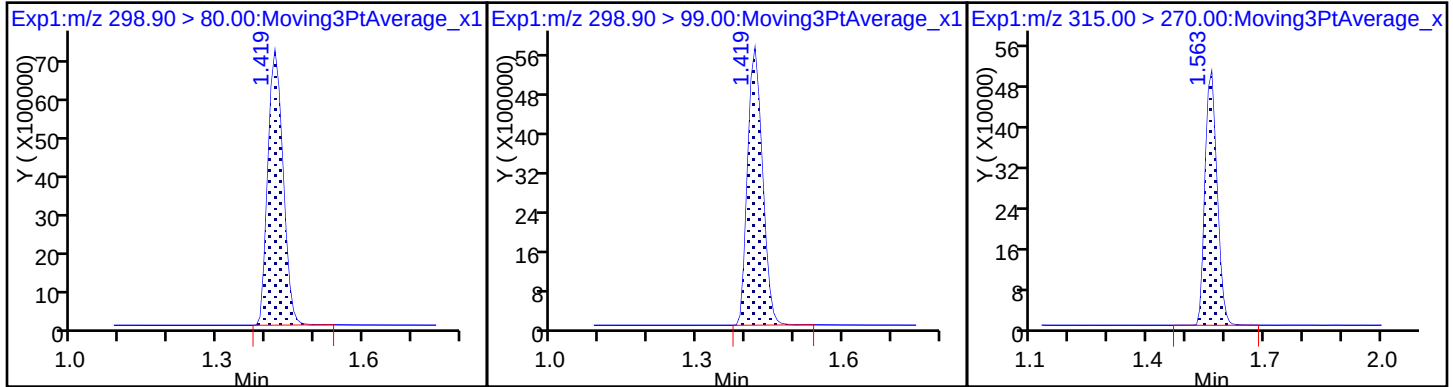
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

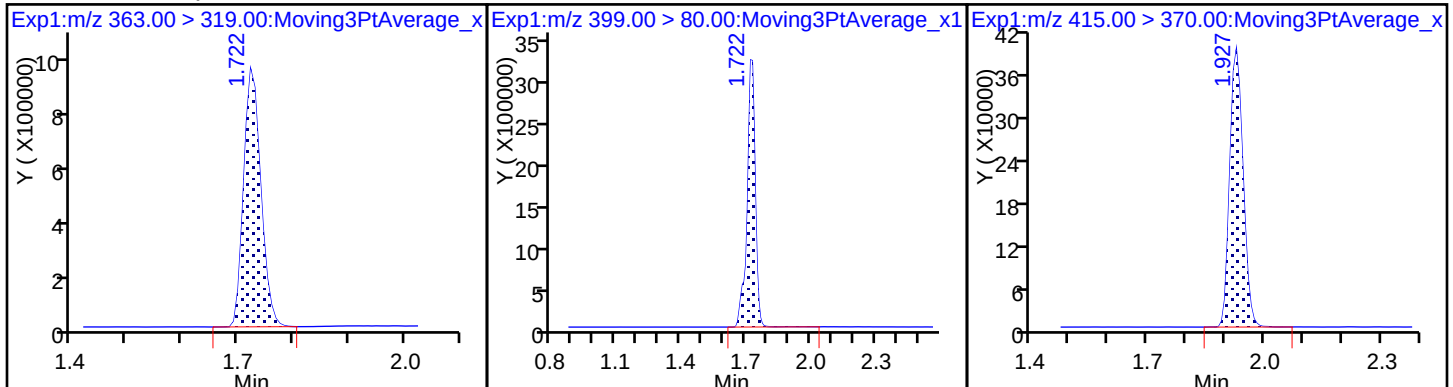
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

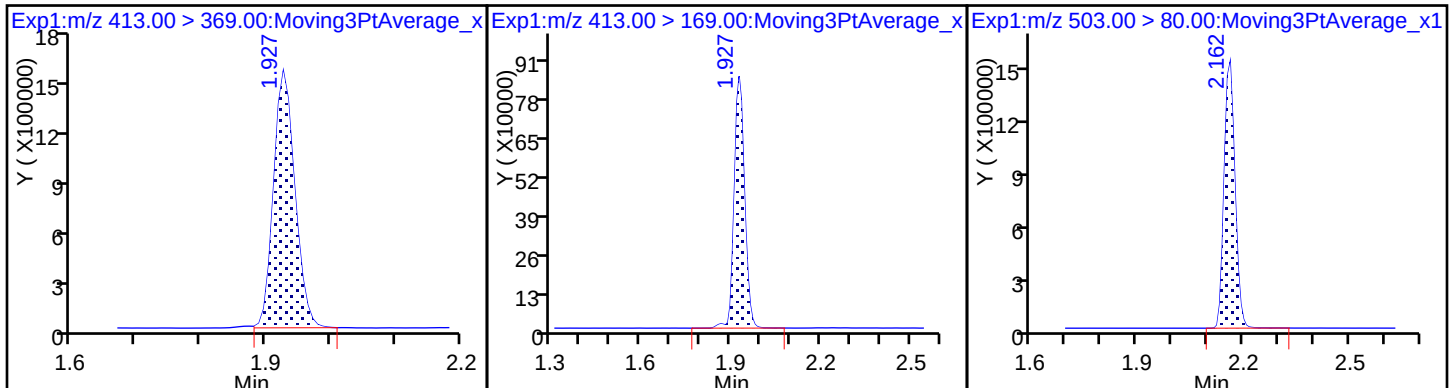
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

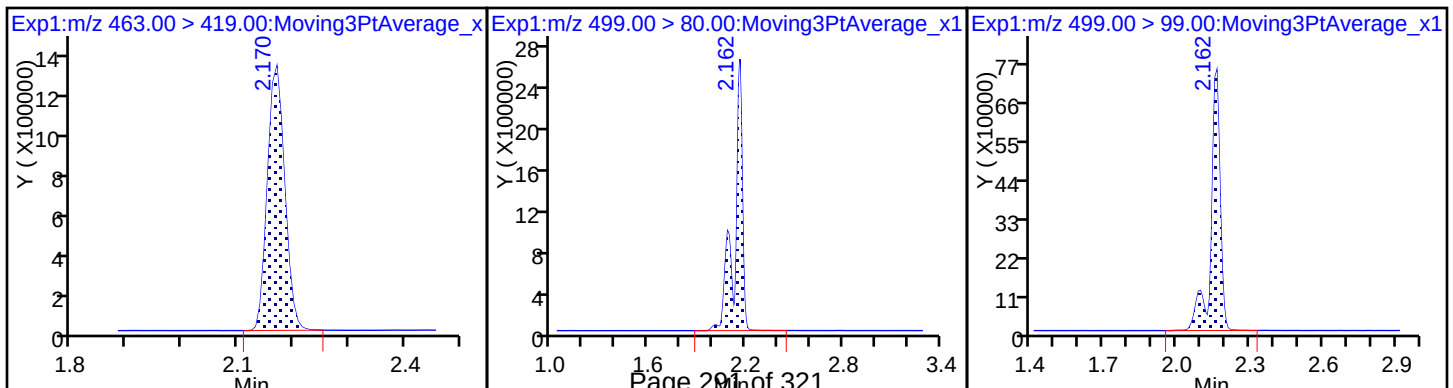
\* 7 13C4 PFOS



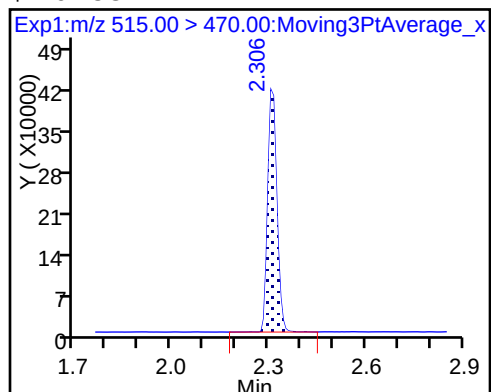
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid

8 Perfluorooctane sulfonic acid



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_008.d  
Lims ID: LCS 320-172426/2-A  
Client ID:  
Sample Type: LCS  
Inject. Date: 08-Jul-2017 11:59:21 ALS Bottle#: 2 Worklist Smp#: 8  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: lcs 320-172426/2-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:50:05

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.91             | 99.14  |
| \$ 10 13C2 PFDA | 10.0         | 10.3             | 103.04 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: LCSD 320-172426/3-A  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_009.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 250 (mL) Date Analyzed: 07/08/2017 12:04  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 291    | M | 40  | 16  | 6.8 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 153    |   | 20  | 8.0 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 142    |   | 24  | 20  | 8.0 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 217    |   | 30  | 12  | 5.5 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 73.4   |   | 10  | 4.0 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 590    |   | 90  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 99   |   | 70-130 |



TestAmerica Sacramento  
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_009.d  
 Lims ID: LCSD 320-172426/3-A  
 Client ID:  
 Sample Type: LCSD  
 Inject. Date: 08-Jul-2017 12:04:06 ALS Bottle#: 3 Worklist Smp#: 9  
 Injection Vol: 2.0 ul Dil. Factor: 1.0000  
 Sample Info: lcsd 320-172426/3-a  
 Misc. Info.: Plate: 1 Rack: 2  
 Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
 Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
 Limit Group: LC 537 ICAL  
 Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
 Integrator: Picker  
 Quant Method: Internal Standard Quant By: Initial Calibration  
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
 Column 1 : Det: EXP1  
 Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:50:50

| Signal                          | RT    | EXP<br>RT | DLT<br>RT | REL<br>RT | Response | Amount<br>ng/ml | Ratio(Limits)   | S/N  | Flags |
|---------------------------------|-------|-----------|-----------|-----------|----------|-----------------|-----------------|------|-------|
| 1 Perfluorobutanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 298.90 > 80.00                  | 1.419 | 1.404     | 0.015     | 1.000     | 14362529 | 147.4           |                 | 3349 |       |
| 298.90 > 99.00                  | 1.419 | 1.404     | 0.015     | 1.000     | 11280358 |                 | 1.27(0.00-0.00) | 3169 |       |
| \$ 2 13C2 PFHxA                 |       |           |           |           |          |                 |                 |      |       |
| 315.00 > 270.00                 | 1.555 | 1.539     | 0.016     | 1.000     | 1091770  | 9.96            |                 | 5714 |       |
| 4 Perfluoroheptanoic acid       |       |           |           |           |          |                 |                 |      |       |
| 363.00 > 319.00                 | 1.722 | 1.691     | 0.031     | 1.000     | 1851253  | 18.4            |                 | 278  |       |
| 3 Perfluorohexanesulfonic acid  |       |           |           |           |          |                 |                 |      |       |
| 399.00 > 80.00                  | 1.722 | 1.692     | 0.030     | 1.000     | 8272305  | 54.3            |                 | 3430 |       |
| * 6 13C2-PFOA                   |       |           |           |           |          |                 |                 |      |       |
| 415.00 > 370.00                 | 1.927 | 1.878     | 0.049     |           | 964655   | 10.0            |                 | 3579 |       |
| 5 Perfluorooctanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 413.00 > 369.00                 | 1.927 | 1.879     | 0.048     | 1.000     | 3405660  | 38.3            |                 | 244  |       |
| 413.00 > 169.00                 | 1.927 | 1.879     | 0.048     | 1.000     | 2040396  |                 | 1.67(0.00-0.00) | 2359 |       |
| * 7 13C4 PFOS                   |       |           |           |           |          |                 |                 |      |       |
| 503.00 > 80.00                  | 2.155 | 2.117     | 0.038     |           | 3136305  | 28.7            |                 | 4594 |       |
| 9 Perfluorononanoic acid        |       |           |           |           |          |                 |                 |      |       |
| 463.00 > 419.00                 | 2.162 | 2.124     | 0.038     | 1.000     | 2831608  | 35.6            |                 | 175  |       |
| 8 Perfluorooctane sulfonic acid |       |           |           |           |          |                 |                 |      |       |
| 499.00 > 80.00                  | 2.162 | 2.162     | 0.0       | 1.000     | 8152161  | 72.8            |                 | 5946 | M     |
| 499.00 > 99.00                  | 2.155 | 2.162     | -0.007    | 0.996     | 1806663  |                 | 4.51(0.00-0.00) | 2345 | M     |
| \$ 10 13C2 PFDA                 |       |           |           |           |          |                 |                 |      |       |
| 515.00 > 470.00                 | 2.306 | 2.281     | 0.025     | 1.000     | 801523   | 9.90            |                 | 1504 |       |

## QC Flag Legend

### Review Flags

M - Manually Integrated

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_009.d

Injection Date: 08-Jul-2017 12:04:06

Instrument ID: A8\_N

Lims ID: LCSD 320-172426/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

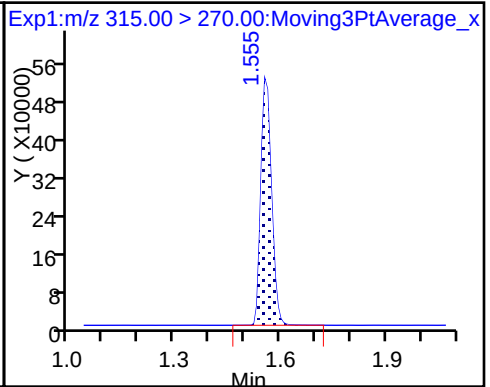
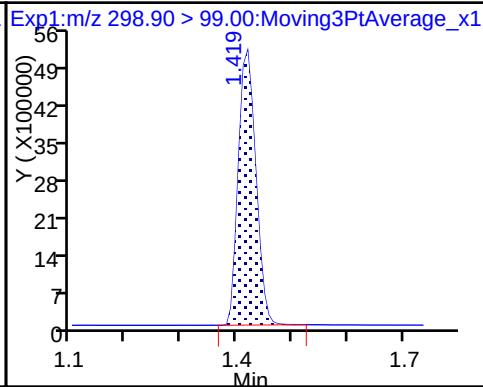
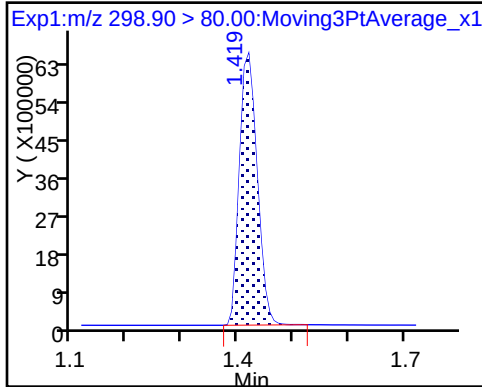
Method: 537\_A8\_N

Limit Group: LC 537 ICAL

1 Perfluorobutanesulfonic acid

1 Perfluorobutanesulfonic acid

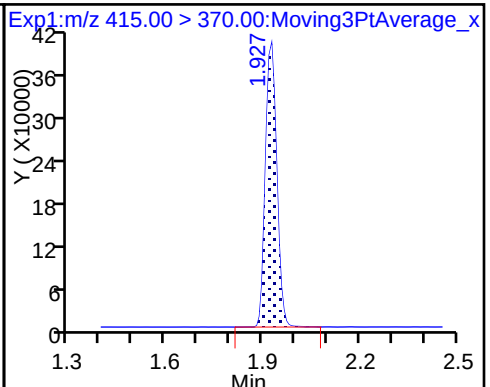
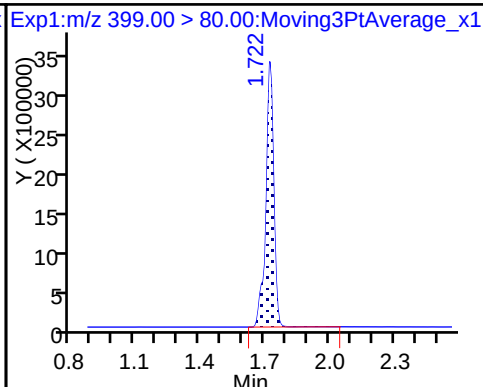
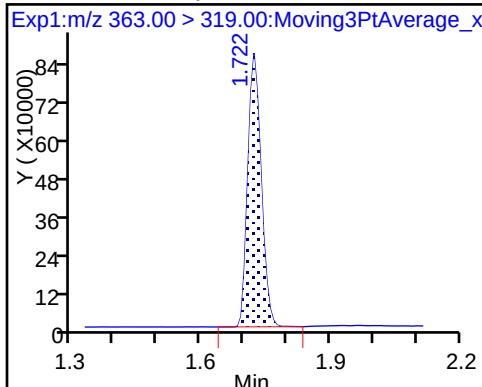
\$ 2 13C2 PFHxA



4 Perfluoroheptanoic acid

3 Perfluorohexanesulfonic acid

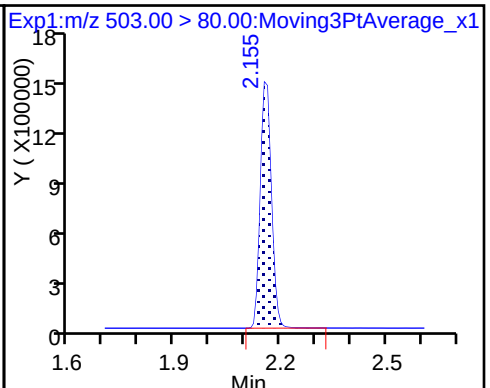
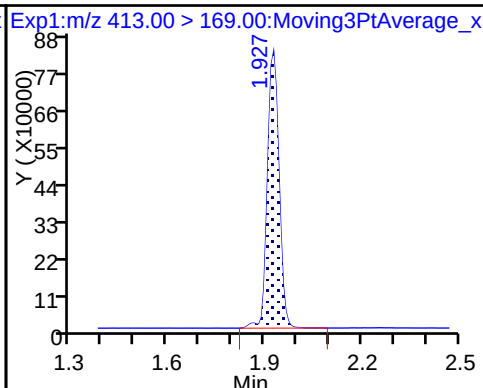
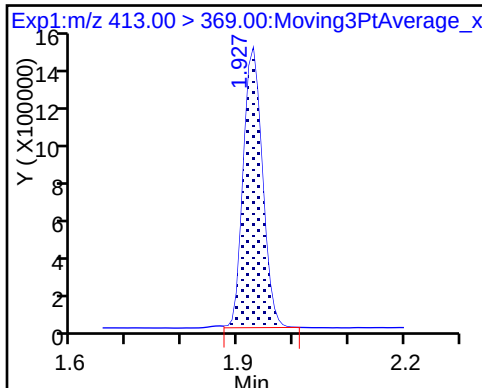
\* 6 13C2-PFOA



5 Perfluorooctanoic acid

5 Perfluorooctanoic acid

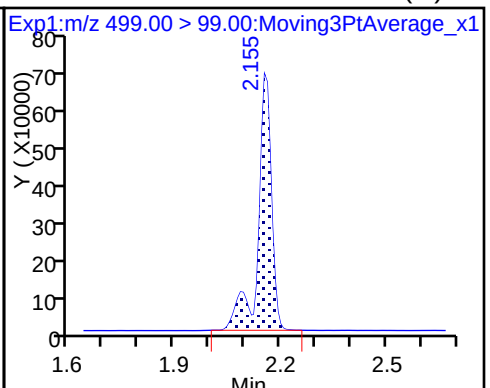
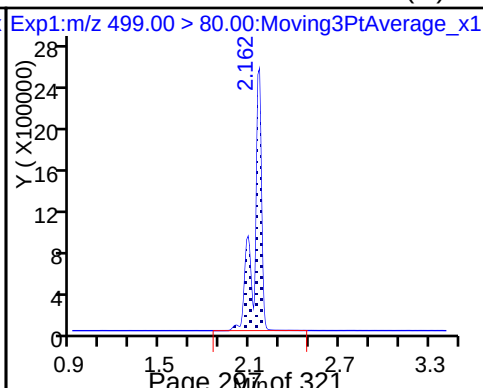
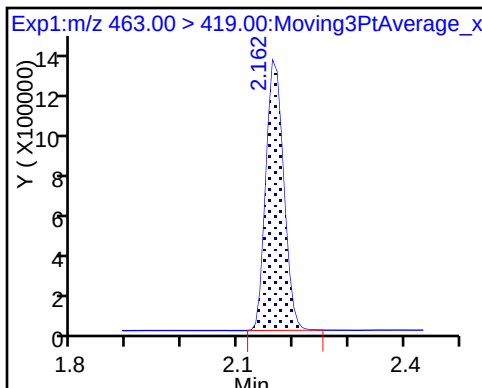
\* 7 13C4 PFOS



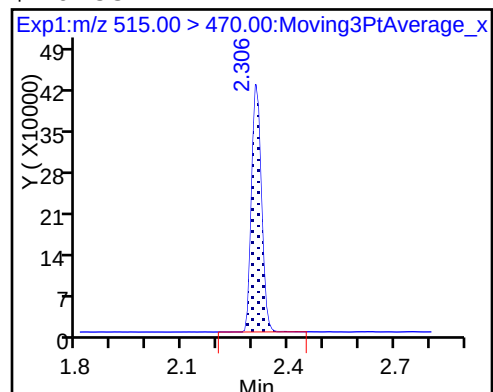
9 Perfluorononanoic acid

8 Perfluorooctane sulfonic acid (M)

8 Perfluorooctane sulfonic acid (M)



\$ 10 13C2 PFDA



TestAmerica Sacramento  
Recovery Report

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_009.d  
Lims ID: LCSD 320-172426/3-A  
Client ID:  
Sample Type: LCSD  
Inject. Date: 08-Jul-2017 12:04:06 ALS Bottle#: 3 Worklist Smp#: 9  
Injection Vol: 2.0 ul Dil. Factor: 1.0000  
Sample Info: lcsd 320-172426/3-a  
Misc. Info.: Plate: 1 Rack: 2  
Operator ID: SACINSTLCMS01 Instrument ID: A8\_N  
Method: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\537\_A8\_N.m  
Limit Group: LC 537 ICAL  
Last Update: 10-Jul-2017 10:13:42 Calib Date: 05-Jul-2017 20:13:46  
Integrator: Picker  
Quant Method: Internal Standard Quant By: Initial Calibration  
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\_N\20170706-45099.b\2017.07.05\_537CURVE\_009.d  
Column 1 : Det: EXP1  
Process Host: XAWRK015

First Level Reviewer: barnettj

Date: 10-Jul-2017 09:50:50

| Compound        | Amount Added | Amount Recovered | % Rec. |
|-----------------|--------------|------------------|--------|
| \$ 2 13C2 PFHxA | 10.0         | 9.96             | 99.61  |
| \$ 10 13C2 PFDA | 10.0         | 9.90             | 98.97  |

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_009.d

Injection Date: 08-Jul-2017 12:04:06

Instrument ID: A8\_N

Lims ID: LCSD 320-172426/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#:

3

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537\_A8\_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

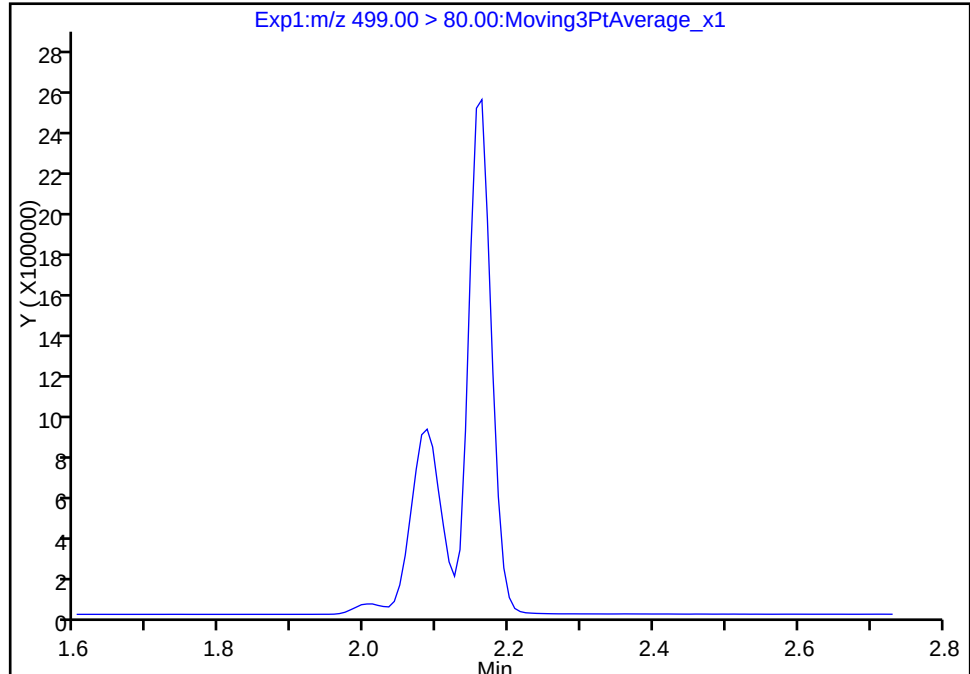
**8 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

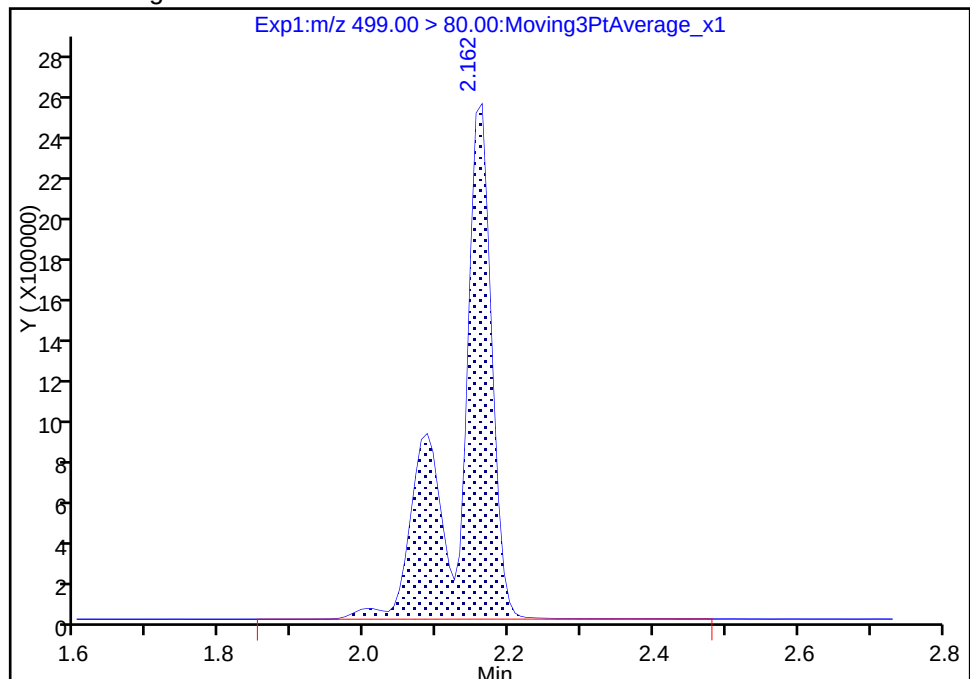
Not Detected

Expected RT: 2.16

## Processing Integration Results



## Manual Integration Results



RT: 2.16

Area: 8152161

Amount: 72.792520

Amount Units: ng/ml

Reviewer: barnettj, 10-Jul-2017 09:50:14

Audit Action: Assigned Compound ID

Audit Reason: Missed Peak

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_009.d

Injection Date: 08-Jul-2017 12:04:06

Instrument ID: A8\_N

Lims ID: LCSD 320-172426/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537\_A8\_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

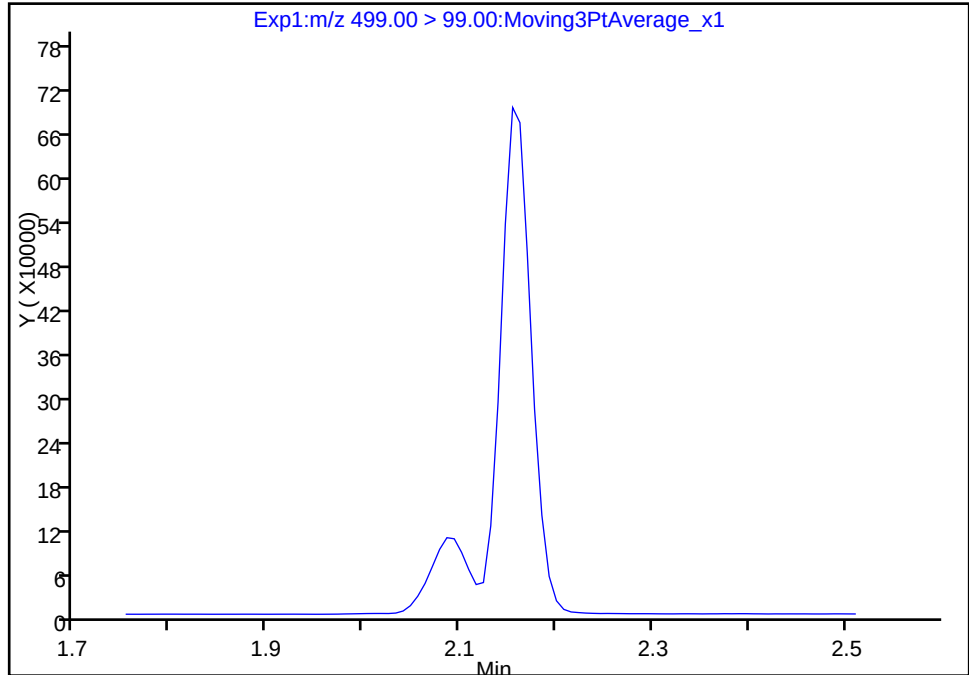
**8 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 2

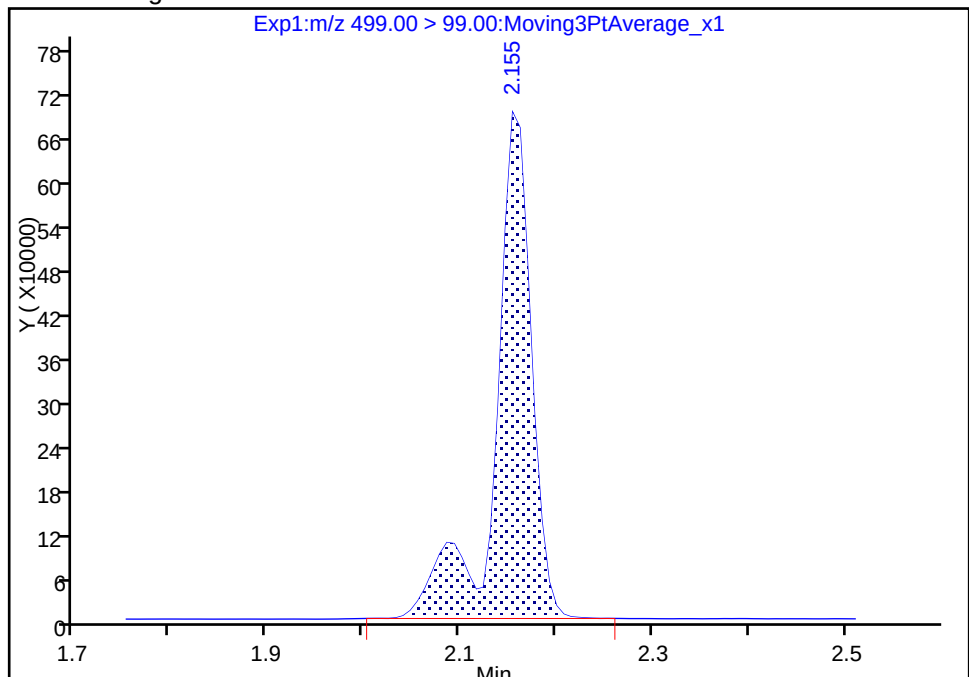
Not Detected

Expected RT: 2.16

## Processing Integration Results



## Manual Integration Results



RT: 2.15

Area: 1806663

Amount: 72.792520

Amount Units: ng/ml

Reviewer: barnettj, 10-Jul-2017 09:50:31

Audit Action: Manually Integrated

Audit Reason: Missed Peak

## TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b\2017.07.08\_537A\_009.d

Injection Date: 08-Jul-2017 12:04:06

Instrument ID: A8\_N

Lims ID: LCSD 320-172426/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: 537\_A8\_N

Limit Group: LC 537 ICAL

Column:

Detector EXP1

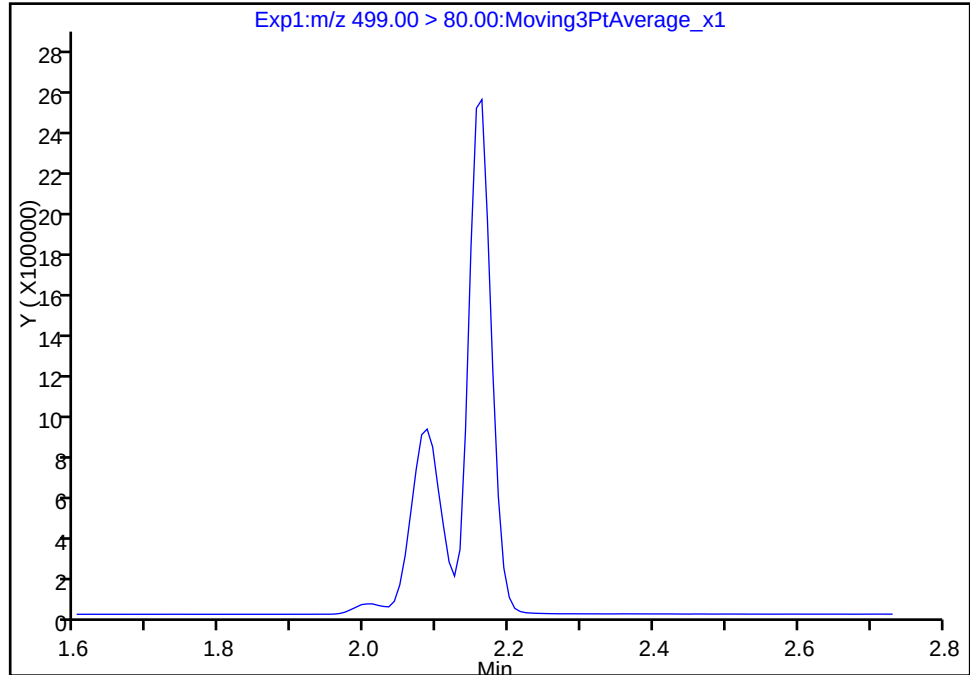
**8 Perfluorooctane sulfonic acid, CAS: 1763-23-1**

Signal: 1

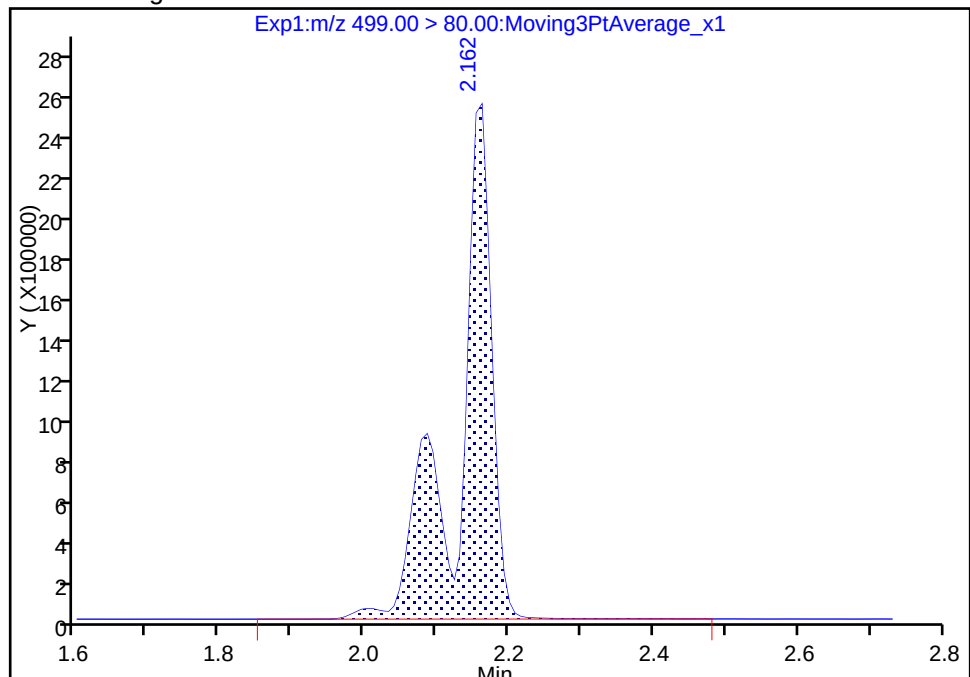
Not Detected

Expected RT: 2.16

## Processing Integration Results



## Manual Integration Results



RT: 2.16

Area: 8152161

Amount: 72.792520

Amount Units: ng/ml

Reviewer: barnettj, 10-Jul-2017 09:50:31

Audit Action: Manually Integrated

Audit Reason: Missed Peak



## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-29346-1

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

Instrument ID: A8\_NStart Date: 07/05/2017 19:50Analysis Batch Number: 172646End Date: 07/05/2017 20:32

| LAB SAMPLE ID             | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID                   | COLUMN ID             |
|---------------------------|------------------|------------------|--------------------|-------------------------------|-----------------------|
| IC 320-172646/4           |                  | 07/05/2017 19:50 | 1                  | 2017.07.05_537C<br>URVE 004.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/5           |                  | 07/05/2017 19:54 | 1                  | 2017.07.05_537C<br>URVE 005.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/6           |                  | 07/05/2017 19:59 | 1                  | 2017.07.05_537C<br>URVE 006.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/7<br>ICISAV |                  | 07/05/2017 20:04 | 1                  | 2017.07.05_537C<br>URVE 007.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/8           |                  | 07/05/2017 20:09 | 1                  | 2017.07.05_537C<br>URVE 008.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/9           |                  | 07/05/2017 20:13 | 1                  | 2017.07.05_537C<br>URVE 009.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                     |                  | 07/05/2017 20:18 | 1                  |                               | GeminiC18 3x100 3(mm) |
| CCVL 320-172646/11        |                  | 07/05/2017 20:23 | 1                  | 2017.07.05_537C<br>URVE 011.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                     |                  | 07/05/2017 20:28 | 1                  |                               | GeminiC18 3x100 3(mm) |
| ICV 320-172646/13         |                  | 07/05/2017 20:32 | 1                  | 2017.07.05_537C<br>URVE 013.d | GeminiC18 3x100 3(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-29346-1

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

Instrument ID: A8\_NStart Date: 07/08/2017 11:40Analysis Batch Number: 173114End Date: 07/08/2017 12:42

| LAB SAMPLE ID              | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID              | COLUMN ID             |
|----------------------------|------------------|------------------|--------------------|--------------------------|-----------------------|
| CCVL 320-173114/4          |                  | 07/08/2017 11:40 | 1                  | 2017.07.08_537A<br>004.d | GeminiC18 3x100 3(mm) |
| CCV 320-173114/5<br>CCVIS  |                  | 07/08/2017 11:45 | 1                  | 2017.07.08_537A<br>005.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 11:49 | 1                  |                          | GeminiC18 3x100 3(mm) |
| MB 320-172426/1-A          |                  | 07/08/2017 11:54 | 1                  | 2017.07.08_537A<br>007.d | GeminiC18 3x100 3(mm) |
| LCS 320-172426/2-A         |                  | 07/08/2017 11:59 | 1                  | 2017.07.08_537A<br>008.d | GeminiC18 3x100 3(mm) |
| LCSD 320-172426/3-A        |                  | 07/08/2017 12:04 | 1                  | 2017.07.08_537A<br>009.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 12:08 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 12:13 | 1                  |                          | GeminiC18 3x100 3(mm) |
| 320-29346-1                |                  | 07/08/2017 12:18 | 1                  | 2017.07.08_537A<br>012.d | GeminiC18 3x100 3(mm) |
| 320-29346-2                |                  | 07/08/2017 12:23 | 1                  | 2017.07.08_537A<br>013.d | GeminiC18 3x100 3(mm) |
| 320-29346-3                |                  | 07/08/2017 12:27 | 1                  | 2017.07.08_537A<br>014.d | GeminiC18 3x100 3(mm) |
| 320-29346-4                |                  | 07/08/2017 12:32 | 1                  | 2017.07.08_537A<br>015.d | GeminiC18 3x100 3(mm) |
| 320-29346-5                |                  | 07/08/2017 12:37 | 1                  | 2017.07.08_537A<br>016.d | GeminiC18 3x100 3(mm) |
| CCV 320-173114/17<br>CCVIS |                  | 07/08/2017 12:42 | 1                  | 2017.07.08_537A<br>017.d | GeminiC18 3x100 3(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-29346-1

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

Instrument ID: A8\_NStart Date: 07/08/2017 12:42Analysis Batch Number: 173116End Date: 07/08/2017 13:39

| LAB SAMPLE ID              | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID              | COLUMN ID             |
|----------------------------|------------------|------------------|--------------------|--------------------------|-----------------------|
| CCV 320-173116/17<br>CCVIS |                  | 07/08/2017 12:42 | 1                  | 2017.07.08_537A<br>017.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 12:46 | 1                  |                          | GeminiC18 3x100 3(mm) |
| 320-29346-6                |                  | 07/08/2017 12:51 | 1                  | 2017.07.08_537A<br>019.d | GeminiC18 3x100 3(mm) |
| 320-29346-7                |                  | 07/08/2017 12:56 | 1                  | 2017.07.08_537A<br>020.d | GeminiC18 3x100 3(mm) |
| 320-29346-8                |                  | 07/08/2017 13:01 | 1                  | 2017.07.08_537A<br>021.d | GeminiC18 3x100 3(mm) |
| 320-29346-9                |                  | 07/08/2017 13:05 | 1                  | 2017.07.08_537A<br>022.d | GeminiC18 3x100 3(mm) |
| 320-29346-10               |                  | 07/08/2017 13:10 | 1                  | 2017.07.08_537A<br>023.d | GeminiC18 3x100 3(mm) |
| 320-29346-11               |                  | 07/08/2017 13:15 | 1                  | 2017.07.08_537A<br>024.d | GeminiC18 3x100 3(mm) |
| 320-29346-12               |                  | 07/08/2017 13:20 | 1                  | 2017.07.08_537A<br>025.d | GeminiC18 3x100 3(mm) |
| 320-29346-13               |                  | 07/08/2017 13:24 | 1                  | 2017.07.08_537A<br>026.d | GeminiC18 3x100 3(mm) |
| 320-29346-14               |                  | 07/08/2017 13:29 | 1                  | 2017.07.08_537A<br>027.d | GeminiC18 3x100 3(mm) |
| 320-29346-15               |                  | 07/08/2017 13:34 | 1                  | 2017.07.08_537A<br>028.d | GeminiC18 3x100 3(mm) |
| CCV 320-173116/29<br>CCVIS |                  | 07/08/2017 13:39 | 1                  | 2017.07.08_537A<br>029.d | GeminiC18 3x100 3(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Instrument ID: A8\_N Start Date: 07/08/2017 13:39Analysis Batch Number: 173117 End Date: 07/08/2017 14:21

| LAB SAMPLE ID              | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID              | COLUMN ID             |
|----------------------------|------------------|------------------|--------------------|--------------------------|-----------------------|
| CCV 320-173117/29<br>CCVIS |                  | 07/08/2017 13:39 | 1                  | 2017.07.08_537A<br>029.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 13:43 | 1                  |                          | GeminiC18 3x100 3(mm) |
| 320-29346-16               |                  | 07/08/2017 13:48 | 1                  | 2017.07.08_537A<br>031.d | GeminiC18 3x100 3(mm) |
| 320-29346-17               |                  | 07/08/2017 13:53 | 1                  | 2017.07.08_537A<br>032.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 13:58 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:02 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:07 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:12 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:16 | 1                  |                          | GeminiC18 3x100 3(mm) |
| CCV 320-173117/38<br>CCVIS |                  | 07/08/2017 14:21 | 1                  | 2017.07.08_537A<br>038.d | GeminiC18 3x100 3(mm) |

## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Batch Number: 172426 Batch Start Date: 07/05/17 10:52 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 07/06/17 20:24

| Lab Sample ID     | Client Sample ID     | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | LC537-HSP 00018 |
|-------------------|----------------------|--------------|-------|-------------|------------|---------------|-------------|------------|-----------------|
| MB 320-172426/1   |                      | 537, 537     |       |             |            | 250 mL        | 1.00 mL     | 7 SU       |                 |
| LCS 320-172426/2  |                      | 537, 537     |       |             |            | 250 mL        | 1.00 mL     | 7 SU       | 100 uL          |
| LCSD 320-172426/3 |                      | 537, 537     |       |             |            | 250 mL        | 1.00 mL     | 7 SU       | 100 uL          |
| 320-29346-A-1     | WGNA-062117-RW-3148  | 537, 537     | T     | 284.23 g    | 27.40 g    | 256.8 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-2     | WGNA-062117-FRB-3148 | 537, 537     | T     | 285.93 g    | 27.01 g    | 258.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-3     | WGNA-062117-RW-0569  | 537, 537     | T     | 292.67 g    | 27.24 g    | 265.4 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-B-4     | WGNA-062117-FRB-0569 | 537, 537     | T     | 279.09 g    | 27.23 g    | 251.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-5     | WGNA-062117-RW-3097  | 537, 537     | T     | 298.04 g    | 27.84 g    | 270.2 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-6     | WGNA-062117-FRB-3097 | 537, 537     | T     | 281.01 g    | 27.14 g    | 253.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-7     | WGNA-062117-RW-0461  | 537, 537     | T     | 284.02 g    | 27.79 g    | 256.2 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-B-8     | WGNA-062117-FRB-0461 | 537, 537     | T     | 294.06 g    | 27.28 g    | 266.8 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-9     | WGNA-062117-DUP02    | 537, 537     | T     | 292.16 g    | 27.85 g    | 264.3 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-10    | WGNA-062117-RW-0500  | 537, 537     | T     | 284.59 g    | 27.43 g    | 257.2 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-11    | WGNA-062117-FRB-0500 | 537, 537     | T     | 298.26 g    | 27.53 g    | 270.7 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-12    | WGNA-062117-RW-3933  | 537, 537     | T     | 281.38 g    | 27.95 g    | 253.4 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-B-13    | WGNA-062117-FRB-3933 | 537, 537     | T     | 285.78 g    | 27.48 g    | 258.3 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-14    | WGNA-062117-RW-0404  | 537, 537     | T     | 284.76 g    | 27.83 g    | 256.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-15    | WGNA-062117-FRB-0404 | 537, 537     | T     | 289.29 g    | 27.30 g    | 262 mL        | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-16    | WGNA-062117-RW-2426  | 537, 537     | T     | 281.14 g    | 27.57 g    | 253.6 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-17    | WGNA-062117-FRB-2426 | 537, 537     | T     | 293.13 g    | 27.37 g    | 265.8 mL      | 1.00 mL     | 7 SU       |                 |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-IS 00044 | LC537-SU 00044 | AnalysisComment |  |  |
|---------------|------------------|--------------|-------|----------------|----------------|-----------------|--|--|
|---------------|------------------|--------------|-------|----------------|----------------|-----------------|--|--|

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.: 320-29346-1

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

Batch Number: 172426 Batch Start Date: 07/05/17 10:52 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 07/06/17 20:24

| Lab Sample ID     | Client Sample ID     | Method Chain | Basis | LC537-IS 00044 | LC537-SU 00044 | AnalysisComment |  |  |  |
|-------------------|----------------------|--------------|-------|----------------|----------------|-----------------|--|--|--|
| MB 320-172426/1   |                      | 537, 537     |       | 100 uL         | 100 uL         | CH ND           |  |  |  |
| LCS 320-172426/2  |                      | 537, 537     |       | 100 uL         | 100 uL         | CH ND           |  |  |  |
| LCSD 320-172426/3 |                      | 537, 537     |       | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-1     | WGNA-062117-RW-3148  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-2     | WGNA-062117-FRB-3148 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-3     | WGNA-062117-RW-0569  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-B-4     | WGNA-062117-FRB-0569 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-5     | WGNA-062117-RW-3097  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-6     | WGNA-062117-FRB-3097 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-7     | WGNA-062117-RW-0461  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-B-8     | WGNA-062117-FRB-0461 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-9     | WGNA-062117-DUP02    | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-10    | WGNA-062117-RW-0500  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-11    | WGNA-062117-FRB-0500 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-12    | WGNA-062117-RW-3933  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-B-13    | WGNA-062117-FRB-3933 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-14    | WGNA-062117-RW-0404  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-15    | WGNA-062117-FRB-0404 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-16    | WGNA-062117-RW-2426  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-17    | WGNA-062117-FRB-2426 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |

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

## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Batch Number: 172426 Batch Start Date: 07/05/17 10:52 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 07/06/17 20:24

| Batch Notes                          |            |
|--------------------------------------|------------|
| Batch Comment                        | IS:975029  |
| Manifold ID                          | 10, 1      |
| Methanol ID                          | 973181     |
| Pipette ID                           | MD05306    |
| Analyst ID - IS Reagent Drop         | VPM        |
| Analyst ID - IS Reagent Drop Witness | JER        |
| Analyst ID - SU Reagent Drop         | NSH        |
| Analyst ID - SU Reagent Drop Witness | HJA        |
| Analyst ID - TA Reagent Drop         | NSH        |
| Analyst ID - TA Reagent Drop Witness | HJA        |
| SPE Cartridge ID                     | 6357081-01 |
| Trizma ID                            | SLBR4303V  |
| Reagent Water ID                     | 7-05-17    |

| Basis | Basis Description |
|-------|-------------------|
| T     | Total/NA          |

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

Method 537 CCV/Data Review Checklist

280-98633, A8  
Job No: 29346 Instrument ID & Date: 7-8-17 ICAL Batch: 172646  
Extraction Batch: 172426 Worklist #: 45208 TALS Batch: 173114, 173116, 173117

| Review Items                                                                                                                                                                               | --- Level 1 --- |    |     | Level 2 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|-----|---------|
|                                                                                                                                                                                            | Yes             | No | N/A |         |
| <b>Initial Calibration</b>                                                                                                                                                                 |                 |    |     |         |
| 1. Is ICAL verified and locked in Chrom & TALS?                                                                                                                                            | ✓               |    |     | ✓       |
| 2. Is ICV properly linked in TALS?                                                                                                                                                         | ✓               |    |     | ✓       |
| <b>Continuing Calibration</b>                                                                                                                                                              |                 |    |     |         |
| 1. Low-range CCV injected at start of analytical run? CCV injected after every 10 samples and at the end of the analytical run and alternated between Low-range, Mid-range and High-range? | ✓               |    |     | ✓       |
| 2. If sequence was not after an ICAL was a low and mid range CCV injected at the start of the analytical run?                                                                              | ✓               |    |     | ✓       |
| 3. Native compounds and surrogates in control?<br>Low-range within ±50% of true value<br>Mid and High-range within ±30% of true value                                                      | ✓               |    |     | ✓       |
| 4. Internal Standard areas in control?<br>Areas ≥ 50% of average area of the ICAL and 70-140% of the most recent CCV.                                                                      | ✓               |    |     | ✓       |
| <b>Client Samples &amp; QC Sample Results</b>                                                                                                                                              |                 |    |     |         |
| 1. Were preparation and analysis done within holding times?                                                                                                                                | ✓               |    |     | ✓       |
| 2. Are Chromatograms reviewed and spectra verified?                                                                                                                                        | ✓               |    |     | ✓       |
| 3. Are positive results within calibration range?                                                                                                                                          | ✓               |    |     | ✓       |
| 4. Dilutions due to target cpds? _____ Dilutions due to non-targets? _____                                                                                                                 |                 |    | ✓   |         |
| 5. All target compounds in MB < 1/3 RL? (Requires NCM if "no.")                                                                                                                            | ✓               |    |     | ✓       |
| 6. Are target constituents in LCS/LCSD within method control limits?                                                                                                                       | ✓               |    |     | ✓       |
| 7. Internal Standard areas in control for all samples and QC reported?<br>±50% from the average area of the ICAL and 70-140% of the most recent CCV                                        | ✓               |    |     | ✓       |
| 8. Do results (e.g., dilutions/trip blanks) make sense?                                                                                                                                    | ✓               |    |     | ✓       |
| 9. Are MS/MSD recoveries and RPDs within method control limits?                                                                                                                            |                 |    | ✓   |         |
| 10. Are all QC samples properly linked in TALS?                                                                                                                                            | ✓               |    |     | ✓       |
| 11. All manual integrations appropriate and completely documented?                                                                                                                         | ✓               |    |     | ✓       |
| 12. Are nonconformances documented as NCMs?                                                                                                                                                | ✓               |    |     | ✓       |
| 13. Are all Chrom graphics uploaded?                                                                                                                                                       | ✓               |    |     | ✓       |

1st Level Reviewer / Date: JRB 7-10-17 2nd Level Reviewer / Date: MW 7/11/2017

NCM # and Comments: 93298  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



A8

Instrument ID & Date: 7-5-17 Worklist#: 45099

ICAL Batch: 172646, 172647 Calibration ID number: 32198, 32199

| Review Items                                                                                                                                                                                                       | --- Level 1 --- |    |     | Level 2 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|-----|---------|
|                                                                                                                                                                                                                    | Yes             | No | N/A |         |
| <b>Initial Calibration</b>                                                                                                                                                                                         |                 |    |     |         |
| 1. Mass calibration, as needed, verified by full scan of PFC stock standard. All PFC ions used for quantitation are within 0.3 m/z of true mass?                                                                   | ✓               |    |     | ✓       |
| 2. Responses increase with increasing concentration?                                                                                                                                                               | ✓               |    |     | ✓       |
| 3. Fit used (circle): <u>Average</u> Linear (1/x <sup>2</sup> ) Linear Quadratic (6 points minimum)                                                                                                                |                 |    |     |         |
| 4. Meets fit criteria?<br>Intercept ≤ ½ RL<br>RSD ≤ 30% for Average<br>R <sup>2</sup> ≥ 0.990 for Linear<br>R <sup>2</sup> ≥ 0.990 for Quadratic<br>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?<br>Are points >MRL within ±30% of true value?                                                                     | ✓               |    |     | ✓       |
| 7. Any carryover from the high calibration point must be ≤ 1/3 RL                                                                                                                                                  | ✓               |    |     | ✓       |
| 8. Asymmetry check meets criteria for the first two eluting peaks? (0.8 - 1.5).                                                                                                                                    | ✓               |    |     | ✓       |
| 9. Is the asymmetry check scanned and linked in TALS to the calibration point?                                                                                                                                     | ✓               |    |     | ✓       |
| 10. Is ICV (2 <sup>nd</sup> source) ± 30% of true value?                                                                                                                                                           | ✓               |    |     | ✓       |
| 11. Is ICV (2 <sup>nd</sup> source) internal standards ±50% of average area of the ICAL?                                                                                                                           | ✓               |    |     | ✓       |
| 12. ICAL locked in Chrom and uploaded to TALS?                                                                                                                                                                     | ✓               |    |     |         |
| 13. ICAL locked in TALS and scanned?                                                                                                                                                                               |                 |    |     | ✓       |

1<sup>st</sup> Level Reviewer / Date: JRB 7-6-17

2<sup>nd</sup> Level Reviewer / Date: CBW 7/6/17

NCM # and Comments:

TestAmerica Laboratories  
Worklist QC Batch Report

Worklist Name: 08JUL2017\_537A

Worklist Number: 45208

Instrument Name: A8\_N

Chrom Method: 537\_A8\_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8\_N\20170708-45208.b

QC Batching: Enabled

Limit Group Batching: Enabled

| QC Batch: 1             | LC 537 ICAL<br>Raw Batch: 173114 | LC 537 CS ICAL<br>Raw Batch: 173115 |
|-------------------------|----------------------------------|-------------------------------------|
| # 1 RB                  | # 1 RB                           | # 1 RB                              |
| # 2 RB                  | # 2 RB                           | # 2 RB                              |
| # 3 RB                  | # 3 RB                           | # 3 RB                              |
| # 4 CCVL                | # 4 CCVL                         | # 4 CCVL                            |
| # 5 CCV L5              | # 5 CCV L5                       | # 5 CCV L5                          |
| # 6 RB                  | # 6 RB                           | # 6 RB                              |
| # 7 MB 320-172426/1-A   | # 7 MB 320-172426/1-A            |                                     |
| # 8 LCS 320-172426/2-A  | # 8 LCS 320-172426/2-A           |                                     |
| # 9 LCSD 320-172426/3-A | # 9 LCSD 320-172426/3-A          |                                     |
| #10 280-98633-C-9-A     | #10 280-98633-C-9-A              |                                     |
| #11 280-98633-A-12-A    | #11 280-98633-A-12-A             |                                     |
| #12 320-29346-A-1-A     | #12 320-29346-A-1-A              |                                     |
| #13 320-29346-A-2-A     | #13 320-29346-A-2-A              |                                     |
| #14 320-29346-A-3-A     | #14 320-29346-A-3-A              |                                     |
| #15 320-29346-B-4-A     | #15 320-29346-B-4-A              |                                     |
| #16 320-29346-A-5-A     | #16 320-29346-A-5-A              |                                     |
| #17 CCV L3              | #17 CCV L3                       |                                     |

| QC Batch: 2          | LC 537 ICAL<br>Raw Batch: 173116 |
|----------------------|----------------------------------|
| #17 CCV L3           | #17 CCV L3                       |
| #18 RB               | #18 RB                           |
| #19 320-29346-A-6-A  | #19 320-29346-A-6-A              |
| #20 320-29346-A-7-A  | #20 320-29346-A-7-A              |
| #21 320-29346-B-8-A  | #21 320-29346-B-8-A              |
| #22 320-29346-A-9-A  | #22 320-29346-A-9-A              |
| #23 320-29346-A-10-A | #23 320-29346-A-10-A             |
| #24 320-29346-A-11-A | #24 320-29346-A-11-A             |
| #25 320-29346-A-12-A | #25 320-29346-A-12-A             |
| #26 320-29346-B-13-A | #26 320-29346-B-13-A             |
| #27 320-29346-A-14-A | #27 320-29346-A-14-A             |
| #28 320-29346-A-15-A | #28 320-29346-A-15-A             |
| #29 CCV L5           | #29 CCV L5                       |

| QC Batch: 3              | LC 537 ICAL<br>Raw Batch: 173117 |
|--------------------------|----------------------------------|
| #29 CCV L5               | #29 CCV L5                       |
| #30 RB                   | #30 RB                           |
| #31 320-29346-A-16-A     | #31 320-29346-A-16-A             |
| #32 320-29346-A-17-A     | #32 320-29346-A-17-A             |
| #33 MB 320-171866/1-A    | #33 MB 320-171866/1-A            |
| #34 LLCSD 320-171866/2-A | #34 LLCSD 320-171866/2-A         |
| #35 LLCSD 320-171866/3-A | #35 LLCSD 320-171866/3-A         |
| #36 320-29300-A-21-A     | #36 320-29300-A-21-A             |
| #37 320-29300-A-22-A     | #37 320-29300-A-22-A             |
| #38 CCV L3               | #38 CCV L3                       |
| #39 RB                   | #39 RB                           |

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## Aqueous Extraction Analysis Sheet

AB 7/8/17

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End: 7/6/2017 8:24:00PM

## Extraction of Perfluorinated Alkyl Acids

Page 318 of 321

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | GrossWt<br>TareWt | InitAmnt<br>FinAmnt | PHs<br>Adj1 Adj2 |  |  | Due Date | Analytical<br>TAT | Div<br>Rank | Comments | Output Sample Lab ID                                                                  |
|--------------------------------------------|----------------------|-------------------|---------------------|------------------|--|--|----------|-------------------|-------------|----------|---------------------------------------------------------------------------------------|
| MB-320-172426/1<br>N/A                     | N/A                  |                   | 250 mL              | 7                |  |  | N/A      | N/A               | N/A         | CH ND    |    |
|                                            |                      |                   | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| LCS-320-172426/2<br>N/A                    | N/A                  |                   | 250 mL              | 7                |  |  | N/A      | N/A               | N/A         | CH ND    |    |
|                                            |                      |                   | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| LCSD-320-172426/3<br>N/A                   | N/A                  |                   | 250 mL              | 7                |  |  | N/A      | N/A               | N/A         | CH ND    |    |
|                                            |                      |                   | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 280-98633-C-9<br>(537_DOD5)                | N/A<br>(280-98633-1) | 290.28 g          | 262.6 mL            | 7                |  |  | 6/29/17  | 12_Days           | 4           | CH ND    |    |
|                                            |                      | 27.73 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 280-98633-A-12<br>(537_DOD5)               | N/A<br>(280-98633-1) | 287.55 g          | 260.4 mL            | 7                |  |  | 6/29/17  | 12_Days           | 4           | CH ND    |    |
|                                            |                      | 27.19 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 320-29346-A-1<br>(537_DOD5)                | N/A<br>(320-29346-1) | 284.23 g          | 256.8 mL            | 7                |  |  | 6/28/17  | 16_Days           | 4           | CH ND    |    |
|                                            |                      | 27.40 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 320-29346-A-2<br>(537_DOD5)                | N/A<br>(320-29346-1) | 285.93 g          | 258.9 mL            | 7                |  |  | 6/28/17  | 16_Days           | 4           | CH ND    |  |
|                                            |                      | 27.01 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 320-29346-A-3<br>(537_DOD5)                | N/A<br>(320-29346-1) | 292.67 g          | 265.4 mL            | 7                |  |  | 6/28/17  | 16_Days           | 4           | CH ND    |  |
|                                            |                      | 27.24 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 320-29346-B-4<br>(537_DOD5)                | N/A<br>(320-29346-1) | 279.09 g          | 251.9 mL            | 7                |  |  | 6/28/17  | 16_Days           | 4           | CH ND    |  |
|                                            |                      | 27.23 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |
| 320-29346-A-5<br>(537_DOD5)                | N/A<br>(320-29346-1) | 298.04 g          | 270.2 mL            | 7                |  |  | 6/28/17  | 16_Days           | 4           | CH ND    |  |
|                                            |                      | 27.84 g           | 1.00 mL             |                  |  |  |          |                   |             |          |                                                                                       |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End: 7/6/2017 8:24:00PM

|    |                              |                      |          |          |   |  |  |         |         |   |       |                                                                                       |
|----|------------------------------|----------------------|----------|----------|---|--|--|---------|---------|---|-------|---------------------------------------------------------------------------------------|
| 11 | 320-29346-A-6<br>(537_DOD5)  | N/A<br>(320-29346-1) | 281.01 g | 253.9 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.14 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 12 | 320-29346-A-7<br>(537_DOD5)  | N/A<br>(320-29346-1) | 284.02 g | 256.2 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.79 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 13 | 320-29346-B-8<br>(537_DOD5)  | N/A<br>(320-29346-1) | 294.06 g | 266.8 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.28 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 14 | 320-29346-A-9<br>(537_DOD5)  | N/A<br>(320-29346-1) | 292.16 g | 264.3 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.85 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 15 | 320-29346-A-10<br>(537_DOD5) | N/A<br>(320-29346-1) | 284.59 g | 257.2 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.43 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 16 | 320-29346-A-11<br>(537_DOD5) | N/A<br>(320-29346-1) | 298.26 g | 270.7 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.53 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 17 | 320-29346-A-12<br>(537_DOD5) | N/A<br>(320-29346-1) | 281.38 g | 253.4 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.95 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 18 | 320-29346-B-13<br>(537_DOD5) | N/A<br>(320-29346-1) | 285.78 g | 258.3 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.48 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 19 | 320-29346-A-14<br>(537_DOD5) | N/A<br>(320-29346-1) | 284.76 g | 256.9 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.83 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 20 | 320-29346-A-15<br>(537_DOD5) | N/A<br>(320-29346-1) | 289.29 g | 262 mL   | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.30 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 21 | 320-29346-A-16<br>(537_DOD5) | N/A<br>(320-29346-1) | 281.14 g | 253.6 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.57 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |
| 22 | 320-29346-A-17<br>(537_DOD5) | N/A<br>(320-29346-1) | 293.13 g | 265.8 mL | 7 |  |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.37 g  | 1.00 mL  |   |  |  |         |         |   |       |                                                                                       |

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End: 7/6/2017 8:24:00PM

## Batch Notes

Manifold ID 10, 1

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-01

Methanol ID 973181

Reagent Water ID 7-05-17

Pipette ID MD05306

Analyst ID - TA Reagent Drop NSH

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop NSH

Analyst ID - SU Reagent Drop HJA

Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER

Witness

Batch Comment IS:975029

## Comments

280-98633-C-9

Method Comments: Q5

280-98633-A-12

Method Comments: Q5

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End:

## Reagent Additions Worksheet

| Lab ID            | Reagent Code    | Amount Added | Final Amount | By         | Witness    |
|-------------------|-----------------|--------------|--------------|------------|------------|
| MB 320-172426/1   | LC537-SU_00044  | 100 uL       | 1.00 mL      | NSH 7-5-17 | HSD 7-5-17 |
| LCS 320-172426/2  | LC537-HSP_00018 | 100 uL       | 1.00 mL      |            |            |
| LCS 320-172426/2  | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| LCSD 320-172426/3 | LC537-HSP_00018 | 100 uL       | 1.00 mL      |            |            |
| LCSD 320-172426/3 | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 280-98633-C-9     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 280-98633-A-12    | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-1     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-2     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-3     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-B-4     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-5     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-6     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-7     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-B-8     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-9     | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-10    | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |
| 320-29346-A-11    | LC537-SU_00044  | 100 uL       | 1.00 mL      |            |            |

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End:

|                |                |        |         |            |            |
|----------------|----------------|--------|---------|------------|------------|
| 320-29346-A-12 | LC537-SU_00044 | 100 uL | 1.00 mL | NSH 7-5-17 | NSA 7-5-17 |
| 320-29346-B-13 | LC537-SU_00044 | 100 uL | 1.00 mL |            |            |
| 320-29346-A-14 | LC537-SU_00044 | 100 uL | 1.00 mL |            |            |
| 320-29346-A-15 | LC537-SU_00044 | 100 uL | 1.00 mL |            |            |
| 320-29346-A-16 | LC537-SU_00044 | 100 uL | 1.00 mL |            |            |
| 320-29346-A-17 | LC537-SU_00044 | 100 uL | 1.00 mL |            |            |

## Other Reagents:

Reagent

Amount/Units

Lot#:

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Preparation Batch Number(s): 172426 Test: 5320005  
Earliest Holding Time: 7-5-17

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

1<sup>st</sup> Level Reviewer: VPM Date: 7/6/17  
2<sup>nd</sup> Level Reviewer: [Signature] Date: 7/6/17  
Comments: \_\_\_\_\_



# Shipping and Receiving Documents

# TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605-1500  
phone 916.373.5600 fax 303.467.7248

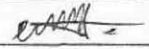
## Chain of Custody Record

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

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

|                                                                                                                                                                                                             |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|----------------------|
| <b>Client Contact</b>                                                                                                                                                                                       |           | <b>Project Manager: Andy Frebowitz</b>                                                                                                   |                    | <b>Site Contact: Mary Kay Bond</b>                                                                                    |               | <b>Date: 6/21/2017</b>                                                                                                                                                                                                                         |                              | <b>COC No:</b>                |                      |
| TetraTech                                                                                                                                                                                                   |           | Tel/Fax:                                                                                                                                 |                    | Lab Contact: Dave Alltucker                                                                                           |               | Carrier: Fed Ex                                                                                                                                                                                                                                |                              | 1 of 1 COCs                   |                      |
| 234 Mall Boulevard Suite 260                                                                                                                                                                                |           | <b>Analysis Turnaround Time</b>                                                                                                          |                    |  <p>320-29346 Chain of Custody</p> |               | Sampler: Andy Frebowitz, Mary Kay Bond<br>r Lab Use Only:<br>alk-in Client:<br>b Sampling:<br>b / SDG No.:                                                                                                                                     |                              |                               |                      |
| King of Prussia, PA 19406                                                                                                                                                                                   |           | <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS                                                             |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| 610-382-1174                                                                                                                                                                                                |           | TAT if different from Below                                                                                                              |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| 610-491-9688                                                                                                                                                                                                |           | <input type="checkbox"/> 2 weeks<br><input type="checkbox"/> 1 week<br><input type="checkbox"/> 2 days<br><input type="checkbox"/> 1 day |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| Project Name: WGNA Willow Grove                                                                                                                                                                             |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| Site: Willow Grove                                                                                                                                                                                          |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| P O # 112G08005-WE04                                                                                                                                                                                        |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| <b>Sample Identification</b>                                                                                                                                                                                |           | <b>Sample Date</b>                                                                                                                       | <b>Sample Time</b> | <b>Sample Type</b><br>(C=Comp, G=Grab)                                                                                | <b>Matrix</b> | <b># of Cont.</b>                                                                                                                                                                                                                              | <b>Filtered Sample (Y/N)</b> | <b>Perform MS / MSD (Y/N)</b> | <b>EPA 537 UCMR3</b> |
| WGNA-062117-RW-3148                                                                                                                                                                                         | 6/21/2017 | 8:35                                                                                                                                     | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-3148                                                                                                                                                                                        | 6/21/2017 | 8:30                                                                                                                                     | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-RW-0569                                                                                                                                                                                         | 6/21/2017 | 13:20                                                                                                                                    | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-0569                                                                                                                                                                                        | 6/21/2017 | 15:15                                                                                                                                    | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-RW-3097                                                                                                                                                                                         | 6/21/2017 | 11:40                                                                                                                                    | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-3097                                                                                                                                                                                        | 6/21/2017 | 9:30                                                                                                                                     | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-RW-0461                                                                                                                                                                                         | 6/21/2017 | 15:20                                                                                                                                    | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-0461                                                                                                                                                                                        | 6/21/2017 | 15:15                                                                                                                                    | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-DUP02                                                                                                                                                                                           | 6/21/2017 | 7:00                                                                                                                                     | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-RW-0500                                                                                                                                                                                         | 6/21/2017 | 15:40                                                                                                                                    | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-0500                                                                                                                                                                                        | 6/21/2017 | 15:35                                                                                                                                    | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-RW-3933                                                                                                                                                                                         | 6/21/2017 | 10:55                                                                                                                                    | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-3933                                                                                                                                                                                        | 6/21/2017 | 10:50                                                                                                                                    | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-RW-0404                                                                                                                                                                                         | 6/21/2017 | 10:35                                                                                                                                    | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-0404                                                                                                                                                                                        | 6/21/2017 | 10:30                                                                                                                                    | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            | 30                            |                      |
| WGNA-062117-RW-2426                                                                                                                                                                                         | 6/21/2017 | 8:35                                                                                                                                     | G                  | DW                                                                                                                    | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| WGNA-062117-FRB-2426                                                                                                                                                                                        | 6/21/2017 | 8:30                                                                                                                                     | G                  | BLK                                                                                                                   | 2             | N                                                                                                                                                                                                                                              | Y                            |                               |                      |
| Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other: Trizma                                                                                                                               |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| <b>Possible Hazard Identification:</b><br>Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. |           |                                                                                                                                          |                    |                                                                                                                       |               | <b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b><br><input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months |                              |                               |                      |
| <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown                 |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| <b>DeSpecial Instructions/QC Requirements &amp; Comments: FedEx 661219926062</b>                                                                                                                            |           |                                                                                                                                          |                    |                                                                                                                       |               |                                                                                                                                                                                                                                                |                              |                               |                      |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                              |           | Custody Seal No.:                                                                                                                        |                    | Cooler Temp. (°C): Obs'd: 5.0 (Cor'd: _____)                                                                          |               | Therm ID No.: AK-1                                                                                                                                                                                                                             |                              |                               |                      |
| Relinquished by: MK Bond                                                                                                                                                                                    |           | Company: Tetra Tech                                                                                                                      |                    | Date/Time: 06/21/17 18:00                                                                                             |               | Received by:                                                                                                                                              |                              | Company: TACS                 |                      |
| Relinquished by:                                                                                                                                                                                            |           | Company:                                                                                                                                 |                    | Date/Time:                                                                                                            |               | Received by:                                                                                                                                                                                                                                   |                              | Company:                      |                      |
| Relinquished by:                                                                                                                                                                                            |           | Company:                                                                                                                                 |                    | Date/Time:                                                                                                            |               | Received in Laboratory by:                                                                                                                                                                                                                     |                              | Company:                      |                      |

## Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-29346-1

**Login Number: 29346**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Turpen, Troy**

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

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","22","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","256.8","1.00","16",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","27","ng/L","M","2.7","DL","","TRG","","","19","LOQ","YES","-99","","256.8","1.00","7.8",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","J","5.4","DL","","TRG","","","29","LOQ","YES","-99","","256.8","1.00","12",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","88","LOQ","YES","-99","","256.8","1.00","35",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.8","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","256.8","1.00","3.9",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U M","7.8","DL","","TRG","","","23","LOQ","YES","-99","","256.8","1.00","19",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","STL00993","13C2 PFHxA","37","ng/L","","-99","DL","","SURRE","94","","-99","LOQ","YES","38.9","","256.8","1.00","0",""

"WGNA-062117-RW-3148","537","RES","320-29346-1","TALSAC","STL00996","13C2 PFDA","36","ng/L","","-99","DL","","SURRE","92","","-99","LOQ","YES","38.9","","256.8","1.00","0",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","23","ng/L","J","6.6","DL","","TRG","","","39","LOQ","YES","-99","","257.2","1.00","16",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","27","ng/L","M","2.7","DL","","TRG","","","19","LOQ","YES","-99","","257.2","1.00","7.8",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","8.1","ng/L","J","5.3","DL","","TRG","","","29","LOQ","YES","-99","","257.2","1.00","12",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","35","ng/L","U","16","DL","","TRG","","","87","LOQ","YES","-99","","257.2","1.00","35",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","7.3","ng/L","J","1.8","DL","","TRG","","","9.7","LOQ","YES","-99","","257.2","1.00","3.9",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U M","7.8","DL","","TRG","","","23","LOQ","YES","-99","","257.2","1.00","19",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","STL00993","13C2 PFHxA","35","ng/L","","-99","DL","","SURRE","89","","-99","LOQ","YES","38.9","","257.2","1.00","0",""

"WGNA-062117-RW-0500","537","RES","320-29346-10","TALSAC","STL00996","13C2 PFDA","35","ng/L","","-99","DL","","SURRE","90","","-99","LOQ","YES","38.9","","257.2","1.00","0",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","15","ng/L","U","6.3","DL","","TRG","","","37","LOQ","YES","-99","","270.7","1.00","15",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","7.4","ng/L","U","2.6","DL","","TRG","","","18","LOQ","YES","-99","","270.7","1.00","7.4",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","11","ng/L","U","5.1","DL","","TRG","","","28","LOQ","YES","-99","","270.7","1.00","11",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","33","ng/L","U","15","DL","","TRG","","","83","LOQ","YES","-99","","270.7","1.00","33",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","3.7","ng/L","U","1.8","DL","","TRG","","","9.2","LOQ","YES","-99","","270.7","1.00","3.7",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","18","ng/L","U","7.4","DL","","TRG","","","22","LOQ","YES","-99","","270.7","1.00","18",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","STL00993","13C2 PFHxA","38","ng/L","","-99","DL","","SURRE","104","","-99","LOQ","YES","36.9","","270.7","1.00","0",""

"WGNA-062117-FRB-0500","537","RES","320-29346-11","TALSAC","STL00996","13C2 PFDA","36","ng/L","","-99","DL","","SURRE","97","","-99","LOQ","YES","36.9","","270.7","1.00","0",""

"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","17","ng/L","J","6.7","DL","","TRG","","","39","LOQ","YES","-99","","253.4","1.00","16",""

"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","18","ng/L","J M","2.8","DL","","TRG","","","20","LOQ","YES","-99","","253.4","1.00","7.9",""

"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","355-46-4","Perfluorohexanesulfonic acid

(PFHxS)","11","ng/L","J","5.4","DL","","","TRG","","","30","LOQ","YES",-99","","253.4","1.00","12","","  
"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","36","ng/L","U","16","DL","","","TRG","","","89","LOQ","YES",-99","","253.4","1.00","36","","  
"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","6.6","ng/L","J","1.9","DL","","","TRG","","","9.9","LOQ","YES",-99","","253.4","1.00","3.9","","  
"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U","7.9","DL","","","TRG","","","24","LOQ","YES",-99","","253.4","1.00","20","","  
"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","STL00993","13C2  
PFHxA","35","ng/L","","","-99","DL","","","SURRE","87","","","-99","LOQ","YES","39.5","","253.4","1.00","0","","  
"WGNA-062117-RW-3933","537","RES","320-29346-12","TALSAC","STL00996","13C2  
PFDA","39","ng/L","","","-99","DL","","","SURRE","98","","","-99","LOQ","YES","39.5","","253.4","1.00","0","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","15","ng/L","U","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","258.3","1.00","15","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","7.7","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","258.3","1.00","7.7","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.3","DL","","","TRG","","","29","LOQ","YES",-99","","258.3","1.00","12","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","87","LOQ","YES",-99","","258.3","1.00","35","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.9","ng/L","U","1.8","DL","","","TRG","","","9.7","LOQ","YES",-99","","258.3","1.00","3.9","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","19","ng/L","U","7.7","DL","","","TRG","","","23","LOQ","YES",-99","","258.3","1.00","19","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","STL00993","13C2  
PFHxA","38","ng/L","","","-99","DL","","","SURRE","99","","","-99","LOQ","YES","38.7","","258.3","1.00","0","","  
"WGNA-062117-FRB-3933","537","RES","320-29346-13","TALSAC","STL00996","13C2  
PFDA","36","ng/L","","","-99","DL","","","SURRE","92","","","-99","LOQ","YES","38.7","","258.3","1.00","0","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","21","ng/L","J","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","256.9","1.00","16","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","23","ng/L","M","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","256.9","1.00","7.8","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","7.4","ng/L","J","5.4","DL","","","TRG","","","29","LOQ","YES",-99","","256.9","1.00","12","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","88","LOQ","YES",-99","","256.9","1.00","35","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","6.3","ng/L","J","1.8","DL","","","TRG","","","9.7","LOQ","YES",-99","","256.9","1.00","3.9","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","19","ng/L","U M","7.8","DL","","","TRG","","","23","LOQ","YES",-99","","256.9","1.00","19","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","STL00993","13C2  
PFHxA","34","ng/L","","","-99","DL","","","SURRE","88","","","-99","LOQ","YES","38.9","","256.9","1.00","0","","  
"WGNA-062117-RW-0404","537","RES","320-29346-14","TALSAC","STL00996","13C2  
PFDA","36","ng/L","","","-99","DL","","","SURRE","92","","","-99","LOQ","YES","38.9","","256.9","1.00","0","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","15","ng/L","U","6.5","DL","","","TRG","","","38","LOQ","YES",-99","","262","1.00","15","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","7.6","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","262","1.00","7.6","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","11","ng/L","U","5.2","DL","","","TRG","","","29","LOQ","YES",-99","","262","1.00","11","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","86","LOQ","YES",-99","","262","1.00","34","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.8","ng/L","U","1.8","DL","","","TRG","","","9.5","LOQ","YES",-99","","262","1.00","3.8","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"19","ng/L","U","7.6","DL","","","TRG","","","23","LOQ","YES",-99","","262","1.00","19","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","STL00993","13C2  
PFHxA","38","ng/L","","-99","DL","","","SURR","100","","-99","LOQ","YES","38.2","","262","1.00","0","","  
"WGNA-062117-FRB-0404","537","RES","320-29346-15","TALSAC","STL00996","13C2  
PFDA","36","ng/L","","-99","DL","","","SURR","93","","-99","LOQ","YES","38.2","","262","1.00","0","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","18","ng/L","J","6.7","DL","","","TRG","","","39","LOQ","YES",-99","","253.6","1.00","16","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","14","ng/L","J M","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","253.6","1.00","7.9","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.4","DL","","","TRG","","","30","LOQ","YES",-99","","253.6","1.00","12","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","89","LOQ","YES",-99","","253.6","1.00","35","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","14","ng/L","","1.9","DL","","","TRG","","","9.9","LOQ","YES",-99","","253.6","1.00","3.9","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U M","7.9","DL","","","TRG","","","24","LOQ","YES",-99","","253.6","1.00","20","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","STL00993","13C2  
PFHxA","34","ng/L","","-99","DL","","","SURR","86","","-99","LOQ","YES","39.4","","253.6","1.00","0","","  
"WGNA-062117-RW-2426","537","RES","320-29346-16","TALSAC","STL00996","13C2  
PFDA","37","ng/L","","-99","DL","","","SURR","93","","-99","LOQ","YES","39.4","","253.6","1.00","0","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","15","ng/L","U","6.4","DL","","","TRG","","","38","LOQ","YES",-99","","265.8","1.00","15","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","7.5","ng/L","U","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","265.8","1.00","7.5","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","11","ng/L","U","5.2","DL","","","TRG","","","28","LOQ","YES",-99","","265.8","1.00","11","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","85","LOQ","YES",-99","","265.8","1.00","34","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.8","ng/L","U","1.8","DL","","","TRG","","","9.4","LOQ","YES",-99","","265.8","1.00","3.8","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","19","ng/L","U","7.5","DL","","","TRG","","","23","LOQ","YES",-99","","265.8","1.00","19","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","STL00993","13C2  
PFHxA","37","ng/L","","-99","DL","","","SURR","97","","-99","LOQ","YES","37.6","","265.8","1.00","0","","  
"WGNA-062117-FRB-2426","537","RES","320-29346-17","TALSAC","STL00996","13C2  
PFDA","35","ng/L","","-99","DL","","","SURR","94","","-99","LOQ","YES","37.6","","265.8","1.00","0","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","15","ng/L","U","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","258.9","1.00","15","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","7.7","ng/L","U","2.7","DL","","","TRG","","","19","LOQ","YES",-99","","258.9","1.00","7.7","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.3","DL","","","TRG","","","29","LOQ","YES",-99","","258.9","1.00","12","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","87","LOQ","YES",-99","","258.9","1.00","35","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.9","ng/L","U","1.8","DL","","","TRG","","","9.7","LOQ","YES",-99","","258.9","1.00","3.9","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","19","ng/L","U","7.7","DL","","","TRG","","","23","LOQ","YES",-99","","258.9","1.00","19","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","STL00993","13C2  
PFHxA","37","ng/L","","-99","DL","","","SURR","95","","-99","LOQ","YES","38.6","","258.9","1.00","0","","  
"WGNA-062117-FRB-3148","537","RES","320-29346-2","TALSAC","STL00996","13C2  
PFDA","37","ng/L","","-99","DL","","","SURR","95","","-99","LOQ","YES","38.6","","258.9","1.00","0","","  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid

(PFOS),"15","ng/L","U","6.4","DL","","","TRG","","","38","LOQ","YES",-99","","265.4","1.00","15",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"7.5","ng/L","U","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","265.4","1.00","7.5",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"11","ng/L","U","5.2","DL","","","TRG","","","28","LOQ","YES",-99","","265.4","1.00","11",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"34","ng/L","U","15","DL","","","TRG","","","85","LOQ","YES",-99","","265.4","1.00","34",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"3.8","ng/L","U","1.8","DL","","","TRG","","","9.4","LOQ","YES",-99","","265.4","1.00","3.8",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"19","ng/L","U","7.5","DL","","","TRG","","","23","LOQ","YES",-99","","265.4","1.00","19",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","STL00993","13C2  
PFHxA","36","ng/L","","","-99","DL","","","SURR","96","","","-99","LOQ","YES","37.7","","","265.4","1.00","0",""  
"WGNA-062117-RW-0569","537","RES","320-29346-3","TALSAC","STL00996","13C2  
PFDA","34","ng/L","","","-99","DL","","","SURR","91","","","-99","LOQ","YES","37.7","","","265.4","1.00","0",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"22","ng/L","J","6.7","DL","","","TRG","","","40","LOQ","YES",-99","","251.9","1.00","16",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"28","ng/L","M","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","251.9","1.00","7.9",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"6.3","ng/L","J","5.5","DL","","","TRG","","","30","LOQ","YES",-99","","251.9","1.00","12",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"36","ng/L","U","16","DL","","","TRG","","","89","LOQ","YES",-99","","251.9","1.00","36",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"8.2","ng/L","J","1.9","DL","","","TRG","","","9.9","LOQ","YES",-99","","251.9","1.00","4.0",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"20","ng/L","U","7.9","DL","","","TRG","","","24","LOQ","YES",-99","","251.9","1.00","20",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","STL00993","13C2  
PFHxA","35","ng/L","","","-99","DL","","","SURR","89","","","-99","LOQ","YES","39.7","","","251.9","1.00","0",""  
"WGNA-062117-FRB-0569","537","RES","320-29346-4","TALSAC","STL00996","13C2  
PFDA","38","ng/L","","","-99","DL","","","SURR","95","","","-99","LOQ","YES","39.7","","","251.9","1.00","0",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"16","ng/L","J","6.3","DL","","","TRG","","","37","LOQ","YES",-99","","270.2","1.00","15",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"19","ng/L","M","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","270.2","1.00","7.4",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"11","ng/L","U","5.1","DL","","","TRG","","","28","LOQ","YES",-99","","270.2","1.00","11",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS),"33","ng/L","U","15","DL","","","TRG","","","83","LOQ","YES",-99","","270.2","1.00","33",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA),"5.1","ng/L","J","1.8","DL","","","TRG","","","9.3","LOQ","YES",-99","","270.2","1.00","3.7",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA),"19","ng/L","U M","7.4","DL","","","TRG","","","22","LOQ","YES",-99","","270.2","1.00","19",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","STL00993","13C2  
PFHxA","31","ng/L","","","-99","DL","","","SURR","83","","","-99","LOQ","YES","37.0","","","270.2","1.00","0",""  
"WGNA-062117-RW-3097","537","RES","320-29346-5","TALSAC","STL00996","13C2  
PFDA","35","ng/L","","","-99","DL","","","SURR","95","","","-99","LOQ","YES","37.0","","","270.2","1.00","0",""  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS),"16","ng/L","U","6.7","DL","","","TRG","","","39","LOQ","YES",-99","","253.9","1.00","16",""  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA),"7.9","ng/L","U","2.8","DL","","","TRG","","","20","LOQ","YES",-99","","253.9","1.00","7.9",""  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS),"12","ng/L","U","5.4","DL","","","TRG","","","30","LOQ","YES",-99","","253.9","1.00","12",""  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","35","ng/L","U","16","DL","","","TRG","","","89","LOQ","YES",-99","","253.9","1.00","35","","  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.9","ng/L","U","1.9","DL","","","TRG","","","9.8","LOQ","YES",-99","","253.9","1.00","3.9","","  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U","7.9","DL","","","TRG","","","24","LOQ","YES",-99","","253.9","1.00","20","","  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","STL00993","13C2  
PFHxA","38","ng/L","","","-99","DL","","","SURR","96","","","-99","LOQ","YES","39.4","","253.9","1.00","0","","  
"WGNA-062117-FRB-3097","537","RES","320-29346-6","TALSAC","STL00996","13C2  
PFDA","35","ng/L","","","-99","DL","","","SURR","90","","","-99","LOQ","YES","39.4","","253.9","1.00","0","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","16","ng/L","U","6.6","DL","","","TRG","","","39","LOQ","YES",-99","","256.2","1.00","16","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","7.8","ng/L","U","2.7","DL","","","TRG","","","20","LOQ","YES",-99","","256.2","1.00","7.8","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.4","DL","","","TRG","","","29","LOQ","YES",-99","","256.2","1.00","12","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","35","ng/L","U","16","DL","","","TRG","","","88","LOQ","YES",-99","","256.2","1.00","35","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.9","ng/L","U","1.9","DL","","","TRG","","","9.8","LOQ","YES",-99","","256.2","1.00","3.9","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","20","ng/L","U","7.8","DL","","","TRG","","","23","LOQ","YES",-99","","256.2","1.00","20","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","STL00993","13C2  
PFHxA","38","ng/L","","","-99","DL","","","SURR","96","","","-99","LOQ","YES","39.0","","256.2","1.00","0","","  
"WGNA-062117-RW-0461","537","RES","320-29346-7","TALSAC","STL00996","13C2  
PFDA","35","ng/L","","","-99","DL","","","SURR","91","","","-99","LOQ","YES","39.0","","256.2","1.00","0","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","15","ng/L","U","6.4","DL","","","TRG","","","37","LOQ","YES",-99","","266.8","1.00","15","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","7.5","ng/L","U","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","266.8","1.00","7.5","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","11","ng/L","U","5.2","DL","","","TRG","","","28","LOQ","YES",-99","","266.8","1.00","11","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","84","LOQ","YES",-99","","266.8","1.00","34","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","3.7","ng/L","U","1.8","DL","","","TRG","","","9.4","LOQ","YES",-99","","266.8","1.00","3.7","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","19","ng/L","U","7.5","DL","","","TRG","","","22","LOQ","YES",-99","","266.8","1.00","19","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","STL00993","13C2  
PFHxA","36","ng/L","","","-99","DL","","","SURR","97","","","-99","LOQ","YES","37.5","","266.8","1.00","0","","  
"WGNA-062117-FRB-0461","537","RES","320-29346-8","TALSAC","STL00996","13C2  
PFDA","34","ng/L","","","-99","DL","","","SURR","89","","","-99","LOQ","YES","37.5","","266.8","1.00","0","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","17","ng/L","J","6.4","DL","","","TRG","","","38","LOQ","YES",-99","","264.3","1.00","15","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","14","ng/L","J M","2.6","DL","","","TRG","","","19","LOQ","YES",-99","","264.3","1.00","7.6","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","11","ng/L","U","5.2","DL","","","TRG","","","28","LOQ","YES",-99","","264.3","1.00","11","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","34","ng/L","U","15","DL","","","TRG","","","85","LOQ","YES",-99","","264.3","1.00","34","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","14","ng/L","","","1.8","DL","","","TRG","","","9.5","LOQ","YES",-99","","264.3","1.00","3.8","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","19","ng/L","U","7.6","DL","","","TRG","","","23","LOQ","YES",-99","","264.3","1.00","19","","  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","STL00993","13C2



PFHxA","33","ng/L","",-99","DL","","SURRE","86","",-99","LOQ","YES","37.8","","264.3","1.00","0",""  
"WGNA-062117-DUP02","537","RES","320-29346-9","TALSAC","STL00996","13C2  
PFDA","36","ng/L","",-99","DL","","SURRE","96","",-99","LOQ","YES","37.8","","264.3","1.00","0",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","302","ng/L","","6.8","DL","","SPK","101","","40","LOQ","YES","300","","250","1.00","16",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","161","ng/L","E","2.8","DL","","SPK","107","","20","LOQ","YES","150","","250","1.00","8.0",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","216","ng/L","","5.5","DL","","SPK","96","","30","LOQ","YES","225","","250","1.00","12",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","630","ng/L","","16","DL","","SPK","95","","90","LOQ","YES","663","","250","1.00","36",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","82.2","ng/L","E","1.9","DL","","SPK","111","","10","LOQ","YES","74.3","","250","1.00","4.0",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","149","ng/L","","8.0","DL","","SPK","103","","24","LOQ","YES","144","","250","1.00","20",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","STL00993","13C2  
PFHxA","39.7","ng/L","",-99","DL","","SURRE","99","",-99","LOQ","YES","40.0","","250","1.00","0",""  
"LCS 320-172426/2-A","537","RES","LCS 320-172426/2-A","TALSAC","STL00996","13C2  
PFDA","41.2","ng/L","",-99","DL","","SURRE","103","",-99","LOQ","YES","40.0","","250","1.00","0",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","1763-23-1","Perfluorooctanesulfonic  
acid (PFOS)","291","ng/L","M","6.8","DL","","SPK","97","4","40","LOQ","YES","300","LCS 320-172426/2-  
A","250","1.00","16",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","153","ng/L","","2.8","DL","","SPK","102","5","20","LOQ","YES","150","LCS 320-172426/2-  
A","250","1.00","8.0",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","355-46-4","Perfluorohexanesulfonic  
acid (PFHxS)","217","ng/L","","5.5","DL","","SPK","96","1","30","LOQ","YES","225","LCS 320-172426/2-  
A","250","1.00","12",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","590","ng/L","","16","DL","","SPK","89","7","90","LOQ","YES","663","LCS 320-172426/2-  
A","250","1.00","36",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","73.4","ng/L","","1.9","DL","","SPK","99","11","10","LOQ","YES","74.3","LCS 320-172426/2-  
A","250","1.00","4.0",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","375-95-1","Perfluorononanoic acid  
(PFNA)","142","ng/L","","8.0","DL","","SPK","99","4","24","LOQ","YES","144","LCS 320-172426/2-  
A","250","1.00","20",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","STL00993","13C2  
PFHxA","39.8","ng/L","",-99","DL","","SURRE","100","",-99","LOQ","YES","40.0","LCS 320-172426/2-  
A","250","1.00","0",""  
"LCSD 320-172426/3-A","537","RES","LCSD 320-172426/3-A","TALSAC","STL00996","13C2  
PFDA","39.6","ng/L","",-99","DL","","SURRE","99","",-99","LOQ","YES","40.0","LCS 320-172426/2-  
A","250","1.00","0",""  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid  
(PFOS)","16","ng/L","U","6.8","DL","","TRG","","","40","LOQ","YES","-99","","250","1.00","16",""  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","335-67-1","Perfluorooctanoic acid  
(PFOA)","8.0","ng/L","U","2.8","DL","","TRG","","","20","LOQ","YES","-99","","250","1.00","8.0",""  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid  
(PFHxS)","12","ng/L","U","5.5","DL","","TRG","","","30","LOQ","YES","-99","","250","1.00","12",""  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid  
(PFBS)","36","ng/L","U","16","DL","","TRG","","","90","LOQ","YES","-99","","250","1.00","36",""  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid  
(PFHpA)","4.0","ng/L","U","1.9","DL","","TRG","","","10","LOQ","YES","-99","","250","1.00","4.0",""  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","375-95-1","Perfluorononanoic acid

(PFNA),"20","ng/L","U","8.0","DL","","","TRG","","","24","LOQ","YES","-99","","","250","1.00","20","","  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","STL00993","13C2  
PFHxA","39.5","ng/L","","","-99","DL","","","SURR","99","","","-99","LOQ","YES","40.0","","","250","1.00","0","","  
"MB 320-172426/1-A","537","RES","MB 320-172426/1-A","TALSAC","STL00996","13C2  
PFDA","40.2","ng/L","","","-99","DL","","","SURR","100","","","-99","LOQ","YES","40.0","","","250","1.00","0","","  
"Unknown","Unknown","WGNA-062117-RW-3148","06/21/2017 08:35","AQ","320-29346-  
1","NM","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:18","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-RW-0500","06/21/2017 15:40","AQ","320-29346-  
10","NM","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:10","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-FRB-0500","06/21/2017 15:35","AQ","320-29346-  
11","FB","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:15","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-RW-3933","06/21/2017 10:55","AQ","320-29346-  
12","NM","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:20","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-FRB-3933","06/21/2017 10:50","AQ","320-29346-  
13","FB","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:24","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-RW-0404","06/21/2017 10:35","AQ","320-29346-  
14","NM","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:29","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-FRB-0404","06/21/2017 10:30","AQ","320-29346-  
15","FB","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:34","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-RW-2426","06/21/2017 08:35","AQ","320-29346-  
16","NM","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:48","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173117","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-FRB-2426","06/21/2017 08:30","AQ","320-29346-  
17","FB","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:53","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173117","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-FRB-3148","06/21/2017 08:30","AQ","320-29346-  
2","FB","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:23","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-RW-0569","06/21/2017 13:20","AQ","320-29346-  
3","NM","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:27","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-FRB-0569","06/21/2017 15:15","AQ","320-29346-  
4","FB","","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:32","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","06/22/2017 09:30","07/18/2017 12:58","","  
"Unknown","Unknown","WGNA-062117-RW-3097","06/21/2017 11:40","AQ","320-29346-

5","NM","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:37","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","06/22/2017 09:30","07/18/2017 12:58",""  
"Unknown","Unknown","WGNA-062117-FRB-3097","06/21/2017 09:30","AQ","320-29346-  
6","FB","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:51","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58",""  
"Unknown","Unknown","WGNA-062117-RW-0461","06/21/2017 15:20","AQ","320-29346-  
7","NM","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:56","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58",""  
"Unknown","Unknown","WGNA-062117-FRB-0461","06/21/2017 15:15","AQ","320-29346-  
8","FB","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:01","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58",""  
"Unknown","Unknown","WGNA-062117-DUP02","06/21/2017 07:00","AQ","320-29346-  
9","FD","","3.00","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
13:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173116","320-29346-1","06/22/2017 09:30","07/18/2017 12:58",""  
"Unknown","Unknown","LCS 320-172426/2-A","","AQ","LCS 320-172426/2-  
A","LCS","","-99","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
11:59","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","07/05/2017 10:52","07/18/2017 12:58",""  
"Unknown","Unknown","LCSD 320-172426/3-A","","AQ","LCSD 320-172426/3-  
A","LCSD","","-99","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
12:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","07/05/2017 10:52","07/18/2017 12:58",""  
"Unknown","Unknown","MB 320-172426/1-A","","AQ","MB 320-172426/1-  
A","MB","","-99","537","METHOD","RES","07/05/2017 10:52","07/08/2017  
11:54","TALSAC","COA","WET","NA","1","NA","NA","","100","320-172426","320-172426","NA","320-  
173114","320-29346-1","07/05/2017 10:52","07/18/2017 12:58",""



**TO:** A. FREBOWITZ **DATE:** AUGUST 10, 2017  
**FROM:** TERRI L. SOLOMON **COPIES:** DV FILE  
**SUBJECT:** ORGANIC DATA VALIDATION –POLYFLUOROALKYL SUBSTANCES (PFAS)  
NAS JRB WILLOW GROVE  
SAMPLE DELIVERY GROUP (SDG) 320-29346-1

**SAMPLES:** 8/Field Reagent Blank (FRB)  
WGNA-062117-FRB-0404 WGNA-062117-FRB-0461  
WGNA-062117-FRB-0500 WGNA-062117-FRB-0569  
WGNA-062117-FRB-2426 WGNA-062117-FRB-3097  
WGNA-062117-FRB-3148 WGNA-062117-FRB-3933

9/Drinking Water  
WGNA-062117-RW-0404 WGNA-062117-RW-0461  
WGNA-062117-RW-0500 WGNA-062117-RW-0569  
WGNA-062117-RW-2426 WGNA-062117-RW-3097  
WGNA-062117-RW-3148 WGNA-062117-RW-3933  
WGNA-062117-DUP02

#### Overview

The sample set for NAS JRB Willow Grove, SDG 320-29346-1, consisted of nine (9) drinking water samples and eight (8) FRB samples. All samples were analyzed for select perfluorinated alkyl acids including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonate (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA) and perfluorooctane sulfonic acid (PFOS). One (1) field duplicate pair (WGNA-062117-RW-2426 / WGNA-062117-DUP02) was included in this SDG.

The samples were collected by Tetra Tech on June 21, 2017 and analyzed by TestAmerica-Sacramento. All sample analyses were conducted in accordance with EPA Method 537 version 1.1 analytical and reporting protocols.

The data contained in this SDG was validated with regard to the following parameters: data completeness, holding times, initial/continuing calibrations, laboratory method/FRBs, surrogate spike recoveries, laboratory control sample / laboratory control sample duplicate results, internal standard areas and recoveries, chromatographic resolution, analyte identification, analyte quantitation, field duplicate precision, and detection limits. Areas of concern are listed below.

#### Major

None.

#### Minor

Detected results reported below the limit of quantitation (LOQ) but above the detection limit (DL) were qualified as estimated, (J).

TO: A. FREBOWITZ  
SDG: 320-29346-1

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### **Notes**

As per the project manager, the labelling of sample WGNA-062117-RW-0569 appeared to be switched with the associated FRB sample in the field. Detections for PFAS compounds in the associated FRB sample and nondetected results in the sample (WGNA-062117-RW-0569) made the results appear questionable because all other FRB samples were nondetected for PFAS. The laboratory re-extracted and re-analyzed the samples as a corrective action step in order to verify the bottles were not switched by the laboratory. The laboratory confirmed that the re-analyses results matched the initial sample results. Therefore, the sample IDs for samples WGNA-062117-RW-0569 and WGNA-062117-FRB-0569 were switched by the validator on the Form Is and the electronic deliverable.

It was noted in the case narrative that there was insufficient sample volume to analyze a matrix spike / matrix spike duplicate sample. No action was taken as a result of this issue.

Samples with detections and their associated FRBs are summarized below. No detected results were present in any FRBs.

| <b><u>Sample</u></b> | <b><u>Associated FRB</u></b> |
|----------------------|------------------------------|
| WGNA-062117-RW-0404  | WGNA-062117-FRB-0404         |
| WGNA-062117-RW-0461  | WGNA-062117-FRB-0461         |
| WGNA-062117-RW-0500  | WGNA-062117-FRB-0500         |
| WGNA-062117-RW-0569  | WGNA-062117-FRB-0569         |
| WGNA-062117-RW-2426  | WGNA-062117-FRB-2426         |
| WGNA-062117-RW-3097  | WGNA-062117-FRB-3097         |
| WGNA-062117-RW-3148  | WGNA-062117-FRB-3148         |
| WGNA-062117-RW-3933  | WGNA-062117-FRB-3933         |
| WGNA-062117-DUP02    | WGNA-062117-FRB-2426         |

Non-detected results were reported to the Limit of Detection (LOD).

The buffering agent Trizma was added to all drinking water samples.

It was noted that FRB samples WGNA-062117-FRB-0461 was analyzed although the associated sample results were nondetects. No validation actions were required.

### **Executive Summary**

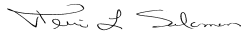
**Laboratory Performance:** None.

**Other Factors Affecting Data Quality:** Results below the RL were estimated.

The data for these analyses were reviewed with reference to the Environmental Protection Agency document EPA/600/R-08/092, Method 537, "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", (September 2009) and the US EPA National Functional Guidelines for Organic Data Review (January 2017) as applicable. The text of this report has been formulated to address only those areas affecting data quality.

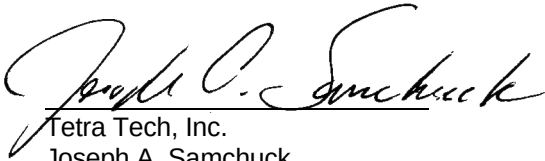
TO: A. FREBOWITZ  
SDG: 320-29346-1

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Tetra Tech, Inc.  
Terri L. Solomon  
Chemist/Data Validator



Tetra Tech, Inc.  
Joseph A. Samchuck  
Data Validation Manager

Attachments:

Appendix A – Qualified Analytical Results  
Appendix B – Results as Reported by the Laboratory  
Appendix C – Support Documentation

### **Data Qualifier Definitions**

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

|           |                                                                                                                                                                                                                                                                                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>U</b>  | The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.                                                                                                                                                     |
| <b>J</b>  | The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit). |
| <b>J+</b> | The result is an estimated quantity, but the result may be biased high.                                                                                                                                                                                                                                            |
| <b>J-</b> | The result is an estimated quantity, but the result may be biased low.                                                                                                                                                                                                                                             |
| <b>UJ</b> | The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.                                                                                                                                                                                |
| <b>R</b>  | The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.                                                                                                                                      |
| <b>UR</b> | The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.                                                                                                                                   |

## **Appendix A**

### Qualified Analytical Results



**Qualifier Codes:**

- A = Lab Blank Contamination
- B = Field Blank Contamination
- C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
- C01 = GC/MS Tuning Noncompliance
- D = MS/MSD Recovery Noncompliance
- E = LCS/LCSD Recovery Noncompliance
- F = Lab Duplicate Imprecision
- G = Field Duplicate Imprecision
- H = Holding Time Exceedance
- I = ICP Serial Dilution Noncompliance
- J = ICP PDS Recovery Noncompliance; MSA's  $r < 0.995$
- K = ICP Interference - includes ICS % R Noncompliance
- L = Instrument Calibration Range Exceedance
- M = Sample Preservation Noncompliance
- N = Internal Standard Noncompliance
- N01 = Internal Standard Recovery Noncompliance Dioxins
- N02 = Recovery Standard Noncompliance Dioxins
- N03 = Clean-up Standard Noncompliance Dioxins
- O = Poor Instrument Performance (i.e., base-time drifting)
- P = Uncertainty near detection limit ( $< 2 \times$  IDL for inorganics and  $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
- R = Surrogates Recovery Noncompliance
- S = Pesticide/PCB Resolution
- T = % Breakdown Noncompliance for DDT and Endrin
- U = RPD between columns/detectors  $>40\%$  for positive results determined via GC/HPLC
- V = Non-linear calibrations; correlation coefficient  $r < 0.995$
- W = EMPC result
- X = Signal to noise response drop
- Y = Percent solids  $<30\%$
- Z = Uncertainty at 2 standard deviations is greater than sample activity
- Z1 = Tentatively Identified Compound considered presumptively present
- Z2 = Tentatively Identified Compound column bleed
- Z3 = Tentatively Identified Compound aldol condensate
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

|                                                                                                       |            |                     |     |      |                      |     |      |                      |     |      |                      |     |      |
|-------------------------------------------------------------------------------------------------------|------------|---------------------|-----|------|----------------------|-----|------|----------------------|-----|------|----------------------|-----|------|
| <b>PROJ_NO: 08005-WE04</b><br><b>SDG: 320-29346-1</b><br><b>FRACTION: PFAS</b><br><b>MEDIA: WATER</b> | NSAMPLE    | WGNA-062117-DUP02   |     |      | WGNA-062117-FRB-0404 |     |      | WGNA-062117-FRB-0461 |     |      | WGNA-062117-FRB-0500 |     |      |
|                                                                                                       | LAB_ID     | 320-29346-9         |     |      | 320-29346-15         |     |      | 320-29346-8          |     |      | 320-29346-11         |     |      |
|                                                                                                       | SAMP_DATE  | 6/21/2017           |     |      | 6/21/2017            |     |      | 6/21/2017            |     |      | 6/21/2017            |     |      |
|                                                                                                       | QC_TYPE    | FD                  |     |      | FB                   |     |      | FB                   |     |      | FB                   |     |      |
|                                                                                                       | UNITS      | NG/L                |     |      | NG/L                 |     |      | NG/L                 |     |      | NG/L                 |     |      |
|                                                                                                       | PCT_SOLIDS | 0.0                 |     |      | 0.0                  |     |      | 0.0                  |     |      | 0.0                  |     |      |
|                                                                                                       | DUP_OF     | WGNA-062117-RW-2426 |     |      |                      |     |      |                      |     |      |                      |     |      |
| PARAMETER                                                                                             |            | RESULT              | VQL | QLCD | RESULT               | VQL | QLCD | RESULT               | VQL | QLCD | RESULT               | VQL | QLCD |
| PENTADECAFLUOROOCTANOIC ACID                                                                          |            | 14                  | J   | P    | 7.6                  | U   |      | 7.5                  | U   |      | 7.4                  | U   |      |
| PERFLUOROBUTANE SULFONATE                                                                             |            | 34                  | U   |      | 34                   | U   |      | 34                   | U   |      | 33                   | U   |      |
| PERFLUOROHEPTANOIC ACID                                                                               |            | 14                  |     |      | 3.8                  | U   |      | 3.7                  | U   |      | 3.7                  | U   |      |
| PERFLUOROHEXANESULFONIC ACID                                                                          |            | 11                  | U   |      | 11                   | U   |      | 11                   | U   |      | 11                   | U   |      |
| PERFLUORONONANOIC ACID                                                                                |            | 19                  | U   |      | 19                   | U   |      | 19                   | U   |      | 18                   | U   |      |
| PERFLUOROOCTANE SULFONIC ACID                                                                         |            | 17                  | J   | P    | 15                   | U   |      | 15                   | U   |      | 15                   | U   |      |

|                                                                                                       |            |                      |     |      |                      |     |      |                      |     |      |                      |     |      |
|-------------------------------------------------------------------------------------------------------|------------|----------------------|-----|------|----------------------|-----|------|----------------------|-----|------|----------------------|-----|------|
| <b>PROJ_NO: 08005-WE04</b><br><b>SDG: 320-29346-1</b><br><b>FRACTION: PFAS</b><br><b>MEDIA: WATER</b> | NSAMPLE    | WGNA-062117-FRB-0569 |     |      | WGNA-062117-FRB-2426 |     |      | WGNA-062117-FRB-3097 |     |      | WGNA-062117-FRB-3148 |     |      |
|                                                                                                       | LAB_ID     | 320-29346-3          |     |      | 320-29346-17         |     |      | 320-29346-6          |     |      | 320-29346-2          |     |      |
|                                                                                                       | SAMP_DATE  | 6/21/2017            |     |      | 6/21/2017            |     |      | 6/21/2017            |     |      | 6/21/2017            |     |      |
|                                                                                                       | QC_TYPE    | NM                   |     |      | FB                   |     |      | FB                   |     |      | FB                   |     |      |
|                                                                                                       | UNITS      | NG/L                 |     |      | NG/L                 |     |      | NG/L                 |     |      | NG/L                 |     |      |
|                                                                                                       | PCT_SOLIDS | 0.0                  |     |      | 0.0                  |     |      | 0.0                  |     |      | 0.0                  |     |      |
|                                                                                                       | DUP_OF     |                      |     |      |                      |     |      |                      |     |      |                      |     |      |
| PARAMETER                                                                                             |            | RESULT               | VQL | QLCD | RESULT               | VQL | QLCD | RESULT               | VQL | QLCD | RESULT               | VQL | QLCD |
| PENTADECAFLUOROOCTANOIC ACID                                                                          |            | 7.5                  | U   |      | 7.5                  | U   |      | 7.9                  | U   |      | 7.7                  | U   |      |
| PERFLUOROBUTANE SULFONATE                                                                             |            | 34                   | U   |      | 34                   | U   |      | 35                   | U   |      | 35                   | U   |      |
| PERFLUOROHEPTANOIC ACID                                                                               |            | 3.8                  | U   |      | 3.8                  | U   |      | 3.9                  | U   |      | 3.9                  | U   |      |
| PERFLUOROHEXANESULFONIC ACID                                                                          |            | 11                   | U   |      | 11                   | U   |      | 12                   | U   |      | 12                   | U   |      |
| PERFLUORONONANOIC ACID                                                                                |            | 19                   | U   |      | 19                   | U   |      | 20                   | U   |      | 19                   | U   |      |
| PERFLUOROOCTANE SULFONIC ACID                                                                         |            | 15                   | U   |      | 15                   | U   |      | 16                   | U   |      | 15                   | U   |      |

|                                                                                                       |            |                      |     |      |                     |     |      |                     |     |      |                     |     |      |
|-------------------------------------------------------------------------------------------------------|------------|----------------------|-----|------|---------------------|-----|------|---------------------|-----|------|---------------------|-----|------|
| <b>PROJ_NO: 08005-WE04</b><br><b>SDG: 320-29346-1</b><br><b>FRACTION: PFAS</b><br><b>MEDIA: WATER</b> | NSAMPLE    | WGNA-062117-FRB-3933 |     |      | WGNA-062117-RW-0404 |     |      | WGNA-062117-RW-0461 |     |      | WGNA-062117-RW-0500 |     |      |
|                                                                                                       | LAB_ID     | 320-29346-13         |     |      | 320-29346-14        |     |      | 320-29346-7         |     |      | 320-29346-10        |     |      |
|                                                                                                       | SAMP_DATE  | 6/21/2017            |     |      | 6/21/2017           |     |      | 6/21/2017           |     |      | 6/21/2017           |     |      |
|                                                                                                       | QC_TYPE    | FB                   |     |      | NM                  |     |      | NM                  |     |      | NM                  |     |      |
|                                                                                                       | UNITS      | NG/L                 |     |      | NG/L                |     |      | NG/L                |     |      | NG/L                |     |      |
|                                                                                                       | PCT_SOLIDS | 0.0                  |     |      | 0.0                 |     |      | 0.0                 |     |      | 0.0                 |     |      |
|                                                                                                       | DUP_OF     |                      |     |      |                     |     |      |                     |     |      |                     |     |      |
| PARAMETER                                                                                             |            | RESULT               | VQL | QLCD | RESULT              | VQL | QLCD | RESULT              | VQL | QLCD | RESULT              | VQL | QLCD |
| PENTADECAFLUOROOCTANOIC ACID                                                                          |            | 7.7                  | U   |      | 23                  |     |      | 7.8                 | U   |      | 27                  |     |      |
| PERFLUOROBUTANE SULFONATE                                                                             |            | 35                   | U   |      | 35                  | U   |      | 35                  | U   |      | 35                  | U   |      |
| PERFLUOROHEPTANOIC ACID                                                                               |            | 3.9                  | U   |      | 6.3                 | J   | P    | 3.9                 | U   |      | 7.3                 | J   | P    |
| PERFLUOROHXANESULFONIC ACID                                                                           |            | 12                   | U   |      | 7.4                 | J   | P    | 12                  | U   |      | 8.1                 | J   | P    |
| PERFLUORONONANOIC ACID                                                                                |            | 19                   | U   |      | 19                  | U   |      | 20                  | U   |      | 19                  | U   |      |
| PERFLUOROOCTANE SULFONIC ACID                                                                         |            | 15                   | U   |      | 21                  | J   | P    | 16                  | U   |      | 23                  | J   | P    |

|                                                                                                       |            |                     |     |      |                     |     |      |                     |     |      |                     |     |      |
|-------------------------------------------------------------------------------------------------------|------------|---------------------|-----|------|---------------------|-----|------|---------------------|-----|------|---------------------|-----|------|
| <b>PROJ_NO: 08005-WE04</b><br><b>SDG: 320-29346-1</b><br><b>FRACTION: PFAS</b><br><b>MEDIA: WATER</b> | NSAMPLE    | WGNA-062117-RW-0569 |     |      | WGNA-062117-RW-2426 |     |      | WGNA-062117-RW-3097 |     |      | WGNA-062117-RW-3148 |     |      |
|                                                                                                       | LAB_ID     | 320-29346-4         |     |      | 320-29346-16        |     |      | 320-29346-5         |     |      | 320-29346-1         |     |      |
|                                                                                                       | SAMP_DATE  | 6/21/2017           |     |      | 6/21/2017           |     |      | 6/21/2017           |     |      | 6/21/2017           |     |      |
|                                                                                                       | QC_TYPE    | FB                  |     |      | NM                  |     |      | NM                  |     |      | NM                  |     |      |
|                                                                                                       | UNITS      | NG/L                |     |      | NG/L                |     |      | NG/L                |     |      | NG/L                |     |      |
|                                                                                                       | PCT_SOLIDS | 0.0                 |     |      | 0.0                 |     |      | 0.0                 |     |      | 0.0                 |     |      |
|                                                                                                       | DUP_OF     |                     |     |      |                     |     |      |                     |     |      |                     |     |      |
| PARAMETER                                                                                             |            | RESULT              | VQL | QLCD | RESULT              | VQL | QLCD | RESULT              | VQL | QLCD | RESULT              | VQL | QLCD |
| PENTADECAFLUOROOCTANOIC ACID                                                                          |            | 28                  |     |      | 14                  | J   | P    | 19                  |     |      | 27                  |     |      |
| PERFLUOROBUTANE SULFONATE                                                                             |            | 36                  | U   |      | 35                  | U   |      | 33                  | U   |      | 35                  | U   |      |
| PERFLUOROHEPTANOIC ACID                                                                               |            | 8.2                 | J   | P    | 14                  |     |      | 5.1                 | J   | P    | 7.8                 | J   | P    |
| PERFLUOROHEXANESULFONIC ACID                                                                          |            | 6.3                 | J   | P    | 12                  | U   |      | 11                  | U   |      | 11                  | J   | P    |
| PERFLUORONONANOIC ACID                                                                                |            | 20                  | U   |      | 20                  | U   |      | 19                  | U   |      | 19                  | U   |      |
| PERFLUOROOCTANE SULFONIC ACID                                                                         |            | 22                  | J   | P    | 18                  | J   | P    | 16                  | J   | P    | 22                  | J   | P    |

|                                                                                                       |            |                     |     |      |
|-------------------------------------------------------------------------------------------------------|------------|---------------------|-----|------|
| <b>PROJ_NO: 08005-WE04</b><br><b>SDG: 320-29346-1</b><br><b>FRACTION: PFAS</b><br><b>MEDIA: WATER</b> | NSAMPLE    | WGNA-062117-RW-3933 |     |      |
|                                                                                                       | LAB_ID     | 320-29346-12        |     |      |
|                                                                                                       | SAMP_DATE  | 6/21/2017           |     |      |
|                                                                                                       | QC_TYPE    | NM                  |     |      |
|                                                                                                       | UNITS      | NG/L                |     |      |
|                                                                                                       | PCT_SOLIDS | 0.0                 |     |      |
|                                                                                                       | DUP_OF     |                     |     |      |
| PARAMETER                                                                                             |            | RESULT              | VQL | QLCD |
| PENTADECAFLUOROOCTANOIC ACID                                                                          |            | 18                  | J   | P    |
| PERFLUOROBUTANE SULFONATE                                                                             |            | 36                  | U   |      |
| PERFLUOROHEPTANOIC ACID                                                                               |            | 6.6                 | J   | P    |
| PERFLUOROHEXANESULFONIC ACID                                                                          |            | 11                  | J   | P    |
| PERFLUORONONANOIC ACID                                                                                |            | 20                  | U   |      |
| PERFLUOROOCTANE SULFONIC ACID                                                                         |            | 17                  | J   | P    |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3148</u> | Lab Sample ID: <u>320-29346-1</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_012.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 08:35</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>256.8 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:18</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173114</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 22     | J              | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 27     | <del>M</del>   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U <del>M</del> | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | J              | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 7.8    | J              | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U              | 88  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 92   |   | 70-130 |

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|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3148</u> | Lab Sample ID: <u>320-29346-2</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_013.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 08:30</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>258.9(mL)</u>               | Date Analyzed: <u>07/08/2017 12:23</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173114</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 15     | U | 39  | 15  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.7    | U | 19  | 7.7 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U | 23  | 19  | 7.7 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 87  | 35  | 16  |

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

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: ~~WGNA-062117-RW-0569~~ Lab Sample ID: 320-29346-3  
 Matrix: Water ~~WGNA-062117-FRB-0569~~ Lab File ID: 2017.07.08\_537A\_014.d  
 Analysis Method: 537 Date Collected: 06/21/2017 13:20  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 265.4 (mL) Date Analyzed: 07/08/2017 12:27  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 91   |   | 70-130 |

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: ~~WGNA-062117-FRB-0569~~ Lab Sample ID: 320-29346-4  
 Matrix: Water **WGNA-062117-RW-0569** Lab File ID: 2017.07.08\_537A\_015.d  
 Analysis Method: 537 Date Collected: 06/21/2017 15:15  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 251.9(mL) Date Analyzed: 07/08/2017 12:32  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q            | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|--------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 22     | J            | 40  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 28     | <del>M</del> | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U            | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 6.3    | J            | 30  | 12  | 5.5 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 8.2    | J            | 9.9 | 4.0 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 36     | U            | 89  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 89   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 95   |   | 70-130 |

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-RW-3097 Lab Sample ID: 320-29346-5  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_016.d  
 Analysis Method: 537 Date Collected: 06/21/2017 11:40  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 270.2 (mL) Date Analyzed: 07/08/2017 12:37  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | J              | 37  | 15  | 6.3 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 19     | <del>M</del>   | 19  | 7.4 | 2.6 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U <del>M</del> | 22  | 19  | 7.4 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | U              | 28  | 11  | 5.1 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 5.1    | J              | 9.3 | 3.7 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 33     | U              | 83  | 33  | 15  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 83   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 95   |   | 70-130 |

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|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3097</u> | Lab Sample ID: <u>320-29346-6</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_019.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 09:30</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>253.9(mL)</u>               | Date Analyzed: <u>07/08/2017 12:51</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | U | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.9    | U | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.8 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 89  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 90   |   | 70-130 |

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-RW-0461 Lab Sample ID: 320-29346-7  
 Matrix: Water	Lab File ID: 2017.07.08\_537A\_020.d  
 Analysis Method: 537	Date Collected: 06/21/2017 15:20  
 Extraction Method: 537	Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 256.2 (mL)	Date Analyzed: 07/08/2017 12:56  
 Con. Extract Vol.: 1.00 (mL)	Dilution Factor: 1  
 Injection Volume: 2 (uL)	GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_	GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173116	Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | U | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.8    | U | 20  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 23  | 20  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.8 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 88  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 91   |   | 70-130 |

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-FRB-0461 Lab Sample ID: 320-29346-8  
 Matrix: Water	Lab File ID: 2017.07.08\_537A\_021.d  
 Analysis Method: 537	Date Collected: 06/21/2017 15:15  
 Extraction Method: 537	Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 266.8 (mL)	Date Analyzed: 07/08/2017 13:01  
 Con. Extract Vol.: 1.00 (mL)	Dilution Factor: 1  
 Injection Volume: 2 (uL)	GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_	GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173116	Units: ng/L

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 89   |   | 70-130 |

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-DUP02 Lab Sample ID: 320-29346-9  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_022.d  
 Analysis Method: 537 Date Collected: 06/21/2017 07:00  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 264.3(mL) Date Analyzed: 07/08/2017 13:05  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173116 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 17     | J              | 38  | 15  | 6.4 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 14     | J <del>M</del> | 19  | 7.6 | 2.6 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U              | 23  | 19  | 7.6 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | U              | 28  | 11  | 5.2 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 14     |                | 9.5 | 3.8 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 34     | U              | 85  | 34  | 15  |

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

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|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-0500</u> | Lab Sample ID: <u>320-29346-10</u>           |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_023.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 15:40</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>257.2 (mL)</u>             | Date Analyzed: <u>07/08/2017 13:10</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 23     | J              | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 27     | <del>M</del>   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U <del>M</del> | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 8.1    | J              | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 7.3    | J              | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U              | 87  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 89   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 90   |   | 70-130 |

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|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-0500</u> | Lab Sample ID: <u>320-29346-11</u>          |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_024.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 15:35</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>270.7(mL)</u>               | Date Analyzed: <u>07/08/2017 13:15</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 104  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 97   |   | 70-130 |

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|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3933</u> | Lab Sample ID: <u>320-29346-12</u>           |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_025.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 10:55</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>253.4 (mL)</u>             | Date Analyzed: <u>07/08/2017 13:20</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 17     | J              | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 18     | J <del>M</del> | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U              | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | J              | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 6.6    | J              | 9.9 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 36     | U              | 89  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 98   |   | 70-130 |

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|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3933</u> | Lab Sample ID: <u>320-29346-13</u>          |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_026.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 10:50</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>258.3(mL)</u>               | Date Analyzed: <u>07/08/2017 13:24</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 15     | U | 39  | 15  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.7    | U | 19  | 7.7 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U | 23  | 19  | 7.7 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 87  | 35  | 16  |

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

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Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-RW-0404 Lab Sample ID: 320-29346-14  
 Matrix: Water	Lab File ID: 2017.07.08\_537A\_027.d  
 Analysis Method: 537	Date Collected: 06/21/2017 10:35  
 Extraction Method: 537	Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 256.9(mL)	Date Analyzed: 07/08/2017 13:29  
 Con. Extract Vol.: 1.00(mL)	Dilution Factor: 1  
 Injection Volume: 2(uL)	GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_	GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173116	Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 21     | J              | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 23     | <del>M</del>   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U <del>M</del> | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 7.4    | J              | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 6.3    | J              | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U              | 88  | 35  | 16  |

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

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LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-0404</u> | Lab Sample ID: <u>320-29346-15</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_028.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 10:30</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>262 (mL)</u>                | Date Analyzed: <u>07/08/2017 13:34</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 93   |   | 70-130 |

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LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                               |                                             |
| Client Sample ID: <u>WGNA-062117-RW-2426</u> | Lab Sample ID: <u>320-29346-16</u>          |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_031.d</u>   |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 08:35</u>     |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>253.6(mL)</u>              | Date Analyzed: <u>07/08/2017 13:48</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>           | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173117</u>            | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q              | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|----------------|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 18     | J              | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 14     | J <del>M</del> | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U <del>M</del> | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U              | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 14     |                | 9.9 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U              | 89  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 86   |   | 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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-FRB-2426 Lab Sample ID: 320-29346-17  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_032.d  
 Analysis Method: 537 Date Collected: 06/21/2017 08:30  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 265.8 (mL) Date Analyzed: 07/08/2017 13:53  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173117 Units: ng/L

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 94   |   | 70-130 |

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## **Appendix B**

Results as Reported by the Laboratory



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3148</u> | Lab Sample ID: <u>320-29346-1</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_012.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 08:35</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>256.8 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:18</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173114</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 22     | J   | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 27     | M   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | J   | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 7.8    | J   | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 88  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 94   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 92   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3148</u> | Lab Sample ID: <u>320-29346-2</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_013.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 08:30</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>258.9(mL)</u>               | Date Analyzed: <u>07/08/2017 12:23</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173114</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 15     | U | 39  | 15  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.7    | U | 19  | 7.7 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U | 23  | 19  | 7.7 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 87  | 35  | 16  |

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

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: ~~WGNA-062117-RW-0569~~ Lab Sample ID: 320-29346-3  
 Matrix: Water WGNA-062117-FRB-0569 Lab File ID: 2017.07.08\_537A\_014.d  
 Analysis Method: 537 Date Collected: 06/21/2017 13:20  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 265.4 (mL) Date Analyzed: 07/08/2017 12:27  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 91   |   | 70-130 |

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LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: ~~WGNA-062117-FRB-0569~~ Lab Sample ID: 320-29346-4  
 Matrix: Water **WGNA-062117-RW-0569** Lab File ID: 2017.07.08\_537A\_015.d  
 Analysis Method: 537 Date Collected: 06/21/2017 15:15  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 251.9(mL) Date Analyzed: 07/08/2017 12:32  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 22     | J | 40  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 28     | M | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 6.3    | J | 30  | 12  | 5.5 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 8.2    | J | 9.9 | 4.0 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 36     | U | 89  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 89   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 95   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-RW-3097 Lab Sample ID: 320-29346-5  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_016.d  
 Analysis Method: 537 Date Collected: 06/21/2017 11:40  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 270.2 (mL) Date Analyzed: 07/08/2017 12:37  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | J   | 37  | 15  | 6.3 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 19     | M   | 19  | 7.4 | 2.6 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 22  | 19  | 7.4 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | U   | 28  | 11  | 5.1 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 5.1    | J   | 9.3 | 3.7 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 33     | U   | 83  | 33  | 15  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 83   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 95   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Client Sample ID: WGNA-062117-FRB-3097 Lab Sample ID: 320-29346-6

Matrix: Water	Lab File ID: 2017.07.08\_537A\_019.d

Analysis Method: 537	Date Collected: 06/21/2017 09:30

Extraction Method: 537	Date Extracted: 07/05/2017 10:52

Sample wt/vol: 253.9(mL)	Date Analyzed: 07/08/2017 12:51

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

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

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

Analysis Batch No.: 173116	Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | U | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.9    | U | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.8 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 89  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 90   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-0461</u> | Lab Sample ID: <u>320-29346-7</u>            |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_020.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 15:20</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>256.2 (mL)</u>             | Date Analyzed: <u>07/08/2017 12:56</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 16     | U | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.8    | U | 20  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U | 23  | 20  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.8 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 88  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 96   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 91   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-0461</u> | Lab Sample ID: <u>320-29346-8</u>            |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_021.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 15:15</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>266.8 (mL)</u>              | Date Analyzed: <u>07/08/2017 13:01</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 89   |   | 70-130 |



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: WGNA-062117-DUP02 Lab Sample ID: 320-29346-9  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_022.d  
 Analysis Method: 537 Date Collected: 06/21/2017 07:00  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 264.3(mL) Date Analyzed: 07/08/2017 13:05  
 Con. Extract Vol.: 1.00(mL) Dilution Factor: 1  
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173116 Units: ng/L

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 17     | J   | 38  | 15  | 6.4 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 14     | J M | 19  | 7.6 | 2.6 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U   | 23  | 19  | 7.6 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | U   | 28  | 11  | 5.2 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 14     |     | 9.5 | 3.8 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 34     | U   | 85  | 34  | 15  |

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

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-0500</u> | Lab Sample ID: <u>320-29346-10</u>           |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_023.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 15:40</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>257.2 (mL)</u>             | Date Analyzed: <u>07/08/2017 13:10</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 23     | J   | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 27     | M   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 8.1    | J   | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 7.3    | J   | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 87  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 89   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 90   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-0500</u> | Lab Sample ID: <u>320-29346-11</u>          |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_024.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 15:35</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>270.7(mL)</u>               | Date Analyzed: <u>07/08/2017 13:15</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 104  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 97   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                               |                                              |
| Client Sample ID: <u>WGNA-062117-RW-3933</u> | Lab Sample ID: <u>320-29346-12</u>           |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_025.d</u>    |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 10:55</u>      |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>253.4 (mL)</u>             | Date Analyzed: <u>07/08/2017 13:20</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>          | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>              | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                           |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 17     | J   | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 18     | J M | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U   | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 11     | J   | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 6.6    | J   | 9.9 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 36     | U   | 89  | 36  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 87   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 98   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                             |
|-----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                                |                                             |
| Client Sample ID: <u>WGNA-062117-FRB-3933</u> | Lab Sample ID: <u>320-29346-13</u>          |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_026.d</u>   |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 10:50</u>     |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>258.3(mL)</u>               | Date Analyzed: <u>07/08/2017 13:24</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>            | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>                | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|---|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 15     | U | 39  | 15  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 7.7    | U | 19  | 7.7 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U | 23  | 19  | 7.7 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U | 29  | 12  | 5.3 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 3.9    | U | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U | 87  | 35  | 16  |

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

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                               |                                             |
| Client Sample ID: <u>WGNA-062117-RW-0404</u> | Lab Sample ID: <u>320-29346-14</u>          |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_027.d</u>   |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 10:35</u>     |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>256.9(mL)</u>              | Date Analyzed: <u>07/08/2017 13:29</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>           | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173116</u>            | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 21     | J   | 39  | 16  | 6.6 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 23     | M   | 19  | 7.8 | 2.7 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 19     | U M | 23  | 19  | 7.8 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 7.4    | J   | 29  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 6.3    | J   | 9.7 | 3.9 | 1.8 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 88  | 35  | 16  |

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

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-0404</u> | Lab Sample ID: <u>320-29346-15</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_028.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 10:30</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>262 (mL)</u>                | Date Analyzed: <u>07/08/2017 13:34</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173116</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 100  |   | 70-130 |
| STL00996 | 13C2 PFDA  | 93   |   | 70-130 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                              |                                             |
|----------------------------------------------|---------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>      | Job No.: <u>320-29346-1</u>                 |
| SDG No.: _____                               |                                             |
| Client Sample ID: <u>WGNA-062117-RW-2426</u> | Lab Sample ID: <u>320-29346-16</u>          |
| Matrix: <u>Water</u>                         | Lab File ID: <u>2017.07.08_537A_031.d</u>   |
| Analysis Method: <u>537</u>                  | Date Collected: <u>06/21/2017 08:35</u>     |
| Extraction Method: <u>537</u>                | Date Extracted: <u>07/05/2017 10:52</u>     |
| Sample wt/vol: <u>253.6(mL)</u>              | Date Analyzed: <u>07/08/2017 13:48</u>      |
| Con. Extract Vol.: <u>1.00(mL)</u>           | Dilution Factor: <u>1</u>                   |
| Injection Volume: <u>2(uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u> |
| % Moisture: _____                            | GPC Cleanup: (Y/N) <u>N</u>                 |
| Analysis Batch No.: <u>173117</u>            | Units: <u>ng/L</u>                          |

| CAS NO.   | COMPOUND NAME                        | RESULT | Q   | LOQ | LOD | DL  |
|-----------|--------------------------------------|--------|-----|-----|-----|-----|
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS)  | 18     | J   | 39  | 16  | 6.7 |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | 14     | J M | 20  | 7.9 | 2.8 |
| 375-95-1  | Perfluorononanoic acid (PFNA)        | 20     | U M | 24  | 20  | 7.9 |
| 355-46-4  | Perfluorohexanesulfonic acid (PFHxS) | 12     | U   | 30  | 12  | 5.4 |
| 375-85-9  | Perfluoroheptanoic acid (PFHpA)      | 14     |     | 9.9 | 3.9 | 1.9 |
| 375-73-5  | Perfluorobutanesulfonic acid (PFBS)  | 35     | U   | 89  | 35  | 16  |

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 86   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 93   |   | 70-130 |



FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Lab Name: <u>TestAmerica Sacramento</u>       | Job No.: <u>320-29346-1</u>                  |
| SDG No.: _____                                |                                              |
| Client Sample ID: <u>WGNA-062117-FRB-2426</u> | Lab Sample ID: <u>320-29346-17</u>           |
| Matrix: <u>Water</u>                          | Lab File ID: <u>2017.07.08_537A_032.d</u>    |
| Analysis Method: <u>537</u>                   | Date Collected: <u>06/21/2017 08:30</u>      |
| Extraction Method: <u>537</u>                 | Date Extracted: <u>07/05/2017 10:52</u>      |
| Sample wt/vol: <u>265.8 (mL)</u>              | Date Analyzed: <u>07/08/2017 13:53</u>       |
| Con. Extract Vol.: <u>1.00 (mL)</u>           | Dilution Factor: <u>1</u>                    |
| Injection Volume: <u>2 (uL)</u>               | GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u> |
| % Moisture: _____                             | GPC Cleanup: (Y/N) <u>N</u>                  |
| Analysis Batch No.: <u>173117</u>             | Units: <u>ng/L</u>                           |

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 97   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 94   |   | 70-130 |

## **Appendix C**

Support Documentation

# TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605-1500  
phone 916.373.5600 fax 303.467.7248

## Chain of Custody Record

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

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

|                                 |  |                                                                                                                                          |  |                                                                                                                       |  |                                                                                                            |  |                |  |
|---------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------|--|----------------|--|
| <b>Client Contact</b>           |  | <b>Project Manager: Andy Frebowitz</b>                                                                                                   |  | <b>Site Contact: Mary Kay Bond</b>                                                                                    |  | <b>Date: 6/21/2017</b>                                                                                     |  | <b>COC No:</b> |  |
| TetraTech                       |  | Tel/Fax:                                                                                                                                 |  | Lab Contact: Dave Alltucker                                                                                           |  | Carrier: Fed Ex                                                                                            |  | 1 of 1 COCs    |  |
| 234 Mall Boulevard Suite 260    |  | <b>Analysis Turnaround Time</b>                                                                                                          |  |  <p>320-29346 Chain of Custody</p> |  | Sampler: Andy Frebowitz, Mary Kay Bond<br>r Lab Use Only:<br>alk-in Client:<br>b Sampling:<br>b / SDG No.: |  |                |  |
| King of Prussia, PA 19406       |  | <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS                                                             |  |                                                                                                                       |  |                                                                                                            |  |                |  |
| 610-382-1174                    |  | TAT if different from Below                                                                                                              |  |                                                                                                                       |  |                                                                                                            |  |                |  |
| 610-491-9688                    |  | <input type="checkbox"/> 2 weeks<br><input type="checkbox"/> 1 week<br><input type="checkbox"/> 2 days<br><input type="checkbox"/> 1 day |  |                                                                                                                       |  |                                                                                                            |  |                |  |
| Project Name: WGNA Willow Grove |  |                                                                                                                                          |  |                                                                                                                       |  |                                                                                                            |  |                |  |
| Site: Willow Grove              |  |                                                                                                                                          |  |                                                                                                                       |  |                                                                                                            |  |                |  |
| P O # 112G08005-WE04            |  |                                                                                                                                          |  |                                                                                                                       |  |                                                                                                            |  |                |  |

| Sample Identification | Sample Date | Sample Time | Sample Type<br>(C=Comp, G=Grab) | Matrix | # of Cont. | Filtered Sample (Y/N) | Perform MS / MSD (Y/N) | EPA 537 UCMR3 | Sample Specific Notes: |
|-----------------------|-------------|-------------|---------------------------------|--------|------------|-----------------------|------------------------|---------------|------------------------|
| WGNA-062117-RW-3148   | 6/21/2017   | 8:35        | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-3148  | 6/21/2017   | 8:30        | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |
| WGNA-062117-RW-0569   | 6/21/2017   | 13:20       | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-0569  | 6/21/2017   | 15:15       | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |
| WGNA-062117-RW-3097   | 6/21/2017   | 11:40       | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-3097  | 6/21/2017   | 9:30        | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |
| WGNA-062117-RW-0461   | 6/21/2017   | 15:20       | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-0461  | 6/21/2017   | 15:15       | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |
| WGNA-062117-DUP02     | 6/21/2017   | 7:00        | G                               | DW     | 2          | N                     | Y                      |               | Duplicate              |
| WGNA-062117-RW-0500   | 6/21/2017   | 15:40       | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-0500  | 6/21/2017   | 15:35       | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |
| WGNA-062117-RW-3933   | 6/21/2017   | 10:55       | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-3933  | 6/21/2017   | 10:50       | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |
| WGNA-062117-RW-0404   | 6/21/2017   | 10:35       | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-0404  | 6/21/2017   | 10:30       | G                               | BLK    | 2          | N                     | Y                      | 30            | Field Reagent Blank    |
| WGNA-062117-RW-2426   | 6/21/2017   | 8:35        | G                               | DW     | 2          | N                     | Y                      |               |                        |
| WGNA-062117-FRB-2426  | 6/21/2017   | 8:30        | G                               | BLK    | 2          | N                     | Y                      |               | Field Reagent Blank    |

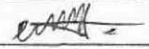
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other: Trizma

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

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

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

**DeSpecial Instructions/QC Requirements & Comments:** FedEx 661219926062

|                                                                                |                     |                                              |                                                                                                    |
|--------------------------------------------------------------------------------|---------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------|
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No | Custody Seal No.:   | Cooler Temp. (°C): Obs'd: 5.0 (Cor'd: _____) | Therm ID No.: AK-1                                                                                 |
| Relinquished by: MK Bond                                                       | Company: Tetra Tech | Date/Time: 06/21/17 18:00                    | Received by:  |
| Relinquished by:                                                               | Company:            | Date/Time:                                   | Received by:                                                                                       |
| Relinquished by:                                                               | Company:            | Date/Time:                                   | Received in Laboratory by:                                                                         |

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## Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-29346-1

**Login Number: 29346**

**List Source: TestAmerica Sacramento**

**List Number: 1**

**Creator: Turpen, Troy**

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

**Job Narrative**  
**320-29346-1**

**Receipt**

The samples were received on 6/22/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0° C.

**LCMS**

Method(s) 537: The laboratory control sample (LCS) has E flags because it is spiked at the upper level of the calibration curve as specified in the method. (LCS 320-172426/2-A)

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

Method(s) 537: The following samples appear to have been switched WGNA-062117-RW-0569 (320-29346-3) and WGNA-062117-FRB-0569 (320-29346-4). Sample 320-29346-4 was labeled FRB and had detections, while 320-29346-3 as labeled RW was Non-Detect. The samples were re-extracted and the results confirmed and the first extraction was reported. The laboratory confirmed the field sample labels on the sample bottles matched the laboratory labels the analysis sequences were verified. Samples may have been switched in the field. WGNA-062117-RW-0569 (320-29346-3) and WGNA-062117-FRB-0569 (320-29346-4)

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

**Organic Prep**

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-172426.

Method(s) 537: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-173623.

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

# Method Summary

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

TestAmerica Job ID: 320-29346-1

| 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: Tetra Tech, Inc.

TestAmerica Job ID: 320-29346-1

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

| Lab Sample ID | Client Sample ID     | Matrix | Collected      | Received       |
|---------------|----------------------|--------|----------------|----------------|
| 320-29346-1   | WGNA-062117-RW-3148  | Water  | 06/21/17 08:35 | 06/22/17 09:30 |
| 320-29346-2   | WGNA-062117-FRB-3148 | Water  | 06/21/17 08:30 | 06/22/17 09:30 |
| 320-29346-3   | WGNA-062117-RW-0569  | Water  | 06/21/17 13:20 | 06/22/17 09:30 |
| 320-29346-4   | WGNA-062117-FRB-0569 | Water  | 06/21/17 15:15 | 06/22/17 09:30 |
| 320-29346-5   | WGNA-062117-RW-3097  | Water  | 06/21/17 11:40 | 06/22/17 09:30 |
| 320-29346-6   | WGNA-062117-FRB-3097 | Water  | 06/21/17 09:30 | 06/22/17 09:30 |
| 320-29346-7   | WGNA-062117-RW-0461  | Water  | 06/21/17 15:20 | 06/22/17 09:30 |
| 320-29346-8   | WGNA-062117-FRB-0461 | Water  | 06/21/17 15:15 | 06/22/17 09:30 |
| 320-29346-9   | WGNA-062117-DUP02    | Water  | 06/21/17 07:00 | 06/22/17 09:30 |
| 320-29346-10  | WGNA-062117-RW-0500  | Water  | 06/21/17 15:40 | 06/22/17 09:30 |
| 320-29346-11  | WGNA-062117-FRB-0500 | Water  | 06/21/17 15:35 | 06/22/17 09:30 |
| 320-29346-12  | WGNA-062117-RW-3933  | Water  | 06/21/17 10:55 | 06/22/17 09:30 |
| 320-29346-13  | WGNA-062117-FRB-3933 | Water  | 06/21/17 10:50 | 06/22/17 09:30 |
| 320-29346-14  | WGNA-062117-RW-0404  | Water  | 06/21/17 10:35 | 06/22/17 09:30 |
| 320-29346-15  | WGNA-062117-FRB-0404 | Water  | 06/21/17 10:30 | 06/22/17 09:30 |
| 320-29346-16  | WGNA-062117-RW-2426  | Water  | 06/21/17 08:35 | 06/22/17 09:30 |
| 320-29346-17  | WGNA-062117-FRB-2426 | Water  | 06/21/17 08:30 | 06/22/17 09:30 |

FORM II  
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Matrix: Water Level: Low

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

| Client Sample ID     | Lab Sample ID          | PFHxA # | PFDA # |
|----------------------|------------------------|---------|--------|
| WGNA-062117-RW-3148  | 320-29346-1            | 94      | 92     |
| WGNA-062117-FRB-3148 | 320-29346-2            | 95      | 95     |
| WGNA-062117-RW-0569  | 320-29346-3            | 96      | 91     |
| WGNA-062117-FRB-0569 | 320-29346-4            | 89      | 95     |
| WGNA-062117-RW-3097  | 320-29346-5            | 83      | 95     |
| WGNA-062117-FRB-3097 | 320-29346-6            | 96      | 90     |
| WGNA-062117-RW-0461  | 320-29346-7            | 96      | 91     |
| WGNA-062117-FRB-0461 | 320-29346-8            | 97      | 89     |
| WGNA-062117-DUP02    | 320-29346-9            | 86      | 96     |
| WGNA-062117-RW-0500  | 320-29346-10           | 89      | 90     |
| WGNA-062117-FRB-0500 | 320-29346-11           | 104     | 97     |
| WGNA-062117-RW-3933  | 320-29346-12           | 87      | 98     |
| WGNA-062117-FRB-3933 | 320-29346-13           | 99      | 92     |
| WGNA-062117-RW-0404  | 320-29346-14           | 88      | 92     |
| WGNA-062117-FRB-0404 | 320-29346-15           | 100     | 93     |
| WGNA-062117-RW-2426  | 320-29346-16           | 86      | 93     |
| WGNA-062117-FRB-2426 | 320-29346-17           | 97      | 94     |
|                      | MB<br>320-172426/1-A   | 99      | 100    |
|                      | LCS<br>320-172426/2-A  | 99      | 103    |
|                      | LCSD<br>320-172426/3-A | 100     | 99     |

PFHxA = 13C2 PFHxA  
PFDA = 13C2 PFDA

QC LIMITS  
70-130  
70-130

# Column to be used to flag recovery values



FORM III  
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2017.07.08\_537A\_008.d  
 Lab ID: LCS 320-172426/2-A Client ID: \_\_\_\_\_

| COMPOUND                             | SPIKE<br>ADDED<br>(ng/L) | LCS<br>CONCENTRATION<br>(ng/L) | LCS<br>%<br>REC | QC<br>LIMITS<br>REC | # |
|--------------------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Perfluorooctanesulfonic acid (PFOS)  | 300                      | 302                            | 101             | 70-130              |   |
| Perfluorooctanoic acid (PFOA)        | 150                      | 161                            | 107             | 70-130              | E |
| Perfluorononanoic acid (PFNA)        | 144                      | 149                            | 103             | 70-130              |   |
| Perfluorohexanesulfonic acid (PFHxS) | 225                      | 216                            | 96              | 70-130              |   |
| Perfluoroheptanoic acid (PFHpA)      | 74.3                     | 82.2                           | 111             | 70-130              | E |
| Perfluorobutanesulfonic acid (PFBS)  | 663                      | 630                            | 95              | 70-130              |   |

# Column to be used to flag recovery and RPD values

FORM III  
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Matrix: Water Level: Low Lab File ID: 2017.07.08\_537A\_009.d  
 Lab ID: LCSD 320-172426/3-A Client ID: \_\_\_\_\_

| COMPOUND                             | SPIKE<br>ADDED<br>(ng/L) | LCSD<br>CONCENTRATION<br>(ng/L) | LCSD<br>%<br>REC | %<br>RPD | QC LIMITS |        | # |
|--------------------------------------|--------------------------|---------------------------------|------------------|----------|-----------|--------|---|
|                                      |                          |                                 |                  |          | RPD       | REC    |   |
| Perfluorooctanesulfonic acid (PFOS)  | 300                      | 291                             | 97               | 4        | 30        | 70-130 | M |
| Perfluorooctanoic acid (PFOA)        | 150                      | 153                             | 102              | 5        | 30        | 70-130 |   |
| Perfluorononanoic acid (PFNA)        | 144                      | 142                             | 99               | 4        | 30        | 70-130 |   |
| Perfluorohexanesulfonic acid (PFHxS) | 225                      | 217                             | 96               | 1        | 30        | 70-130 |   |
| Perfluoroheptanoic acid (PFHpA)      | 74.3                     | 73.4                            | 99               | 11       | 30        | 70-130 |   |
| Perfluorobutanesulfonic acid (PFBS)  | 663                      | 590                             | 89               | 7        | 30        | 70-130 |   |

# Column to be used to flag recovery and RPD values

FORM IV  
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab File ID: 2017.07.08\_537A\_007.d Lab Sample ID: MB 320-172426/1-A  
 Matrix: Water Date Extracted: 07/05/2017 10:52  
 Instrument ID: A8\_N Date Analyzed: 07/08/2017 11:54  
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID     | LAB SAMPLE ID       | LAB<br>FILE ID        | DATE ANALYZED    |
|----------------------|---------------------|-----------------------|------------------|
|                      | LCS 320-172426/2-A  | 2017.07.08_537A 008.d | 07/08/2017 11:59 |
|                      | LCSD 320-172426/3-A | 2017.07.08_537A 009.d | 07/08/2017 12:04 |
| WGNA-062117-RW-3148  | 320-29346-1         | 2017.07.08_537A 012.d | 07/08/2017 12:18 |
| WGNA-062117-FRB-3148 | 320-29346-2         | 2017.07.08_537A 013.d | 07/08/2017 12:23 |
| WGNA-062117-RW-0569  | 320-29346-3         | 2017.07.08_537A 014.d | 07/08/2017 12:27 |
| WGNA-062117-FRB-0569 | 320-29346-4         | 2017.07.08_537A 015.d | 07/08/2017 12:32 |
| WGNA-062117-RW-3097  | 320-29346-5         | 2017.07.08_537A 016.d | 07/08/2017 12:37 |
| WGNA-062117-FRB-3097 | 320-29346-6         | 2017.07.08_537A 019.d | 07/08/2017 12:51 |
| WGNA-062117-RW-0461  | 320-29346-7         | 2017.07.08_537A 020.d | 07/08/2017 12:56 |
| WGNA-062117-FRB-0461 | 320-29346-8         | 2017.07.08_537A 021.d | 07/08/2017 13:01 |
| WGNA-062117-DUP02    | 320-29346-9         | 2017.07.08_537A 022.d | 07/08/2017 13:05 |
| WGNA-062117-RW-0500  | 320-29346-10        | 2017.07.08_537A 023.d | 07/08/2017 13:10 |
| WGNA-062117-FRB-0500 | 320-29346-11        | 2017.07.08_537A 024.d | 07/08/2017 13:15 |
| WGNA-062117-RW-3933  | 320-29346-12        | 2017.07.08_537A 025.d | 07/08/2017 13:20 |
| WGNA-062117-FRB-3933 | 320-29346-13        | 2017.07.08_537A 026.d | 07/08/2017 13:24 |
| WGNA-062117-RW-0404  | 320-29346-14        | 2017.07.08_537A 027.d | 07/08/2017 13:29 |
| WGNA-062117-FRB-0404 | 320-29346-15        | 2017.07.08_537A 028.d | 07/08/2017 13:34 |
| WGNA-062117-RW-2426  | 320-29346-16        | 2017.07.08_537A 031.d | 07/08/2017 13:48 |
| WGNA-062117-FRB-2426 | 320-29346-17        | 2017.07.08_537A 032.d | 07/08/2017 13:53 |

FORM I  
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Client Sample ID: \_\_\_\_\_ Lab Sample ID: MB 320-172426/1-A  
 Matrix: Water Lab File ID: 2017.07.08\_537A\_007.d  
 Analysis Method: 537 Date Collected: \_\_\_\_\_  
 Extraction Method: 537 Date Extracted: 07/05/2017 10:52  
 Sample wt/vol: 250 (mL) Date Analyzed: 07/08/2017 11:54  
 Con. Extract Vol.: 1.00 (mL) Dilution Factor: 1  
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)  
 % Moisture: \_\_\_\_\_ GPC Cleanup: (Y/N) N  
 Analysis Batch No.: 173114 Units: ng/L

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

| CAS NO.  | SURROGATE  | %REC | Q | LIMITS |
|----------|------------|------|---|--------|
| STL00993 | 13C2 PFHxA | 99   |   | 70-130 |
| STL00996 | 13C2 PFDA  | 100  |   | 70-130 |

FORM VIII  
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 07/05/2017 20:13  
 Calibration ID: 32198

|                                           |                      | 13PFOA  |      | PFOS    |      |        |      |
|-------------------------------------------|----------------------|---------|------|---------|------|--------|------|
|                                           |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT |                      | 966867  | 1.88 | 2790947 | 2.12 |        |      |
| UPPER LIMIT                               |                      | 1450301 | 2.38 | 4186421 | 2.62 |        |      |
| LOWER LIMIT                               |                      | 483434  | 1.38 | 1395474 | 1.62 |        |      |
| LAB SAMPLE ID                             | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| CCVL 320-172646/11                        |                      | 960063  | 1.87 | 2831967 | 2.11 |        |      |
| ICV 320-172646/13                         |                      | 920859  | 1.87 | 2667731 | 2.11 |        |      |
| CCVL 320-173114/4                         |                      | 980863  | 1.94 | 3129733 | 2.17 |        |      |
| CCV 320-173114/5<br>CCVIS                 |                      | 942853  | 1.93 | 3248548 | 2.16 |        |      |
| MB 320-172426/1-A                         |                      | 964941  | 1.93 | 3151444 | 2.16 |        |      |
| LCS 320-172426/2-A                        |                      | 933319  | 1.93 | 3136705 | 2.16 |        |      |
| LCSD 320-172426/3-A                       |                      | 964655  | 1.93 | 3136305 | 2.16 |        |      |
| 320-29346-1                               | WGNA-062117-RW-3148  | 956259  | 1.91 | 3088691 | 2.15 |        |      |
| 320-29346-2                               | WGNA-062117-FRB-3148 | 1005161 | 1.91 | 3124310 | 2.15 |        |      |
| 320-29346-3                               | WGNA-062117-RW-0569  | 1074440 | 1.91 | 3403793 | 2.16 |        |      |
| 320-29346-4                               | WGNA-062117-FRB-0569 | 932576  | 1.91 | 3071649 | 2.15 |        |      |
| 320-29346-5                               | WGNA-062117-RW-3097  | 949831  | 1.91 | 3004027 | 2.15 |        |      |
| CCV 320-173114/17<br>CCVIS                |                      | 947388  | 1.91 | 3016336 | 2.15 |        |      |
| CCV 320-173116/17<br>CCVIS                |                      | 947388  | 1.91 | 3016336 | 2.15 |        |      |
| 320-29346-6                               | WGNA-062117-FRB-3097 | 935887  | 1.92 | 2954087 | 2.16 |        |      |
| 320-29346-7                               | WGNA-062117-RW-0461  | 944306  | 1.92 | 3038844 | 2.16 |        |      |
| 320-29346-8                               | WGNA-062117-FRB-0461 | 966603  | 1.92 | 3126086 | 2.16 |        |      |
| 320-29346-9                               | WGNA-062117-DUP02    | 926788  | 1.94 | 3073775 | 2.17 |        |      |
| 320-29346-10                              | WGNA-062117-RW-0500  | 994119  | 1.93 | 3208745 | 2.16 |        |      |
| 320-29346-11                              | WGNA-062117-FRB-0500 | 906406  | 1.93 | 3056099 | 2.16 |        |      |
| 320-29346-12                              | WGNA-062117-RW-3933  | 902311  | 1.94 | 3000823 | 2.17 |        |      |
| 320-29346-13                              | WGNA-062117-FRB-3933 | 932828  | 1.94 | 3012668 | 2.17 |        |      |
| 320-29346-14                              | WGNA-062117-RW-0404  | 1079406 | 1.94 | 3512651 | 2.16 |        |      |
| 320-29346-15                              | WGNA-062117-FRB-0404 | 909149  | 1.94 | 2916020 | 2.17 |        |      |
| CCV 320-173116/29<br>CCVIS                |                      | 869614  | 1.93 | 3053864 | 2.16 |        |      |
| CCV 320-173117/29<br>CCVIS                |                      | 869614  | 1.93 | 3053864 | 2.16 |        |      |
| 320-29346-16                              | WGNA-062117-RW-2426  | 903934  | 1.93 | 2923055 | 2.16 |        |      |
| 320-29346-17                              | WGNA-062117-FRB-2426 | 936994  | 1.93 | 2958006 | 2.16 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

Area Limit = 50%-150% of internal standard area  
 RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Instrument ID: A8\_N Calibration Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3 (mm) Calibration End Date: 07/05/2017 20:13  
 Calibration ID: 32198

|                                           | 13PFOA           |                | PFOS            |      |        |      |
|-------------------------------------------|------------------|----------------|-----------------|------|--------|------|
|                                           | AREA #           | RT #           | AREA #          | RT # | AREA # | RT # |
| INITIAL CALIBRATION MEAN AREA AND MEAN RT | 966867           | 1.88           | 2790947         | 2.12 |        |      |
| UPPER LIMIT                               | 1450301          | 2.38           | 4186421         | 2.62 |        |      |
| LOWER LIMIT                               | 483434           | 1.38           | 1395474         | 1.62 |        |      |
| LAB SAMPLE ID                             | CLIENT SAMPLE ID |                |                 |      |        |      |
| CCV 320-173117/38<br>CCVIS                |                  | 860316<br>1.93 | 3010705<br>2.16 |      |        |      |

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

Area Limit = 50%-150% of internal standard area  
 RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173114/5 Date Analyzed: 07/08/2017 11:45  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_005 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                     |                      | 13PFOA  |      | PFOS    |      |        |      |
|---------------------|----------------------|---------|------|---------|------|--------|------|
|                     |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| 12/24 HOUR STD      |                      | 942853  | 1.93 | 3248548 | 2.16 |        |      |
| UPPER LIMIT         |                      | 1319994 | 2.43 | 4547967 | 2.66 |        |      |
| LOWER LIMIT         |                      | 659997  | 1.43 | 2273984 | 1.66 |        |      |
| LAB SAMPLE ID       | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| MB 320-172426/1-A   |                      | 964941  | 1.93 | 3151444 | 2.16 |        |      |
| LCS 320-172426/2-A  |                      | 933319  | 1.93 | 3136705 | 2.16 |        |      |
| LCSD 320-172426/3-A |                      | 964655  | 1.93 | 3136305 | 2.16 |        |      |
| 320-29346-1         | WGNA-062117-RW-3148  | 956259  | 1.91 | 3088691 | 2.15 |        |      |
| 320-29346-2         | WGNA-062117-FRB-3148 | 1005161 | 1.91 | 3124310 | 2.15 |        |      |
| 320-29346-3         | WGNA-062117-RW-0569  | 1074440 | 1.91 | 3403793 | 2.16 |        |      |
| 320-29346-4         | WGNA-062117-FRB-0569 | 932576  | 1.91 | 3071649 | 2.15 |        |      |
| 320-29346-5         | WGNA-062117-RW-3097  | 949831  | 1.91 | 3004027 | 2.15 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173114/17 Date Analyzed: 07/08/2017 12:42  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_017 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                     |                      | 13PFOA  |      | PFOS    |      |        |      |
|---------------------|----------------------|---------|------|---------|------|--------|------|
|                     |                      | AREA #  | RT # | AREA #  | RT # | AREA # | RT # |
| 12/24 HOUR STD      |                      | 947388  | 1.91 | 3016336 | 2.15 |        |      |
| UPPER LIMIT         |                      | 1326343 | 2.41 | 4222870 | 2.65 |        |      |
| LOWER LIMIT         |                      | 663172  | 1.41 | 2111435 | 1.65 |        |      |
| LAB SAMPLE ID       | CLIENT SAMPLE ID     |         |      |         |      |        |      |
| MB 320-172426/1-A   |                      | 964941  | 1.93 | 3151444 | 2.16 |        |      |
| LCS 320-172426/2-A  |                      | 933319  | 1.93 | 3136705 | 2.16 |        |      |
| LCSD 320-172426/3-A |                      | 964655  | 1.93 | 3136305 | 2.16 |        |      |
| 320-29346-1         | WGNA-062117-RW-3148  | 956259  | 1.91 | 3088691 | 2.15 |        |      |
| 320-29346-2         | WGNA-062117-FRB-3148 | 1005161 | 1.91 | 3124310 | 2.15 |        |      |
| 320-29346-3         | WGNA-062117-RW-0569  | 1074440 | 1.91 | 3403793 | 2.16 |        |      |
| 320-29346-4         | WGNA-062117-FRB-0569 | 932576  | 1.91 | 3071649 | 2.15 |        |      |
| 320-29346-5         | WGNA-062117-RW-3097  | 949831  | 1.91 | 3004027 | 2.15 |        |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173116/17 Date Analyzed: 07/08/2017 12:42  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_017 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |      | PFOS    |      |         |      |
|----------------|----------------------|------|---------|------|---------|------|
|                | AREA #               | RT # | AREA #  | RT # | AREA #  | RT # |
| 12/24 HOUR STD | 947388               | 1.91 | 3016336 | 2.15 |         |      |
| UPPER LIMIT    | 1326343              | 2.41 | 4222870 | 2.65 |         |      |
| LOWER LIMIT    | 663172               | 1.41 | 2111435 | 1.65 |         |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |      |         |      |         |      |
| 320-29346-6    | WGNA-062117-FRB-3097 |      | 935887  | 1.92 | 2954087 | 2.16 |
| 320-29346-7    | WGNA-062117-RW-0461  |      | 944306  | 1.92 | 3038844 | 2.16 |
| 320-29346-8    | WGNA-062117-FRB-0461 |      | 966603  | 1.92 | 3126086 | 2.16 |
| 320-29346-9    | WGNA-062117-DUP02    |      | 926788  | 1.94 | 3073775 | 2.17 |
| 320-29346-10   | WGNA-062117-RW-0500  |      | 994119  | 1.93 | 3208745 | 2.16 |
| 320-29346-11   | WGNA-062117-FRB-0500 |      | 906406  | 1.93 | 3056099 | 2.16 |
| 320-29346-12   | WGNA-062117-RW-3933  |      | 902311  | 1.94 | 3000823 | 2.17 |
| 320-29346-13   | WGNA-062117-FRB-3933 |      | 932828  | 1.94 | 3012668 | 2.17 |
| 320-29346-14   | WGNA-062117-RW-0404  |      | 1079406 | 1.94 | 3512651 | 2.16 |
| 320-29346-15   | WGNA-062117-FRB-0404 |      | 909149  | 1.94 | 2916020 | 2.17 |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173116/29 Date Analyzed: 07/08/2017 13:39  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_029 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |         | PFOS    |         |        |      |
|----------------|----------------------|---------|---------|---------|--------|------|
|                | AREA #               | RT #    | AREA #  | RT #    | AREA # | RT # |
| 12/24 HOUR STD | 869614               | 1.93    | 3053864 | 2.16    |        |      |
| UPPER LIMIT    | 1217460              | 2.43    | 4275410 | 2.66    |        |      |
| LOWER LIMIT    | 608730               | 1.43    | 2137705 | 1.66    |        |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |         |         |         |        |      |
| 320-29346-6    | WGNA-062117-FRB-3097 | 935887  | 1.92    | 2954087 | 2.16   |      |
| 320-29346-7    | WGNA-062117-RW-0461  | 944306  | 1.92    | 3038844 | 2.16   |      |
| 320-29346-8    | WGNA-062117-FRB-0461 | 966603  | 1.92    | 3126086 | 2.16   |      |
| 320-29346-9    | WGNA-062117-DUP02    | 926788  | 1.94    | 3073775 | 2.17   |      |
| 320-29346-10   | WGNA-062117-RW-0500  | 994119  | 1.93    | 3208745 | 2.16   |      |
| 320-29346-11   | WGNA-062117-FRB-0500 | 906406  | 1.93    | 3056099 | 2.16   |      |
| 320-29346-12   | WGNA-062117-RW-3933  | 902311  | 1.94    | 3000823 | 2.17   |      |
| 320-29346-13   | WGNA-062117-FRB-3933 | 932828  | 1.94    | 3012668 | 2.17   |      |
| 320-29346-14   | WGNA-062117-RW-0404  | 1079406 | 1.94    | 3512651 | 2.16   |      |
| 320-29346-15   | WGNA-062117-FRB-0404 | 909149  | 1.94    | 2916020 | 2.17   |      |

13PFOA = 13C2-PFOA

PFOS = 13C4 PFOS

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

RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173117/29 Date Analyzed: 07/08/2017 13:39  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_029 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |      | PFOS    |      |         |      |
|----------------|----------------------|------|---------|------|---------|------|
|                | AREA #               | RT # | AREA #  | RT # | AREA #  | RT # |
| 12/24 HOUR STD | 869614               | 1.93 | 3053864 | 2.16 |         |      |
| UPPER LIMIT    | 1217460              | 2.43 | 4275410 | 2.66 |         |      |
| LOWER LIMIT    | 608730               | 1.43 | 2137705 | 1.66 |         |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |      |         |      |         |      |
| 320-29346-16   | WGNA-062117-RW-2426  |      | 903934  | 1.93 | 2923055 | 2.16 |
| 320-29346-17   | WGNA-062117-FRB-2426 |      | 936994  | 1.93 | 2958006 | 2.16 |

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

Area Limit = 70%-140% of internal standard area  
 RT Limit =  $\pm$  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.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Sample No.: CCV 320-173117/38 Date Analyzed: 07/08/2017 14:21  
 Instrument ID: A8\_N GC Column: GeminiC18 3x100 ID: 3 (mm)  
 Lab File ID (Standard): 2017.07.08\_537A\_038 Heated Purge: (Y/N) N  
 Calibration ID: 32198

|                | 13PFOA               |      | PFOS    |      |         |      |
|----------------|----------------------|------|---------|------|---------|------|
|                | AREA #               | RT # | AREA #  | RT # | AREA #  | RT # |
| 12/24 HOUR STD | 860316               | 1.93 | 3010705 | 2.16 |         |      |
| UPPER LIMIT    | 1204442              | 2.43 | 4214987 | 2.66 |         |      |
| LOWER LIMIT    | 602221               | 1.43 | 2107494 | 1.66 |         |      |
| LAB SAMPLE ID  | CLIENT SAMPLE ID     |      |         |      |         |      |
| 320-29346-16   | WGNA-062117-RW-2426  |      | 903934  | 1.93 | 2923055 | 2.16 |
| 320-29346-17   | WGNA-062117-FRB-2426 |      | 936994  | 1.93 | 2958006 | 2.16 |

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

Area Limit = 70%-140% of internal standard area  
 RT Limit =  $\pm$  0.5 minutes of internal standard RT

# Column used to flag values outside QC limits

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

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1 Analy Batch No.: 172646

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

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2017 19:50 Calibration End Date: 07/05/2017 20:13 Calibration ID: 32198

Calibration Files:

|         |                 |                           |
|---------|-----------------|---------------------------|
| LEVEL:  | LAB SAMPLE ID:  | LAB FILE ID:              |
| Level 1 | IC 320-172646/4 | 2017.07.05_537CURVE_004.d |
| Level 2 | IC 320-172646/5 | 2017.07.05_537CURVE_005.d |
| Level 3 | IC 320-172646/6 | 2017.07.05_537CURVE_006.d |
| Level 4 | IC 320-172646/7 | 2017.07.05_537CURVE_007.d |
| Level 5 | IC 320-172646/8 | 2017.07.05_537CURVE_008.d |
| Level 6 | IC 320-172646/9 | 2017.07.05_537CURVE_009.d |

| ANALYTE                              | RRF              |        |        |        |        | CURVE<br>TYPE | COEFFICIENT |        |    | # | MIN RRF | %RSD | # | MAX<br>%RSD | R^2<br>OR COD | # | MIN R^2<br>OR COD |
|--------------------------------------|------------------|--------|--------|--------|--------|---------------|-------------|--------|----|---|---------|------|---|-------------|---------------|---|-------------------|
|                                      | LVL 1<br>LVL 6   | LVL 2  | LVL 3  | LVL 4  | LVL 5  |               | B           | M1     | M2 |   |         |      |   |             |               |   |                   |
| Perfluorobutanesulfonic acid (PFBS)  | 0.9481<br>0.7897 | 0.9454 | 0.9006 | 0.8560 | 0.9067 | Ave           |             | 0.8911 |    |   |         | 6.7  |   | 30.0        |               |   |                   |
| Perfluoroheptanoic acid (PFHpA)      | 1.0233<br>1.0518 | 1.1219 | 1.0105 | 1.0079 | 1.0586 | Ave           |             | 1.0457 |    |   |         | 4.1  |   | 30.0        |               |   |                   |
| Perfluorohexanesulfonic acid (PFHxS) | 1.4151<br>1.3485 | 1.4140 | 1.3485 | 1.3337 | 1.5012 | Ave           |             | 1.3935 |    |   |         | 4.6  |   | 30.0        |               |   |                   |
| Perfluorooctanoic acid (PFOA)        | 0.8653<br>0.9458 | 0.9483 | 0.8907 | 0.9155 | 0.9646 | Ave           |             | 0.9217 |    |   |         | 4.1  |   | 30.0        |               |   |                   |
| Perfluorooctanesulfonic acid (PFOS)  | 1.0233<br>0.9990 | 1.0180 | 1.0066 | 1.0023 | 1.0955 | Ave           |             | 1.0241 |    |   |         | 3.5  |   | 30.0        |               |   |                   |
| Perfluorononanoic acid (PFNA)        | 0.8166<br>0.8011 | 0.8671 | 0.8018 | 0.8165 | 0.8416 | Ave           |             | 0.8241 |    |   |         | 3.1  |   | 30.0        |               |   |                   |
| 13C2 PFHxA                           | 1.0491<br>1.1558 | 1.1981 | 1.1291 | 1.1054 | 1.1794 | Ave           |             | 1.1362 |    |   |         | 4.8  |   | 30.0        |               |   |                   |
| 13C2 PFDA                            | 0.8223<br>0.8325 | 0.8717 | 0.8508 | 0.8171 | 0.8428 | Ave           |             | 0.8395 |    |   |         | 2.4  |   | 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.: 320-29346-1 Analy Batch No.: 172646

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

Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2017 19:50 Calibration End Date: 07/05/2017 20:13 Calibration ID: 32198

Calibration Files:

| LEVEL:  | LAB SAMPLE ID:  | LAB FILE ID:              |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-172646/4 | 2017.07.05_537CURVE_004.d |
| Level 2 | IC 320-172646/5 | 2017.07.05_537CURVE_005.d |
| Level 3 | IC 320-172646/6 | 2017.07.05_537CURVE_006.d |
| Level 4 | IC 320-172646/7 | 2017.07.05_537CURVE_007.d |
| Level 5 | IC 320-172646/8 | 2017.07.05_537CURVE_008.d |
| Level 6 | IC 320-172646/9 | 2017.07.05_537CURVE_009.d |

| ANALYTE                                 | IS<br>REF  | CURVE<br>TYPE | RESPONSE           |         |         |         |          | CONCENTRATION (NG/ML) |       |       |       |       |
|-----------------------------------------|------------|---------------|--------------------|---------|---------|---------|----------|-----------------------|-------|-------|-------|-------|
|                                         |            |               | LVL 1<br>LVL 6     | LVL 2   | LVL 3   | LVL 4   | LVL 5    | LVL 1<br>LVL 6        | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| Perfluorobutanesulfonic acid (PFBS)     | PFOS       | Ave           | 803806<br>14234634 | 1925519 | 3823269 | 7725129 | 11133396 | 8.83<br>176           | 21.2  | 44.4  | 89.4  | 133   |
| Perfluoroheptanoic acid (PFHpA)         | 13PF<br>OA | Ave           | 101135<br>1993330  | 250235  | 490415  | 984967  | 1494114  | 0.990<br>19.7         | 2.38  | 4.97  | 10.0  | 14.9  |
| Perfluorohexanesulfonic acid<br>(PFHxS) | PFOS       | Ave           | 408251<br>8271288  | 980019  | 1948018 | 4095579 | 6272381  | 3.01<br>59.7          | 7.21  | 15.1  | 30.4  | 45.1  |
| Perfluorooctanoic acid (PFOA)           | 13PF<br>OA | Ave           | 172606<br>3617366  | 426873  | 872357  | 1805622 | 2747595  | 2.00<br>39.7          | 4.80  | 10.0  | 20.2  | 30.0  |
| Perfluorooctanesulfonic acid (PFOS)     | PFOS       | Ave           | 393122<br>8159668  | 939618  | 1936577 | 4098834 | 6095701  | 4.00<br>79.6          | 9.61  | 20.1  | 40.5  | 60.0  |
| Perfluorononanoic acid (PFNA)           | 13PF<br>OA | Ave           | 157013<br>2953507  | 376270  | 756974  | 1552293 | 2310846  | 1.93<br>38.3          | 4.62  | 9.68  | 19.5  | 28.9  |
| 13C2 PFHxA                              | 13PF<br>OA | Ave           | 1047405<br>1113221 | 1124762 | 1101523 | 1077727 | 1120950  | 10.0<br>10.0          | 10.0  | 10.0  | 10.0  | 10.0  |
| 13C2 PFDA                               | 13PF<br>OA | Ave           | 820977<br>801864   | 818323  | 829957  | 796662  | 800975   | 10.0<br>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.: 320-29346-1 Analy Batch No.: 172646

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

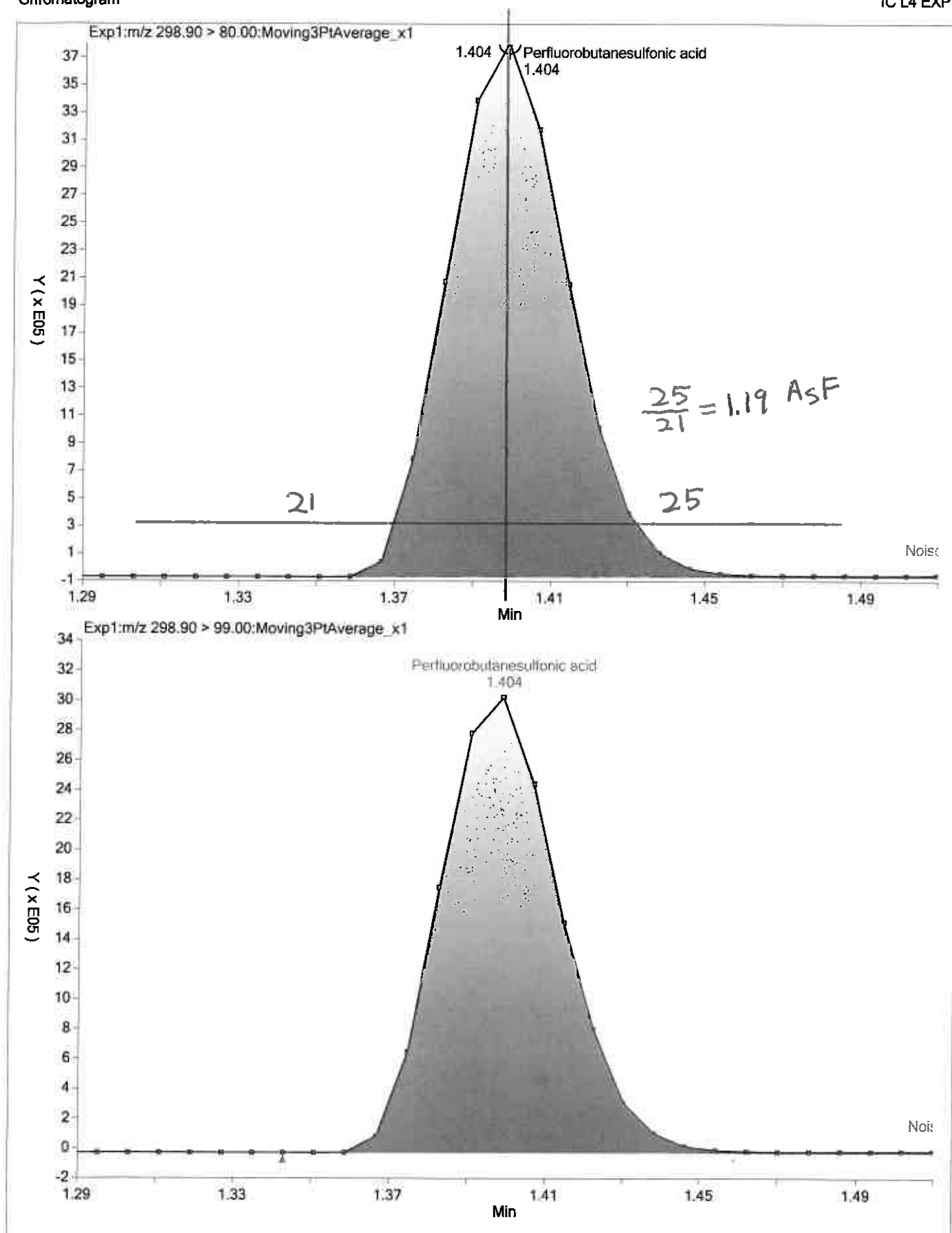
Instrument ID: A8\_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2017 19:50 Calibration End Date: 07/05/2017 20:13 Calibration ID: 32198

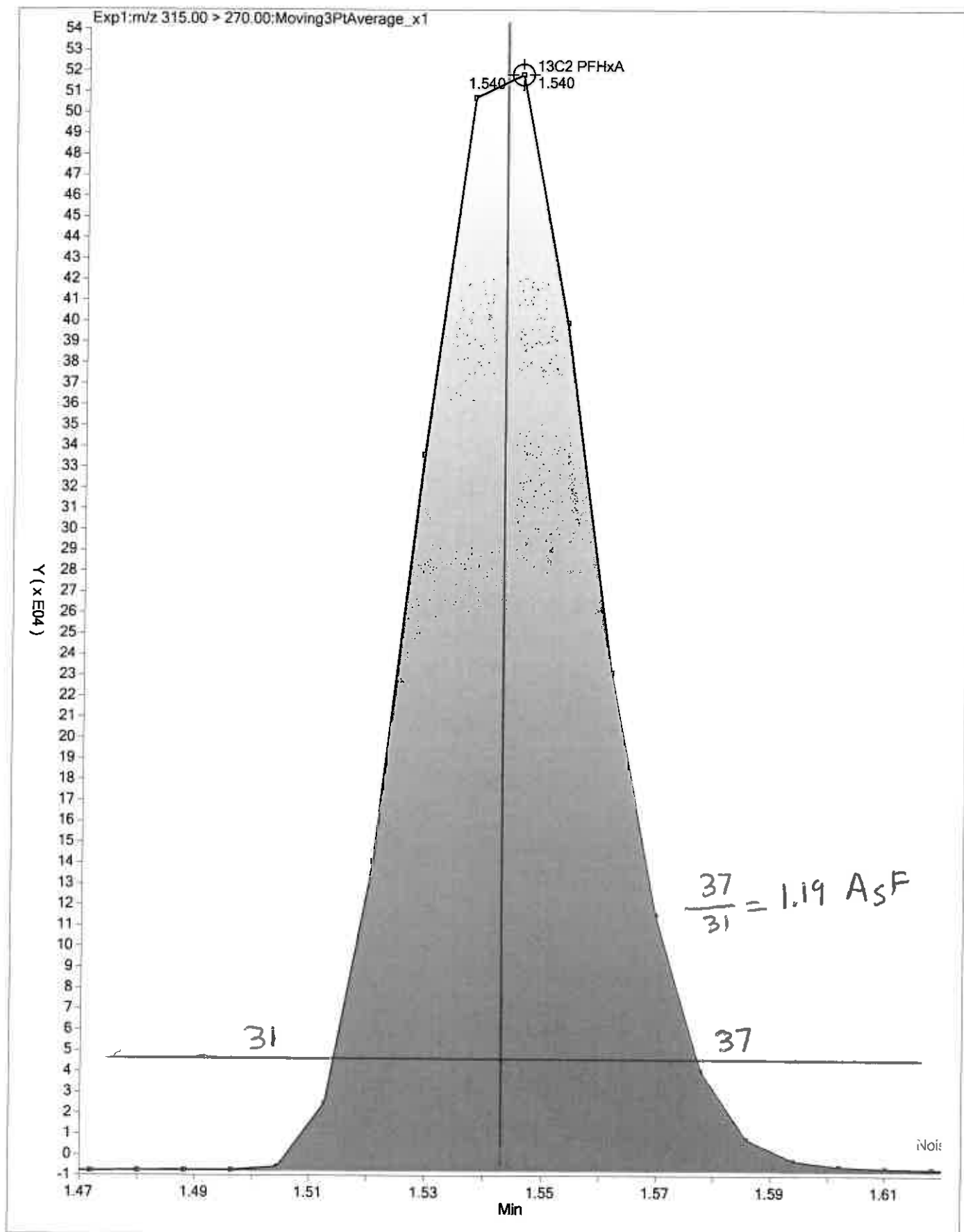
Calibration Files:

| LEVEL:  | LAB SAMPLE ID:  | LAB FILE ID:              |
|---------|-----------------|---------------------------|
| Level 1 | IC 320-172646/4 | 2017.07.05_537CURVE_004.d |
| Level 2 | IC 320-172646/5 | 2017.07.05_537CURVE_005.d |
| Level 3 | IC 320-172646/6 | 2017.07.05_537CURVE_006.d |
| Level 4 | IC 320-172646/7 | 2017.07.05_537CURVE_007.d |
| Level 5 | IC 320-172646/8 | 2017.07.05_537CURVE_008.d |
| Level 6 | IC 320-172646/9 | 2017.07.05_537CURVE_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)  | 6.4           | 6.1     | 1.1     | -3.9    | 1.8     | -11.4   | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluoroheptanoic acid (PFHpA)      | -2.1          | 7.3     | -3.4    | -3.6    | 1.2     | 0.6     | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorohexanesulfonic acid (PFHxS) | 1.6           | 1.5     | -3.2    | -4.3    | 7.7     | -3.2    | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorooctanoic acid (PFOA)        | -6.1          | 2.9     | -3.4    | -0.7    | 4.7     | 2.6     | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorooctanesulfonic acid (PFOS)  | -0.1          | -0.6    | -1.7    | -2.1    | 7.0     | -2.5    | 50                  | 50    | 50    | 50    | 50    | 50    |
| Perfluorononanoic acid (PFNA)        | -0.9          | 5.2     | -2.7    | -0.9    | 2.1     | -2.8    | 50                  | 50    | 50    | 50    | 50    | 50    |
| 13C2 PFHxA                           | -7.7          | 5.5     | -0.6    | -2.7    | 3.8     | 1.7     | 30                  | 30    | 30    | 30    | 30    | 30    |
| 13C2 PFDA                            | -2.0          | 3.8     | 1.3     | -2.7    | 0.4     | -0.8    | 30                  | 30    | 30    | 30    | 30    | 30    |







FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-172646/11 Calibration Date: 07/05/2017 20:23  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.05\_537CURVE\_011.d Conc. Units: ng/mL

| ANALYTE                              | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|--------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid (PFBS)  | Ave           | 0.8911  | 0.9450 |         | 22.5           | 21.2            | 6.0  | 50.0      |
| Perfluoroheptanoic acid (PFHpA)      | Ave           | 1.046   | 1.013  |         | 2.30           | 2.38            | -3.1 | 50.0      |
| Perfluorohexanesulfonic acid (PFHxS) | Ave           | 1.394   | 1.375  |         | 7.12           | 7.21            | -1.3 | 50.0      |
| Perfluorooctanoic acid (PFOA)        | Ave           | 0.9217  | 0.9158 |         | 4.76           | 4.80            | -0.6 | 50.0      |
| Perfluorooctanesulfonic acid (PFOS)  | Ave           | 1.024   | 0.9585 |         | 8.99           | 9.61            | -6.4 | 50.0      |
| Perfluorononanoic acid (PFNA)        | Ave           | 0.8241  | 0.8346 |         | 4.68           | 4.62            | 1.3  | 50.0      |
| 13C2 PFHxA                           | Ave           | 1.136   | 1.093  |         | 9.62           | 10.0            | -3.8 | 30.0      |
| 13C2 PFDA                            | Ave           | 0.8395  | 0.8398 |         | 10.0           | 10.0            | 0.0  | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: ICV 320-172646/13 Calibration Date: 07/05/2017 20:32  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.05\_537CURVE\_013.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9309 |         | 105            | 101             | 4.5  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 0.9545 |         | 9.20           | 10.1            | -8.7 | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.547  |         | 23.5           | 21.2            | 11.0 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9807 |         | 21.3           | 20.0            | 6.4  | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.035  |         | 20.9           | 20.7            | 1.0  | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8757 |         | 21.3           | 20.0            | 6.3  | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.143  |         | 10.1           | 10.0            | 0.6  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8348 |         | 9.94           | 10.0            | -0.6 | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCVL 320-173114/4 Calibration Date: 07/08/2017 11:40  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_004.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9701 |         | 23.1           | 21.2            | 8.9  | 50.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.010  |         | 2.29           | 2.38            | -3.4 | 50.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.264  |         | 6.54           | 7.21            | -9.3 | 50.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9027 |         | 4.70           | 4.80            | -2.1 | 50.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 0.998  |         | 9.36           | 9.61            | -2.6 | 50.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.7837 |         | 4.40           | 4.62            | -4.9 | 50.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.151  |         | 10.1           | 10.0            | 1.3  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8172 |         | 9.73           | 10.0            | -2.7 | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173114/5 Calibration Date: 07/08/2017 11:45  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_005.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.8311 |         | 124            | 133             | -6.7  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.046  |         | 14.9           | 14.9            | 0.0   | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.243  |         | 40.2           | 45.1            | -10.8 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9796 |         | 31.9           | 30.0            | 6.3   | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.030  |         | 60.4           | 60.0            | 0.6   | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8376 |         | 29.4           | 28.9            | 1.6   | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.150  |         | 10.1           | 10.0            | 1.2   | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8581 |         | 10.2           | 10.0            | 2.2   | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173114/17 Calibration Date: 07/08/2017 12:42  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_017.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9576 |         | 47.7           | 44.4            | 7.5  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.027  |         | 4.89           | 4.97            | -1.8 | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.292  |         | 14.0           | 15.1            | -7.3 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.8879 |         | 9.67           | 10.0            | -3.7 | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.004  |         | 19.7           | 20.1            | -2.0 | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.7807 |         | 9.17           | 9.68            | -5.3 | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.185  |         | 10.4           | 10.0            | 4.3  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8247 |         | 9.82           | 10.0            | -1.8 | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173116/17 Calibration Date: 07/08/2017 12:42  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_017.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D   | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.9576 |         | 47.7           | 44.4            | 7.5  | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.027  |         | 4.89           | 4.97            | -1.8 | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.292  |         | 14.0           | 15.1            | -7.3 | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.8879 |         | 9.67           | 10.0            | -3.7 | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.004  |         | 19.7           | 20.1            | -2.0 | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.7807 |         | 9.17           | 9.68            | -5.3 | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.185  |         | 10.4           | 10.0            | 4.3  | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8247 |         | 9.82           | 10.0            | -1.8 | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173116/29 Calibration Date: 07/08/2017 13:39  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_029.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.7864 |         | 117            | 133             | -11.8 | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.036  |         | 14.7           | 14.9            | -0.9  | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.299  |         | 42.0           | 45.1            | -6.8  | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9241 |         | 30.0           | 30.0            | 0.3   | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.013  |         | 59.4           | 60.0            | -1.1  | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8277 |         | 29.0           | 28.9            | 0.4   | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.211  |         | 10.7           | 10.0            | 6.6   | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8366 |         | 9.96           | 10.0            | -0.4  | 30.0      |



FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173117/29 Calibration Date: 07/08/2017 13:39  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_029.d Conc. Units: ng/mL

| ANALYTE                                 | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|-----------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid<br>(PFBS)  | Ave           | 0.8911  | 0.7864 |         | 117            | 133             | -11.8 | 30.0      |
| Perfluoroheptanoic acid<br>(PFHpA)      | Ave           | 1.046   | 1.036  |         | 14.7           | 14.9            | -0.9  | 30.0      |
| Perfluorohexanesulfonic acid<br>(PFHxS) | Ave           | 1.394   | 1.299  |         | 42.0           | 45.1            | -6.8  | 30.0      |
| Perfluorooctanoic acid<br>(PFOA)        | Ave           | 0.9217  | 0.9241 |         | 30.0           | 30.0            | 0.3   | 30.0      |
| Perfluorooctanesulfonic acid<br>(PFOS)  | Ave           | 1.024   | 1.013  |         | 59.4           | 60.0            | -1.1  | 30.0      |
| Perfluorononanoic acid<br>(PFNA)        | Ave           | 0.8241  | 0.8277 |         | 29.0           | 28.9            | 0.4   | 30.0      |
| 13C2 PFHxA                              | Ave           | 1.136   | 1.211  |         | 10.7           | 10.0            | 6.6   | 30.0      |
| 13C2 PFDA                               | Ave           | 0.8395  | 0.8366 |         | 9.96           | 10.0            | -0.4  | 30.0      |

FORM VII  
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1  
 SDG No.: \_\_\_\_\_  
 Lab Sample ID: CCV 320-173117/38 Calibration Date: 07/08/2017 14:21  
 Instrument ID: A8\_N Calib Start Date: 07/05/2017 19:50  
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/05/2017 20:13  
 Lab File ID: 2017.07.08\_537A\_038.d Conc. Units: ng/mL

| ANALYTE                              | CURVE<br>TYPE | AVE RRF | RRF    | MIN RRF | CALC<br>AMOUNT | SPIKE<br>AMOUNT | %D    | MAX<br>%D |
|--------------------------------------|---------------|---------|--------|---------|----------------|-----------------|-------|-----------|
| Perfluorobutanesulfonic acid (PFBS)  | Ave           | 0.8911  | 0.8672 |         | 43.2           | 44.4            | -2.7  | 30.0      |
| Perfluoroheptanoic acid (PFHpA)      | Ave           | 1.046   | 1.078  |         | 5.13           | 4.97            | 3.1   | 30.0      |
| Perfluorohexanesulfonic acid (PFHxS) | Ave           | 1.394   | 1.237  |         | 13.4           | 15.1            | -11.3 | 30.0      |
| Perfluorooctanoic acid (PFOA)        | Ave           | 0.9217  | 0.9122 |         | 9.94           | 10.0            | -1.0  | 30.0      |
| Perfluorooctanesulfonic acid (PFOS)  | Ave           | 1.024   | 1.011  |         | 19.9           | 20.1            | -1.3  | 30.0      |
| Perfluorononanoic acid (PFNA)        | Ave           | 0.8241  | 0.8235 |         | 9.67           | 9.68            | -0.0  | 30.0      |
| 13C2 PFHxA                           | Ave           | 1.136   | 1.269  |         | 11.2           | 10.0            | 11.6  | 30.0      |
| 13C2 PFDA                            | Ave           | 0.8395  | 0.8509 |         | 10.1           | 10.0            | 1.3   | 30.0      |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-29346-1

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

Instrument ID: A8\_NStart Date: 07/05/2017 19:50Analysis Batch Number: 172646End Date: 07/05/2017 20:32

| LAB SAMPLE ID             | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID                   | COLUMN ID             |
|---------------------------|------------------|------------------|--------------------|-------------------------------|-----------------------|
| IC 320-172646/4           |                  | 07/05/2017 19:50 | 1                  | 2017.07.05_537C<br>URVE 004.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/5           |                  | 07/05/2017 19:54 | 1                  | 2017.07.05_537C<br>URVE 005.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/6           |                  | 07/05/2017 19:59 | 1                  | 2017.07.05_537C<br>URVE 006.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/7<br>ICISAV |                  | 07/05/2017 20:04 | 1                  | 2017.07.05_537C<br>URVE 007.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/8           |                  | 07/05/2017 20:09 | 1                  | 2017.07.05_537C<br>URVE 008.d | GeminiC18 3x100 3(mm) |
| IC 320-172646/9           |                  | 07/05/2017 20:13 | 1                  | 2017.07.05_537C<br>URVE 009.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                     |                  | 07/05/2017 20:18 | 1                  |                               | GeminiC18 3x100 3(mm) |
| CCVL 320-172646/11        |                  | 07/05/2017 20:23 | 1                  | 2017.07.05_537C<br>URVE 011.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                     |                  | 07/05/2017 20:28 | 1                  |                               | GeminiC18 3x100 3(mm) |
| ICV 320-172646/13         |                  | 07/05/2017 20:32 | 1                  | 2017.07.05_537C<br>URVE 013.d | GeminiC18 3x100 3(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-29346-1

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

Instrument ID: A8\_NStart Date: 07/08/2017 11:40Analysis Batch Number: 173114End Date: 07/08/2017 12:42

| LAB SAMPLE ID              | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID              | COLUMN ID             |
|----------------------------|------------------|------------------|--------------------|--------------------------|-----------------------|
| CCVL 320-173114/4          |                  | 07/08/2017 11:40 | 1                  | 2017.07.08_537A<br>004.d | GeminiC18 3x100 3(mm) |
| CCV 320-173114/5<br>CCVIS  |                  | 07/08/2017 11:45 | 1                  | 2017.07.08_537A<br>005.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 11:49 | 1                  |                          | GeminiC18 3x100 3(mm) |
| MB 320-172426/1-A          |                  | 07/08/2017 11:54 | 1                  | 2017.07.08_537A<br>007.d | GeminiC18 3x100 3(mm) |
| LCS 320-172426/2-A         |                  | 07/08/2017 11:59 | 1                  | 2017.07.08_537A<br>008.d | GeminiC18 3x100 3(mm) |
| LCSD 320-172426/3-A        |                  | 07/08/2017 12:04 | 1                  | 2017.07.08_537A<br>009.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 12:08 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 12:13 | 1                  |                          | GeminiC18 3x100 3(mm) |
| 320-29346-1                |                  | 07/08/2017 12:18 | 1                  | 2017.07.08_537A<br>012.d | GeminiC18 3x100 3(mm) |
| 320-29346-2                |                  | 07/08/2017 12:23 | 1                  | 2017.07.08_537A<br>013.d | GeminiC18 3x100 3(mm) |
| 320-29346-3                |                  | 07/08/2017 12:27 | 1                  | 2017.07.08_537A<br>014.d | GeminiC18 3x100 3(mm) |
| 320-29346-4                |                  | 07/08/2017 12:32 | 1                  | 2017.07.08_537A<br>015.d | GeminiC18 3x100 3(mm) |
| 320-29346-5                |                  | 07/08/2017 12:37 | 1                  | 2017.07.08_537A<br>016.d | GeminiC18 3x100 3(mm) |
| CCV 320-173114/17<br>CCVIS |                  | 07/08/2017 12:42 | 1                  | 2017.07.08_537A<br>017.d | GeminiC18 3x100 3(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-29346-1

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

Instrument ID: A8\_NStart Date: 07/08/2017 12:42Analysis Batch Number: 173116End Date: 07/08/2017 13:39

| LAB SAMPLE ID              | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID              | COLUMN ID             |
|----------------------------|------------------|------------------|--------------------|--------------------------|-----------------------|
| CCV 320-173116/17<br>CCVIS |                  | 07/08/2017 12:42 | 1                  | 2017.07.08_537A<br>017.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 12:46 | 1                  |                          | GeminiC18 3x100 3(mm) |
| 320-29346-6                |                  | 07/08/2017 12:51 | 1                  | 2017.07.08_537A<br>019.d | GeminiC18 3x100 3(mm) |
| 320-29346-7                |                  | 07/08/2017 12:56 | 1                  | 2017.07.08_537A<br>020.d | GeminiC18 3x100 3(mm) |
| 320-29346-8                |                  | 07/08/2017 13:01 | 1                  | 2017.07.08_537A<br>021.d | GeminiC18 3x100 3(mm) |
| 320-29346-9                |                  | 07/08/2017 13:05 | 1                  | 2017.07.08_537A<br>022.d | GeminiC18 3x100 3(mm) |
| 320-29346-10               |                  | 07/08/2017 13:10 | 1                  | 2017.07.08_537A<br>023.d | GeminiC18 3x100 3(mm) |
| 320-29346-11               |                  | 07/08/2017 13:15 | 1                  | 2017.07.08_537A<br>024.d | GeminiC18 3x100 3(mm) |
| 320-29346-12               |                  | 07/08/2017 13:20 | 1                  | 2017.07.08_537A<br>025.d | GeminiC18 3x100 3(mm) |
| 320-29346-13               |                  | 07/08/2017 13:24 | 1                  | 2017.07.08_537A<br>026.d | GeminiC18 3x100 3(mm) |
| 320-29346-14               |                  | 07/08/2017 13:29 | 1                  | 2017.07.08_537A<br>027.d | GeminiC18 3x100 3(mm) |
| 320-29346-15               |                  | 07/08/2017 13:34 | 1                  | 2017.07.08_537A<br>028.d | GeminiC18 3x100 3(mm) |
| CCV 320-173116/29<br>CCVIS |                  | 07/08/2017 13:39 | 1                  | 2017.07.08_537A<br>029.d | GeminiC18 3x100 3(mm) |

## LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Instrument ID: A8\_N Start Date: 07/08/2017 13:39Analysis Batch Number: 173117 End Date: 07/08/2017 14:21

| LAB SAMPLE ID              | CLIENT SAMPLE ID | DATE ANALYZED    | DILUTION<br>FACTOR | LAB FILE ID              | COLUMN ID             |
|----------------------------|------------------|------------------|--------------------|--------------------------|-----------------------|
| CCV 320-173117/29<br>CCVIS |                  | 07/08/2017 13:39 | 1                  | 2017.07.08_537A<br>029.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 13:43 | 1                  |                          | GeminiC18 3x100 3(mm) |
| 320-29346-16               |                  | 07/08/2017 13:48 | 1                  | 2017.07.08_537A<br>031.d | GeminiC18 3x100 3(mm) |
| 320-29346-17               |                  | 07/08/2017 13:53 | 1                  | 2017.07.08_537A<br>032.d | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 13:58 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:02 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:07 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:12 | 1                  |                          | GeminiC18 3x100 3(mm) |
| ZZZZZ                      |                  | 07/08/2017 14:16 | 1                  |                          | GeminiC18 3x100 3(mm) |
| CCV 320-173117/38<br>CCVIS |                  | 07/08/2017 14:21 | 1                  | 2017.07.08_537A<br>038.d | GeminiC18 3x100 3(mm) |

## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Batch Number: 172426 Batch Start Date: 07/05/17 10:52 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 07/06/17 20:24

| Lab Sample ID     | Client Sample ID     | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | LC537-HSP 00018 |
|-------------------|----------------------|--------------|-------|-------------|------------|---------------|-------------|------------|-----------------|
| MB 320-172426/1   |                      | 537, 537     |       |             |            | 250 mL        | 1.00 mL     | 7 SU       |                 |
| LCS 320-172426/2  |                      | 537, 537     |       |             |            | 250 mL        | 1.00 mL     | 7 SU       | 100 uL          |
| LCSD 320-172426/3 |                      | 537, 537     |       |             |            | 250 mL        | 1.00 mL     | 7 SU       | 100 uL          |
| 320-29346-A-1     | WGNA-062117-RW-3148  | 537, 537     | T     | 284.23 g    | 27.40 g    | 256.8 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-2     | WGNA-062117-FRB-3148 | 537, 537     | T     | 285.93 g    | 27.01 g    | 258.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-3     | WGNA-062117-RW-0569  | 537, 537     | T     | 292.67 g    | 27.24 g    | 265.4 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-B-4     | WGNA-062117-FRB-0569 | 537, 537     | T     | 279.09 g    | 27.23 g    | 251.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-5     | WGNA-062117-RW-3097  | 537, 537     | T     | 298.04 g    | 27.84 g    | 270.2 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-6     | WGNA-062117-FRB-3097 | 537, 537     | T     | 281.01 g    | 27.14 g    | 253.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-7     | WGNA-062117-RW-0461  | 537, 537     | T     | 284.02 g    | 27.79 g    | 256.2 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-B-8     | WGNA-062117-FRB-0461 | 537, 537     | T     | 294.06 g    | 27.28 g    | 266.8 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-9     | WGNA-062117-DUP02    | 537, 537     | T     | 292.16 g    | 27.85 g    | 264.3 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-10    | WGNA-062117-RW-0500  | 537, 537     | T     | 284.59 g    | 27.43 g    | 257.2 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-11    | WGNA-062117-FRB-0500 | 537, 537     | T     | 298.26 g    | 27.53 g    | 270.7 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-12    | WGNA-062117-RW-3933  | 537, 537     | T     | 281.38 g    | 27.95 g    | 253.4 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-B-13    | WGNA-062117-FRB-3933 | 537, 537     | T     | 285.78 g    | 27.48 g    | 258.3 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-14    | WGNA-062117-RW-0404  | 537, 537     | T     | 284.76 g    | 27.83 g    | 256.9 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-15    | WGNA-062117-FRB-0404 | 537, 537     | T     | 289.29 g    | 27.30 g    | 262 mL        | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-16    | WGNA-062117-RW-2426  | 537, 537     | T     | 281.14 g    | 27.57 g    | 253.6 mL      | 1.00 mL     | 7 SU       |                 |
| 320-29346-A-17    | WGNA-062117-FRB-2426 | 537, 537     | T     | 293.13 g    | 27.37 g    | 265.8 mL      | 1.00 mL     | 7 SU       |                 |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | LC537-IS 00044 | LC537-SU 00044 | AnalysisComment |  |  |
|---------------|------------------|--------------|-------|----------------|----------------|-----------------|--|--|
|---------------|------------------|--------------|-------|----------------|----------------|-----------------|--|--|

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.: 320-29346-1

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

Batch Number: 172426 Batch Start Date: 07/05/17 10:52 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 07/06/17 20:24

| Lab Sample ID     | Client Sample ID     | Method Chain | Basis | LC537-IS 00044 | LC537-SU 00044 | AnalysisComment |  |  |  |
|-------------------|----------------------|--------------|-------|----------------|----------------|-----------------|--|--|--|
| MB 320-172426/1   |                      | 537, 537     |       | 100 uL         | 100 uL         | CH ND           |  |  |  |
| LCS 320-172426/2  |                      | 537, 537     |       | 100 uL         | 100 uL         | CH ND           |  |  |  |
| LCSD 320-172426/3 |                      | 537, 537     |       | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-1     | WGNA-062117-RW-3148  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-2     | WGNA-062117-FRB-3148 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-3     | WGNA-062117-RW-0569  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-B-4     | WGNA-062117-FRB-0569 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-5     | WGNA-062117-RW-3097  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-6     | WGNA-062117-FRB-3097 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-7     | WGNA-062117-RW-0461  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-B-8     | WGNA-062117-FRB-0461 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-9     | WGNA-062117-DUP02    | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-10    | WGNA-062117-RW-0500  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-11    | WGNA-062117-FRB-0500 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-12    | WGNA-062117-RW-3933  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-B-13    | WGNA-062117-FRB-3933 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-14    | WGNA-062117-RW-0404  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-15    | WGNA-062117-FRB-0404 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-16    | WGNA-062117-RW-2426  | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |
| 320-29346-A-17    | WGNA-062117-FRB-2426 | 537, 537     | T     | 100 uL         | 100 uL         | CH ND           |  |  |  |

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



## LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-29346-1

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

Batch Number: 172426 Batch Start Date: 07/05/17 10:52 Batch Analyst: Sharifi, NooshinBatch Method: 537 Batch End Date: 07/06/17 20:24

| Batch Notes                          |            |
|--------------------------------------|------------|
| Batch Comment                        | IS:975029  |
| Manifold ID                          | 10, 1      |
| Methanol ID                          | 973181     |
| Pipette ID                           | MD05306    |
| Analyst ID - IS Reagent Drop         | VPM        |
| Analyst ID - IS Reagent Drop Witness | JER        |
| Analyst ID - SU Reagent Drop         | NSH        |
| Analyst ID - SU Reagent Drop Witness | HJA        |
| Analyst ID - TA Reagent Drop         | NSH        |
| Analyst ID - TA Reagent Drop Witness | HJA        |
| SPE Cartridge ID                     | 6357081-01 |
| Trizma ID                            | SLBR4303V  |
| Reagent Water ID                     | 7-05-17    |

| Basis | Basis Description |
|-------|-------------------|
| T     | Total/NA          |

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

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# Aqueous Extraction Analysis Sheet

AO 7/8/17

Batch Number: 320-172426

(To Accompany Samples to Instruments)

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End: 7/6/2017 8:24:00PM

## Extraction of Perfluorinated Alkyl Acids

| Input Sample Lab ID<br>(Analytical Method) | SDG<br>(Job #)       | GrossWt<br>TareWt | InitAmnt<br>FinAmnt | Rcvd | PHs<br>Adj1 Adj2 | Due Date | Analytical<br>TAT | Div<br>Rank | Comments | Output Sample Lab ID |
|--------------------------------------------|----------------------|-------------------|---------------------|------|------------------|----------|-------------------|-------------|----------|----------------------|
| 1 MB-320-172426/1<br>N/A                   | N/A                  |                   | 250 mL              | 7    |                  | N/A      | N/A               | N/A         | CH ND    |                      |
|                                            |                      |                   | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 2 LCS-320-172426/2<br>N/A                  | N/A                  |                   | 250 mL              | 7    |                  | N/A      | N/A               | N/A         | CH ND    |                      |
|                                            |                      |                   | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 3 LCSD-320-172426/3<br>N/A                 | N/A                  |                   | 250 mL              | 7    |                  | N/A      | N/A               | N/A         | CH ND    |                      |
|                                            |                      |                   | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 4 280-98633-C-9<br>(537_DOD5)              | N/A<br>(280-98633-1) | 290.28 g          | 262.6 mL            | 7    |                  | 6/29/17  | 12_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.73 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 5 280-98633-A-12<br>(537_DOD5)             | N/A<br>(280-98633-1) | 287.55 g          | 260.4 mL            | 7    |                  | 6/29/17  | 12_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.19 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 6 320-29346-A-1<br>(537_DOD5)              | N/A<br>(320-29346-1) | 284.23 g          | 256.8 mL            | 7    |                  | 6/28/17  | 16_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.40 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 7 320-29346-A-2<br>(537_DOD5)              | N/A<br>(320-29346-1) | 285.93 g          | 258.9 mL            | 7    |                  | 6/28/17  | 16_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.01 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 8 320-29346-A-3<br>(537_DOD5)              | N/A<br>(320-29346-1) | 292.67 g          | 265.4 mL            | 7    |                  | 6/28/17  | 16_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.24 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 9 320-29346-B-4<br>(537_DOD5)              | N/A<br>(320-29346-1) | 279.09 g          | 251.9 mL            | 7    |                  | 6/28/17  | 16_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.23 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |
| 10 320-29346-A-5<br>(537_DOD5)             | N/A<br>(320-29346-1) | 298.04 g          | 270.2 mL            | 7    |                  | 6/28/17  | 16_Days           | 4           | CH ND    |                      |
|                                            |                      | 27.84 g           | 1.00 mL             |      |                  |          |                   |             |          |                      |

# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End: 7/6/2017 8:24:00PM

|    |                              |                      |          |          |   |  |         |         |   |       |                                                                                       |
|----|------------------------------|----------------------|----------|----------|---|--|---------|---------|---|-------|---------------------------------------------------------------------------------------|
| 11 | 320-29346-A-6<br>(537_DOD5)  | N/A<br>(320-29346-1) | 281.01 g | 253.9 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.14 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 12 | 320-29346-A-7<br>(537_DOD5)  | N/A<br>(320-29346-1) | 284.02 g | 256.2 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.79 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 13 | 320-29346-B-8<br>(537_DOD5)  | N/A<br>(320-29346-1) | 294.06 g | 266.8 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.28 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 14 | 320-29346-A-9<br>(537_DOD5)  | N/A<br>(320-29346-1) | 292.16 g | 264.3 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.85 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 15 | 320-29346-A-10<br>(537_DOD5) | N/A<br>(320-29346-1) | 284.59 g | 257.2 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.43 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 16 | 320-29346-A-11<br>(537_DOD5) | N/A<br>(320-29346-1) | 298.26 g | 270.7 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.53 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 17 | 320-29346-A-12<br>(537_DOD5) | N/A<br>(320-29346-1) | 281.38 g | 253.4 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.95 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 18 | 320-29346-B-13<br>(537_DOD5) | N/A<br>(320-29346-1) | 285.78 g | 258.3 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |    |
|    |                              |                      | 27.48 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 19 | 320-29346-A-14<br>(537_DOD5) | N/A<br>(320-29346-1) | 284.76 g | 256.9 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.83 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 20 | 320-29346-A-15<br>(537_DOD5) | N/A<br>(320-29346-1) | 289.29 g | 262 mL   | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.30 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 21 | 320-29346-A-16<br>(537_DOD5) | N/A<br>(320-29346-1) | 281.14 g | 253.6 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.57 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |
| 22 | 320-29346-A-17<br>(537_DOD5) | N/A<br>(320-29346-1) | 293.13 g | 265.8 mL | 7 |  | 6/28/17 | 16_Days | 4 | CH ND |  |
|    |                              |                      | 27.37 g  | 1.00 mL  |   |  |         |         |   |       |                                                                                       |

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# Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-172426

Analyst: Sharifi, Nooshin

Batch Open: 7/5/2017 10:52:00AM

Method Code: 320-537\_Prep-320

Batch End: 7/6/2017 8:24:00PM

## Batch Notes

Manifold ID 10, 1

Trizma ID SLBR4303V

SPE Cartridge ID 6357081-01

Methanol ID 973181

Reagent Water ID 7-05-17

Pipette ID MD05306

Analyst ID - TA Reagent Drop NSH

Analyst ID - TA Reagent Drop HJA

Witness

Analyst ID - SU Reagent Drop NSH

Analyst ID - SU Reagent Drop HJA

Witness

Analyst ID - IS Reagent Drop VPM

Analyst ID - IS Reagent Drop JER

Witness

Batch Comment IS:975029

## Comments

280-98633-C-9

Method Comments: Q5

280-98633-A-12

Method Comments: Q5

PFAS Calibration Calculations:

Initial Calibration                      7/5/2017  
Instrument                                  A8\_N

Perfluorohexanesulfonic acid

| Analyte<br>Concentration | Analyte<br>Response | Internal Standard<br>Response | Internal Standard<br>Amount | RRF     | Reported<br>RRF |
|--------------------------|---------------------|-------------------------------|-----------------------------|---------|-----------------|
| 3.01                     | 408251              | 2752369                       | 28.7                        | 1.41428 | 1.4151          |
| 7.21                     | 980019              | 2755145                       | 28.7                        | 1.41591 | 1.414           |
| 15.1                     | 1948018             | 2742820                       | 28.7                        | 1.34990 | 1.3485          |
| 30.4                     | 4095579             | 2893551                       | 28.7                        | 1.33626 | 1.3337          |
| 45.1                     | 6272381             | 2657493                       | 28.7                        | 1.50199 | 1.5012          |
| 59.7                     | 8271288             | 2944302                       | 28.7                        | 1.35051 | 1.3485          |
| Average                  |                     |                               |                             | 1.39481 | 1.3935          |
| Standard Deviation       |                     |                               |                             | 0.0628  |                 |
| RSD                      |                     |                               |                             | 0.0450  |                 |
| %RSD                     |                     |                               |                             | 4.50228 | 4.6             |

Continuing Calibration                07/08/2017 @ 11:45  
A8\_N

Perfluorohexanesulfonic acid

| Analyte<br>Concentration | Analyte<br>Response | Internal Standard<br>Response | Internal Standard<br>Amount | RRF    | %D        | Reported<br>RRF | Reported<br>%D |
|--------------------------|---------------------|-------------------------------|-----------------------------|--------|-----------|-----------------|----------------|
| 45.1                     | 6348452             | 3248548                       | 28.7                        | 1.2436 | -10.75643 | 1.243           | -10.8          |

Willow Grove  
SDG 320-29346-1

Sample Identification

WGNA-062117-RW-3148

Compound

Perfluorohexanesulfonic acid

|                               |            |
|-------------------------------|------------|
| Compound Area                 | 433997     |
| Internal Standard Amount (ng) | 28.7       |
| Dilution Factor               | 1          |
| Internal Standard Area        | 3088691    |
| Average RRF                   | 1.3935     |
| Sample Volume(ml)             | 256.8      |
| Volume Extract (ml)           | 1          |
| Injection Volume (µl)         | 1          |
| µl to ml                      | 1000.00    |
| Concentration                 | 11.27 ng/L |



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